

ORIGINAL INSTRUCTIONS GOVERNING
PUBLIC LAND SURVEYS OF IOWA

Original Instructions Governing Public Land Surveys of Iowa

A Guide to Their Use in Resurveys of Public Lands

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AMES, IOWA
IOWA ENGINEERING SOCIETY

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PREFACE

The well-qualified land surveyor makes use of many sorts of reference works when preparing for a difficult land survey. He must be familiar with the technique of surveying operations and the theory and practice of surveying, whether of land lines or for construction.

He should have access to the field notes and plats of the original surveyors whose work he must retrace. He needs to know the law relating to land surveying and boundaries. This is available in such reference books as Patton on *Land Titles*, Clark on *Surveying and Boundaries*, and Skelton on *The Legal Elements of Boundaries and Adjacent Boundaries*. It is available in the annotated land laws to be found in good legal libraries.

In addition to the above he also needs to know as much as possible of the instructions under which the earlier work was done so that he can correctly retrace and interpret the meaning of the original notes and plats.

It has been the purpose of the voluntary committee which has prepared this volume to make available such early instructions for the original public land surveys of Iowa.

This material will be helpful in bordering states for surveys conducted at the same time. It makes the early original instructions available in printed form for the first time. Text book authors have tried to keep their books up to date by reproducing the most recent and current instructions. In this way they have made their books very misleading as a guide to the retracement of the early surveys.

To use this book properly on a resurvey in Iowa, refer to Chapter IV, for the actual special instructions under which the lines were originally run. Then read the general instructions in Chapter III covering the period in which the survey was made. The original survey notes should then be studied to learn what the surveyor did.

A glance at the map showing the location of resurveys in Chapter V will indicate whether some special situations may be expected. Equipped with the general and special instructions and the original notes the surveyor should apply the instructions given in Chapter VI. Special care must be taken to consider no corner or line lost until all efforts fail to produce evidence of the location of the lines or corners.

Many authorities upon land surveying have assisted the committee in the preparation of this book.

Special acknowledgment is made of the help and inspiration of Mr. W.

D. Jones, Chicago surveyor. Mr. Jones is the dean of land surveyors in Illinois and an able authority in land boundary matters. Mr. A. D. Kidder, of the General Land Office presented much of the helpful material of Chapter Six to the land surveyors of Iowa at one of the Iowa Surveying Conferences. Mr. Kidder has done much to increase the store of knowledge available to land surveyors and has been a guide and inspiring friend to the editor-in-chief and to many practicing land surveyors.

J. S. DODDS, C.E.

Editor-in-Chief

AMES, IOWA, *June, 1943*

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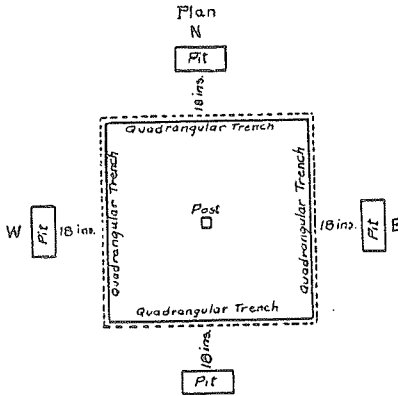
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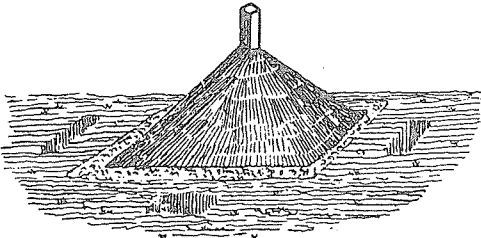
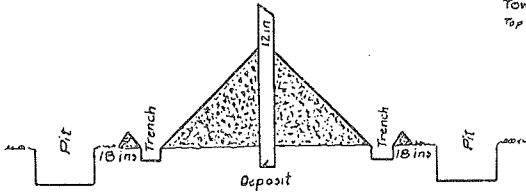
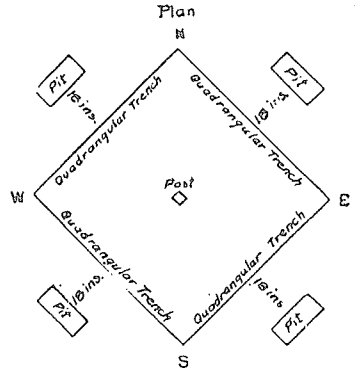
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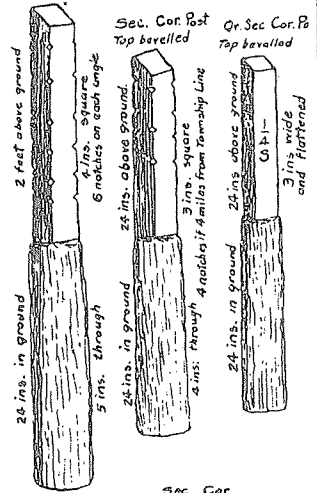
Position of Cor. Mound common to two Twps. or two Secs.



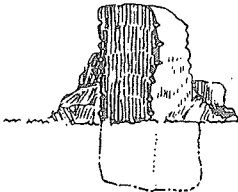
Position of Cor. Mound common to four Twps. or four Secs.



Township Corner Post
Top bevelled to turn rain



Twp. Cor. Stone.



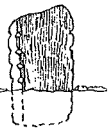
Sec. Cor. Stone



Qr. Sec. Cor. Stone



Sec. Cor. Flat Stone



From Manual of 1855

DIAGRAM C

Chapter I

INTRODUCTION

Historical background, which is both interesting and helpful to an understanding of the development of the public land surveys in the United States, is discussed in *Public Land Surveys—History, Instructions, Methods* by L. O. Stewart. The present volume will deal, almost exclusively, with Iowa surveys.

We should be aware of the objectives of the early public land legislation and understand the point of view of the early legislators lest we become unfairly critical of the surveys and surveyors of that period. Understanding these things, we are magnanimous in estimating whether the end justified the means.

Several factors influenced their decisions and actions. These were:

1. The urgent need of the treasury for money.
2. Settling of people on unsurveyed land, and the consequent unpleasant relationships between citizens and the government.
3. Because of this rapid settlement, surveys had to be pushed forward hastily.
4. Land prices were low (\$1.25 per acre), which did not seem to warrant any delays incident to precision.
5. Settlements, frequently, occurred in isolated fragments which obviated any possibility of carrying on a continuous and progressive scheme of surveys.
6. Surveys were made only in territory belonging to the government. Additions to these lands were made from time to time by treaties with the Indians. Many of these acquisitions were irregular in shape and boundaries and, sometimes, left unceded land between old and new government holdings.
7. The contract system, which was in force during the completion of the major portion of the public land surveys, tended to encourage the deputies to use surveying methods that would produce results of the minimum acceptable precision.

The purpose of this book is to present all of the original instructions and correspondence relating to public land surveys in Iowa. This material is so voluminous that there was little space remaining for discussion. Consequently, only that discussion has been included which will aid in understanding the original notes or which serves to explain their background.

Chapter IV should be particularly useful to all surveyors of public land in Iowa. The diagrams show for each township and section line the general instructions and the special instructions under which the deputy surveyor worked. With this information at hand the surveyor may proceed more intelligently with his resurveys.

Chapter VI, which deals with retracement surveys, should be found very helpful. The original surveys in Iowa were begun more than one hundred years ago. In many instances all evidence of the original corner has disappeared. Later surveys and uses of the land have introduced numerous conflicting calls which the present surveyor must harmonize. A proper use of the information contained herein will prove very helpful in the solution of difficult land surveying problems.

When *Public Land Surveys—History, Instruction, Methods* by L. O. Stewart was published it was hoped that someone in each of the public land surveys states might become interested in the project of compiling the original instructions for his state. This book on the Iowa surveys is the first of that sort.

The instructions, letters, sample notes, and other communications are reproduced in their original form and spelling as far as possible. In some instances the capital letter at the beginning of a word has been omitted when that capital seemed to contribute nothing to the clarity or understanding of the text.

This book is offered to all who are interested in land surveying either professionally or historically. There is enough source material here to provide the basis for several books on specific phases of the early surveys.

As an illustration of the need for this book in the surveys it covers, the following correspondence is quoted:

OFFICE OF THE COUNTY ENGINEER OF WINNESHEIK COUNTY

Decorah, Iowa

DEAR SIR:

I ran into a snag on my survey between sec. 31 T. 99 N., R. 10 W. and sec. 6, T. 98 N., R. 10 W. This is the way our government field notes state, which is clearly in error. This is one mile north of the line wanted:

West between sec. 30 and 31, T. 99 N., R. 10, 49.73 intersect range line at post on var. 10° E. Therefore retraced on true line correct var. 10° E. 9.73 set $\frac{1}{4}$ corner in mound of earth; 49.73 section corner.

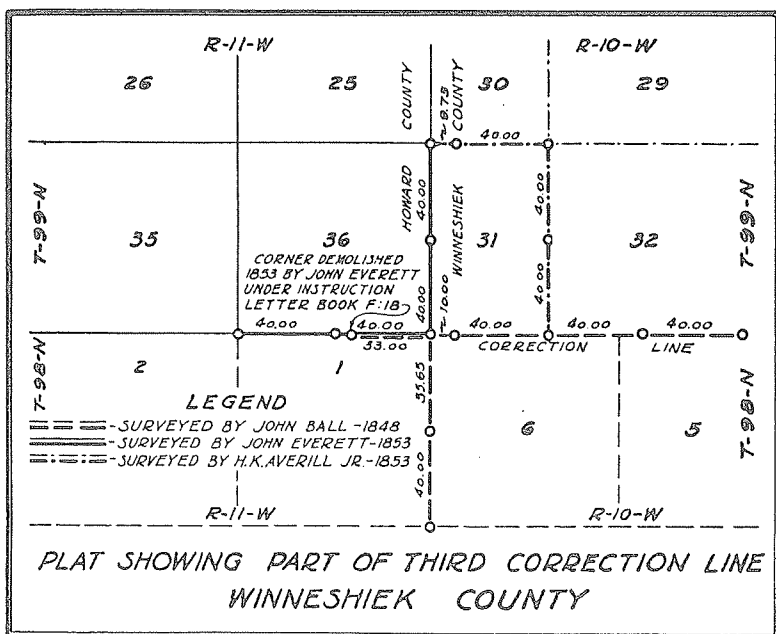
Now here is the 3rd correction line:

West on south side sec. 31 mag. var. 9° 20' E.: 40.00 chs. set post for $\frac{1}{4}$ corner and took two trees Burr Oak 12" N. 55° W. 44 lks. and Burr Oak 10" N. 52° E. 52 lks.; 83.06 chs. set post for corner to T. 99 N., R. 10 and 11. Burr Oak 12" N. 80° E. 11 lks. Burr Oak 6" N. 48° E. 92 lks., Burr Oak 16" N. 20° W. 23 lks. and Burr Oak 8" N. 35° W. 164 lks.

Here are the notes for the closing line from the south:

North on line between sec. 1, T. 98 N., R. 11 W. and Sec. 6, T. 98 N., R. 10 W.; 75.65 Int. 3rd correction line 33 chs. east of the SW. cor. T. 99 N., R. 10 W. and set corner to T. 98 N., R. 10 and 11, W. of the 5th P.M.

As can be seen from the first description above the section is 49.73 chs. long between 30 and 31, yet on the south side of the same section it is 83.00 chs. wide. As the S $\frac{1}{4}$ has to be relocated and the SE. cor. of sec. 31 by proportional



The above plat prepared by Mr. Tigges refers to the information contained in his reply to Mr. Arneson as quoted below. It will be clear to the land surveyor That The line between Ranges 10-W and 11-W was continued north from the closing corner of T. 98. Nothing in the records of the county engineer would give a clear picture of the situation created by the abandonment of Thirty three chains of the original connection line when the surveys were extended to the north and west of that point.

government distances I must know what the correct distance to the range line is across south side sec. 31.

I understand you had the government survey notes in Des Moines from the Surveyor General's office. Could you give me this correct distance?

Thanking you for this information as soon as is possible, I am

Yours truly,

FRANK W. ARNESON, *County Engineer*

IOWA GEODETIC SURVEY

April 8, 1940

MR. FRANK W. ARNESON

Winneshiek County Engineer, Decorah, Iowa

DEAR MR. ARNESON:

With reference to your inquiry on the apparent error which you feel exists in the original notes on the 3rd correction line on R. 10 W., in your County, I wish to give you the following information:

Professor J. S. Dodds and I made a very thorough study of the old records in the state house to find some solution to your problem, and to determine if an

error actually exists on the correction line as you pointed out in your letter. We found the answer to your letter given very conclusively in the manuscript for the book being prepared by the special committee of the Iowa Engineering Society.

I have prepared a copy of the original field notes of the lines in question, and I have also enclosed those special instructions taken from the above manuscript that pertain to this problem. They are listed under Letter Book Number F:18, of which the second paragraph should be carefully studied.

After studying the special instructions issued to the Deputy, John T. Everett, by the surveyor general, under date of June 6, 1853, we know that specific instructions were given to destroy the 3rd correction line running through range 11 at corner to tps. 98 and 99. Checking the original field notes for this line in question, we find that the deputy, Mr. Everett, intersected the corner to Tps. 98 and 99 at 33.00 chains west of the closing corner and demolished said corner. The closing corner from which the above survey was started is noted on the original notes on the line on west side of sec. 6, T. 98 N., R. 10 W.

The distance on the south side of sec. 31, T. 99 N., R. 10 W., is without question 50.00 chains, with the quarter corner set at 40.00 chains, and the fractional distance to the township corner of 10.00 chains.

A study of the aerial photographs for this territory shows the subdivision in agreement with the above deductions.

Yours very truly,

GEROLD F. TIGGES

Chapter II

EARLY IOWA LEGISLATION AND SURVEYS

The first reference to the establishment of a surveying district and surveyor general's office in Iowa is contained in this petition which was presented to Congress:

TO THE HONORABLE THE CONGRESS OF THE UNITED STATES:

Your petitioners, citizens of the town of Burlington, in the county of Desmoine, in that part of the Territory of Michigan which lies on the west side of the Mississippi river, sheweth: That the unparalleled rapidity with which the district of country lately purchased of the Sac and Fox Indians is populating, requires that your honorable body should establish a surveyor general's office in the said town of Burlington. Was said purchase surveyed it would be purchased of government immediately. And it is not only the present lands of government that will justify the establishing of an office of the kind mentioned, but there lies west of the late purchase an almost unbounded extent of very valuable country which to the Indians is of but little value, in consequence of there being little game. They inform us already that they wish a purchase to be made by the government. So rapidly, indeed, has this purchase increased in population that there scarcely, between the Mississippi river and the purchase line, remains a good farming situation that is unoccupied; and this is not only back of the flourishing town of Burlington, but from the lower end of the purchase one hundred and fifty miles upward. Your petitioners are confident that there is no point other than the one mentioned which furnishes so good grounds for the establishing of said office. They, your petitioners, therefore earnestly pray that a surveyor general's office may be established at Burlington, Desmoine county, Michigan Territory.

JANUARY 19, 1836.

(Signed by 191 persons)

The committee on Public Lands, to whom this petition was referred, reported in part as follows:

. . . The vast extent of country lying between the Mississippi and Missouri rivers, which has been ceded to the United States by the Indians, the richness of the soil, not surpassed by any under the sun, and the rapidity with which it is being settled, at once convince the committee of the propriety of the survey of the same, and consequently, the establishment of an office for that purpose . . .

The quantity of land between the Mississippi and Missouri rivers which has been ceded to the United States by the Indians, is estimated at upward of 21,328,000 acres. Of this, 7,200,000 acres, lying immediately north of the State of Missouri, and along the west bank of the Mississippi, is comprised the counties of Dubuque and Desmoine, containing already a population of some twelve or thirteen thousand souls and increasing in numbers with a rapidity never surpassed in any country before, and from which the Indians have migrated. West of this tract is an immense country, containing something like 14,576,000 acres of land, which is not

yet ceded to the United States . . . This, too, is a country rich as any other in soil, of salubrious climate, beautifully watered, and *intended as the home of the white man.*¹

With this the Commissioner of the General Land Office concurred. He called the committee's attention to the fact, moreover, that surveys were already in progress in Wisconsin under the authority of the surveyor general at Cincinnati. He intimated his opinion "that the proposed bill should provide for a surveyor general's office, to be located at a suitable point, to take jurisdiction (until further and additional provision of law) over the surveying of all public lands lying north of the state of Missouri, west of the Mississippi river, and north of the Wisconsin and Fox rivers, in the territory of Michigan. And that whenever . . . the President of the United States shall deem it important . . . he shall be empowered and directed to cause to be transferred to the office of the surveyor general for the new district, all maps, field notes, documents, books, and papers, now in the surveyor general's office at Cincinnati appertaining to that portion of the country."

At the time that this petition was presented the towns of Dubuque and Burlington had not been laid off into streets and lots. On July 2, 1836, Congress passed an act for laying off the towns of Fort Madison and Burlington, in the county of Des Moines, and the town of Belleview, Du Buque, and Peru, in the county of Du Buque, Territory of Wisconsin, and for other purposes. "Be it enacted that the tracts of land in the Territory of Wisconsin . . . shall under the direction of the surveyor general of the public lands, be laid off into town lots, streets, avenues, and the lots for public use called the public squares, and into outlots having regard to the lots and streets already surveyed, in such a manner and of such dimensions as he may think proper for the public good and the equitable rights of the settlers and occupants of the said towns: Provided, The tracts of land so to be laid off into town lots, etc., shall not exceed the quantity of one entire section, nor the town-lots one-half of an acre; nor shall the outlots exceed the quantity of four acres each . . . And provided further, that a quantity of land of proper width, on the river banks, at the towns of . . . and running with the said rivers the whole length of said towns, shall be reserved from sale, (as shall also the public squares,) for public use, and remain forever for public use, as public highways, and for other public uses.

"And be it further enacted, That it shall be the duty of the said surveyor to class the lots already surveyed in the said towns of . . . into three classes according to the relative value thereof, on account of situation and

¹ Italics by the editor.

eligibility for business, without regard however to the improvements made thereon: and previous to the sale of said lots as aforesaid, each and every person or persons . . . who shall heretofore have obtained from the agent of the United States a permit to occupy any lot or lots in the said towns, or who shall have, by building or enclosure, actually occupied or improved any lot or lots in the said towns, or within the tract of land hereby authorized to be laid off into lots, shall be permitted to purchase such lot or lots by paying therefore, in cash if the same fall within the first class as aforesaid, at the rate of forty dollars per acre; if within the second class, at the rate of twenty dollars per acre; and if within the third class at the rate of ten dollars per acre: Provided, that no one of the persons aforesaid shall be permitted to purchase, by authority of this section, more than one acre of ground to embrace the improvements already made."

This act was amended on May 3, 1837, to provide for three commissioners who were charged with all the duties heretofore given to the surveyor general. In addition the commissioners were given the power to hear evidence and determine all claims.

IOWA TERRITORY ESTABLISHED

On June 12, 1838, Congress passed an act to divide the Territory of Wisconsin and to establish the territorial government of Iowa. Surveys were already under way, however, under the surveyor general at Cincinnati. This act provided "That from and after the third day of July next, all that part of the Territory of Wisconsin which lies west of the Mississippi River, and west of a line drawn due north from the headwaters or sources of the Mississippi to the Territorial line, shall, for the purposes of temporary government, be and constitute a separate Territorial government by the name of Iowa."

By this same act provision was also made to create the office of surveyor of public lands in the Wisconsin Territory as follows:

That a surveyor of the territory of Wisconsin shall be appointed, who shall have the same authority and perform the same duties respecting the public lands and private land claims, in the Territory of Wisconsin, as are now vested in and required of the surveyor of the lands of the United States in Ohio.

Sec. 2. That it shall be the duty of the surveyor for Ohio to deliver to the surveyor for Wisconsin Territory, all the maps, papers, records, and documents relating to the public lands and private land claims in the said Territory of Wisconsin, which may be in his office; and in every case where it shall be impracticable to make a separation of such maps, papers, records and documents, without injury, it shall be his duty to cause copies thereof, certified by him to be furnished to the surveyor for Wisconsin Territory; which copies shall be of the same validity as the originals. And the Secretary of the Treasury is hereby authorized

to cause the expense attending the transfer of the records to be paid out of the appropriation for surveying the public lands.

Sec. 3. That the surveyor for Wisconsin Territory, to be appointed in pursuance of this act, shall establish his office at the town of Dubuque, in the Territory of Wisconsin; and that he shall be allowed an annual salary of fifteen hundred dollars, to commence at such period as his office shall be in readiness for operation; and he shall be authorized to employ one draughtsman and clerk, whose aggregate compensation shall not exceed sixteen hundred dollars per annum. He shall also be allowed the sum of three hundred and fifty dollars per annum, for office rent, fuel and other incidental expenses of his office; to be paid out of any money appropriated.

The first surveyor general for the new district was A. G. Ellis of Green Bay, Wisconsin, who was appointed on July 3, 1838. He set out for Dubuque with all his data and equipment shortly after November 13, 1838. But unfavorable weather and the close of navigation delayed his arrival at Dubuque until February 17, 1839, which date marks the official opening of that office.

On the same day that Iowa Territory was established provision was made by an act to establish two additional land offices in that part of the Wisconsin Territory west of the River Mississippi as follows:

That for the sale of the public lands in that part of the Territory of Wisconsin situate west of the river Mississippi, two land districts are hereby created; one of which comprising all of the lands south of the east and west line which forms the northern boundary of the township adjoining to, and immediately south of, the township in which the town of Davenport is situate, shall be called the Des Moines land district, the land office for which shall be established at the town of Burlington; and the other district comprising the lands north of the said east and west line, shall be called the DuBuque land district, the office for which shall be established at the town of DuBuque.

IOWA EARLY SETTLEMENT

In 1836 Iowa had a population of 10,531. By 1838 this number had doubled to reach 22,859. The counties with their populations were:²

Cedar	557	Jackson	881
Clayton	274	Johnson	237
Clinton	445	Jones	241
Des Moines	4,605	Lee	2,839
DuBuque	2,381	Linn	205
Henry	3,058	Slaughter	
Muscatine	1,247	(later Washington)	283
Scott	1,252	Van Buren	3,174

A descriptive circular of that period (1840) states, "Iowa is now settling more rapidly than any other part of the western country with enterprising and industrious inhabitants."

² An unpublished booklet of 1840 in Securities Department, statehouse, Des Moines.

None of these people who had settled on unsurveyed lands had any legal claim to the land, for there were no pre-emption or homestead laws at that time. It was incumbent upon the settlers, therefore, that they form rules for their own protection.

It became the custom for the settlers in each township that was to go on sale to meet just previous to that sale and adopt bylaws and appoint a committee of five or seven to hear and pass upon all disputed claims. Each settler who had made certain improvements was allowed to hold three hundred and twenty acres. The lines of these settlements were made ahead of the government surveys and naturally did not conform thereto. The committee's first duty was to prepare the township map and register each claim thereon. It then acted as a sort of court, heard the claimants, and decided all cases. There was no appeal from the decision of these commissioners. The final registration was then made with each settler's name appearing upon his tract.

After registration a bidder was appointed for the township. At the land sale he bid off each tract of land to the settler to whom it was registered on the unofficial township plat. This arrangement was acquiesced in by the government.

At these land sales when the land in any one township was to be offered for sale (usually a day was taken for one or two townships) the settlers of that township constituted the guards on duty for that day. They surrounded the office for their own protection, and had the settlers from other townships as a reserve force if necessary.

The minimum price of the land was one dollar and twenty-five cents per acre at public sale. It rarely brought more than this minimum when bid in by the settlers' bidder because the settlers had formed combinations to protect themselves. If any outsider or speculator cut in on a settler they made life so miserable for him that he was glad to withdraw. These lands increased in value to such an extent that most of the first settlers, who were industrious and frugal, became wealthy.³

The hotels were full of speculators and loan sharks during these sales. The latter loaned money to the settlers at fifty percent. "He would enter a settler's land in his own name, and file a bond for a deed at the end of two years, by the settler's paying him double the amount of the land costs."⁴ Some men loaned as much as \$100,000 at these high rates.

Some of the early settlers got beyond the limits of the Indian cessions and squatted on Indian territory. The government, anxious to keep the Indians satisfied and peaceable, ejected these squatters as promptly as

³ *Annals of Iowa*, v. 8, p. 97.

⁴ *Annals of Iowa*, v. 8, p. 270.

⁵ *Annals of Iowa*, v. 1-4, p. 535.

they were discovered. In 1841 the territory along the Des Moines River, with what is now Wapello County as the focus, was in great demand. The prospect of a successful conclusion of the treaty which had been proposed in the fall of 1841 had impelled some of the settlers to break over the boundary line and make settlements upon Indian land. The Indians complained, and the Indian agent remonstrated with the settlers. Finally an officer and the necessary dragoons came in to remove the intruders. "Their household effects were carefully removed, and the cabins and fences burned down."⁵ The soldiers had to stay in the vicinity to restrain the impatient immigrants.

After that treaty was signed in 1842 the people were permitted to explore, without marking, the newly ceded territory. By May 1, 1842, the day of the opening, the country was covered with imaginary lines and claims. The legal day commenced at midnight. The situation is described thus:⁶

To aid in an approach to accuracy, in some cases piles of dry wood were piled on the rising ground along the projected boundaries, and were fired a short time previous to twelve o'clock. Time pieces were held at various stations throughout the country, and when the momentous hour had fairly arrived, it was announced by the discharge of fire arms, and answered in like manner throughout the country . . . The night was dark, the stars furnished a too feeble light for the necessity of the moment, but everyone pressed forward in the execution of his purpose by torchlight and starlight and in darkness, with axe and hatchet, blazing lines with all possible courses, corners and angles, crossing and recrossing their neighbor's track, and overlapping each other's claims, and leaving strips and gores of unclaimed territory between, creating chaos of lines and tracts of interminable confusion. When daylight revealed the results of the night's labor, altercations arose, and compromises were generally effected without serious difficulty or personal violence.

SURVEYS FROM THE DUBUQUE OFFICE

When Mr. Ellis arrived at Dubuque in 1839 he found a territory of 23,000 people clamoring for surveys and land sales. His arrival was not auspicious because it was delayed by bad weather and a frozen river. His salary was to be \$1,500 per year, an amount \$500 below that of any other surveyor general. No logical explanation can be found for this difference, which continued until 1846 when Iowa became a state. It seemed to Congress that the surveyor general in a territory could not have the standing of one in a state. For help, one draftsman and one clerk, he was allowed \$1,600. Rent, fuel, etc., were estimated to cost him \$350 per year. The Commissioner of the General Land Office "hoped by an economical use of the same will besides paying house rent and fuel, enable you to procure

⁵*Annals of Iowa*, v. 1-4, (No. 12) p. 536, Oct. 1865.

the instruments and office furniture that will be immediately wanted." The Cincinnati office had been able to start his supply of instrumental equipment with two ivory scales.

Each report of the surveyor general at Dubuque (the same was true of others) contained a plea for more funds and more help to take care of the constantly increasing work. Office work was heavy. The deputies were required to turn in a copy of their field notes, called the original notes, but in most cases a pen and ink copy of the pencil notes taken during the day. In some instances the deputies did actually trace over the pencil notes with ink. With these notes were rather crude sketches and plats.

The draftsmen and clerks at the surveyor general's office made a township plat, a set of descriptive notes, and after 1839 a copy on rolls of the original notes. The work of copying the original notes was onerous and expensive and was discontinued for a few months in 1840. Clerks were paid at the rate of eight cents per hundred words for the transcribing of these original notes.

TOWNSHIP PLATS

The township plats were carefully drawn to a fairly large scale, two inches to a mile in colors and showed all features indicated in the field notes. These township maps were drawn in triplicate and each was certified as correct by the surveyor general. One copy was retained by the surveyor general, another copy was sent to the general land office at Washington, and a third was furnished the register and receiver for use at the public land sales. These plats are still practically the only source from which county and state maps have been made.

DESCRIPTIVE NOTES

The other item furnished by the surveyor general's office, called a description of the township, or descriptive notes, showed the quality of the land on sectional lines and described the corner posts and bearing trees. These were used for advertising purposes to acquaint prospective settlers with detailed information about the land. A compilation of such notes published in 1840 describes the land surveyed to date. A township was described as follows: "Township 72 Range 6 West (now Marion township, Henry County, Iowa) embraces every variety of soil and timber; about three fourths beautiful rolling prairie, sufficiently interspersed with timber to make the whole valuable. The S.W. part is well watered by Big Creek and its tributaries; an abundance of good limestone is to be

found in the banks of the stream. Growth, white and black oak, hickory, elm, lynn, hackberry, ash, walnut, sugar, and locust; undergrowth, hazel, thorn, and briers. This may be considered one of the best townships of land for agricultural purposes.

“The SW $\frac{1}{4}$ sec. 7, SW $\frac{1}{4}$ 16, S $\frac{1}{2}$ 17, secs. 18, 19, 20, W $\frac{1}{2}$ 21, W $\frac{1}{2}$ 27, sec. 28, N $\frac{1}{2}$ and SW $\frac{1}{4}$ 29, secs. 30, 31, W $\frac{1}{2}$ and SW $\frac{1}{4}$ and W $\frac{1}{2}$ NW $\frac{1}{4}$ 32, NE $\frac{1}{4}$ 33, and N $\frac{1}{2}$ 34 embrace all the first rate timber land; residue first rate rolling prairie. The township is rapidly settling.”

The booklet containing these notes closed with an appendix which gave descriptions under the headings, Prairies, Bottoms, Uplands, Rivers, Aboriginal Tribes, Quadrupeds, Birds, Fishes, Reptiles.

The places of the two land offices, Burlington and Dubuque, with the dates of land sales were given.

It closed with this statement: “The surveyed part of Iowa may be considered one among the best watered regions in the West. Water in abundance for navigation, hydraulic purposes, and the grazing of stock.”

EARLY IOWA DEPUTY SURVEYORS

The deputies who made the first surveys in Iowa were skillful, conscientious surveyors. William A. Burt and Harvey Parke, whose lives and reminiscences are given in another publication by Professor Stewart,⁷ are typical representatives of the class of men who assumed the risks and obligations of those early days. Some of them later became influential and prominent citizens. For example, George W. Jones, a surveyor general, became a senator from Iowa. They took their risks, and their losses, cheerfully. Some, like Burt, made surveying their life work. Others did it to fill in during slack periods in their regular occupations. Some like Orson Lyon in 1837 retired from the service, saying, “The price of provisions and labor is so uncommon high, I shall decline to do any more surveying for the government at present. Two dollars and seventy-five cents per mile for surveying is not sufficient compensation to justify me in neglecting business at home.” The rate which he mentions, \$2.75 per mile, is probably the lowest rate that was paid for section lines in Iowa. Township lines commanded a higher rate, from \$3.25 per mile up. Hands on the survey parties, axemen and chainmen, were paid \$15 per month and their keep. Under reasonable working conditions a deputy could make fair wages. If the weather were bad, he might find at the end of a season’s work after settling all of his bills that his contract failed to pay his expenses. The impression seemed general that the pay was inade-

⁷ *Public Land Surveys—History, Instructions, Methods.* Collegiate Press, Ames, Iowa, 1935.

quate. Yet there were always hardy souls willing to gamble on the chance of making a comfortable profit. In general, the Land Office at Washington and the surveyors general adopted a sympathetic and understanding attitude toward the problems of the deputies. In several instances men who were surveyors general became deputies under later surveyors general. The latter was an appointive office subject to the usual vicissitudes of politics. Deputies were appointed by each surveyor general and were responsible to him.

During the rush period of the surveys the surveyors general were frequently hard pressed to find enough skillful deputies. They usually had to rely on the word and letters of deputies and friends for their information about applicants. Sometimes, of course, the new man failed to make good. More often he was all right. Many of the deputies worked in more than one district and under different surveyors general.

The procedure of procuring a contract usually started with a letter from the deputy to the surveyor general in which he stated that he was anxious to obtain a contract for surveying in the latter's district. From the surveyor general came a letter in reply stating that the deputy would be given a contract at such and such a time or, as often happened, enclosing a contract. The letters had this form:

SURVEYOR GENERAL'S OFFICE
Cincinnati, April 29, 1837

SIR:

I have appointed you to be one of my deputy surveyors and have allotted to you a district of subdivision of 10 townships in the Sac and Fox purchase west of the Mississippi River, near the mouth of the Iowa River.

If you accept the appointment signify it immediately by letter, and as soon as it may be convenient you will visit the office to enter into contract and receive your instructions, etc., as the town lines are ready for you to proceed to work as soon as you can get off.

I am, sir
Your Obt. Servt.
(Signed) ROBT. F. LYTLE

MR. BASIL BENTLEY
Madison, Indiana

Usually it was not convenient for the deputy to make a trip to the office. Then the contract (for his signature) and instructions were mailed to him. Sometimes the deputy sat in some little Iowa town, with his party ready to go, and waited for instructions. If they failed to come in one mail he could look for them two weeks later. In the meantime he was feeding a party of six or more men, and wondering whether the instructions were on the way or were lost.

A certain deputy with a contract for subdividing several townships

arrived with his party ready to begin work. He found that the township exteriors, from which he was to begin subdividing, had not been run. He was two hundred and fifty miles from Dubuque, there was a weekly mail, and he had a heavy daily expense. What should he do? He ran enough exteriors (they were contracted to some other deputy) to give him a start on his subdividing.

Pork and beans formed a big part of their diet. In a letter from the surveyor general to Harvey Parke the former says, "Your request to have five barrels of pork and one of beans sent to Burlington will be attended to. And as I propose to leave in a few days myself to superintend the survey of Burlington and other towns by the right bank of the Mississippi River, directed by act of Congress, I will see to the shipment and delivery of the pork at Burlington."

OUTLINE OF IOWA SURVEY METHODS

The current system of surveying the public lands which consists of guide meridians and correction lines which make up the regular pattern of "24-mile tracts" is known to students of modern textbooks on surveying. It is not so well known that this system was not always in effect. That system was first given currency with the publication of the Instructions of 1855, which grew out of instructions for surveys in Oregon issued in 1850. Practically all of Iowa had been surveyed prior to 1855. It will be helpful, therefore, to present a very brief outline of the "control" system that was used for the Iowa surveys.

The intersection of the fifth principal meridian and the national base-line is the origin of rectangular coördinates (the zero north or south and zero east or west point) to which all public land surveys in Arkansas, Missouri, Iowa, North Dakota, and portions of Minnesota and South Dakota are referred. This point is about 70 miles east of Little Rock, Arkansas.

The starting point of the fifth principal meridian is at the junction of the Arkansas River with the Mississippi River. It enters the State of Missouri in township 21 north; crosses the Missouri River in township 44 north; passes 39 miles west of St. Louis; intersects the Mississippi River at township 53 north. It is discontinued at this point and does not resume until township 77 is reached, above the bend of the Mississippi River in Iowa. It terminates at its intersection with the Mississippi in township 91 north.

The national base line runs west from the place where the St. Francis River enters the Mississippi River in Arkansas. It passes about four miles south of Little Rock.

Because the fifth principal meridian is not a continuous line it was necessary to carry the line upward through Iowa on an offset. This offset line was run between ranges 4 and 5 west from Iowa's south boundary to the first correction line, between townships 78 and 79; thence east a calculated distance (four townships) to the fifth principal meridian.

Correction lines were projected at ten township intervals, very nearly. Actually, there are eleven townships between the base line (Iowa) and the first correction line, ten townships between the first and second correction lines, twelve townships between the second correction line and the Iowa-Minnesota boundary which serves as a correction line.

Using a middle latitude for Iowa (about 42° north) as a basis for calculation we find from tables of convergence that the amount of convergence for two meridians six miles apart in a meridional distance of 60 miles (ten townships) would be about 6.5 chains (429 feet).

Provision was made for the convergence by making an excess of measurement on the correction lines. This excess was placed in the west half of section 31. The intention was that the placing of an excess on the correction line would reduce the deficiency in width at the next correction line and that there would be some place between the two correction lines, preferably midway, where the width would be exactly six miles. The amount of this excess was two chains at first, and finally was increased to three chains.

The early instructions did not include a provision for the running of guide meridians. This omission was due, probably, to the fact that in none of the surveys east of Iowa had the distance between principal meridians been more than 25 townships. Naturally, errors began to accumulate in the Iowa surveys. So, two guide meridians were run, one between ranges 25 and 26, the other between ranges 39 and 40. Neither of these range lines ran the entire width of the state. [See map p. 196]

IOWA SURVEYS BEGIN

The first public land surveys in the territory which is now Iowa were made by Jenifer T. Sprigg in 1832. He was engaged at that time in completing the Missouri surveys to the north boundary of the cession of the Sac and Fox Indians. The portion of his survey which interests us particularly was made by Sprigg on December 18, 1832. The following is a copy of a portion of the original notes for township 67 north, ranges 4 and 5 west of the fifth principal meridian:

CHAINS LINKS

80

00

Set a post in mound corner of sec. 1 and 12, 6 and 7, T. 67 N., R. 4 and 5 W. 5th P.M.

CHAINS	LINKS	
		North along the east side of sec. 1, T. 67 north of the base line, of range 5, west of the 5th P. M.
11	44	Intersected the north boundary line of the half breed Sacs and Fox Reservation 16.39 chains S. $86\frac{1}{2}$ W. of the corner marked $169\frac{1}{2}$ M. At said intersection raised a mound in which set post (beneath which deposited charcoal) corner of fractional sec. 1 and 6, T. 67 N., R. 4 and 5 W. Land level rich prairie, fit for cultivation.

About four years later when surveys were started north of the Missouri line under the authority of the surveyor general at Cincinnati, William A. Burt made his starting point at the intersection described above. The corner marked " $169\frac{1}{2}$ M" was a half mile post set on the Indian boundary (Sullivan's line of 1816) and indicated the distance in miles from the corner known as the northwest corner of Missouri. Sullivan's line figured prominently in subsequent determinations of the Iowa-Missouri boundary. Discussion of this will be found elsewhere in this book. (See Chapter VII.)

The first instructions relative to surveys in Iowa were contained in a letter from the General Land Office, Ethan A. Brown, Commissioner, to Robert T. Lytle, surveyor general at Cincinnati. The letter, dated August 16, 1836, follows:

On reference to the laws passed at the late session of Congress (page 40) a copy of which was forwarded to you some days since, it will be seen that the sum of \$50,000 has been appropriated "for surveying in the Michigan Territory west of the lake and Wisconsin Territory," which amount exceeds by \$25,000 that submitted in your last annual report. The excess was intended to defray the expenses of surveying "Scott purchase" or the tract west of the Mississippi River, ceded by the Sac and Fox Indians by treaty at Fort Armstrong of the 20th of September, 1832. Also in page 84, section 5, you will perceive that that country has been contained in your district.

By their omission to create a separate surveying district for this tract, Congress has evinced a confidence in your skill and ability which I am sure is not misplaced: Therefore, since these lands appear to be rapidly filling up with settlers, and a deep and general interest seems to prevail, that they should be prepared for market without delay, I have to request that you will lose no time after receipt hereof in contracting for the survey of *all* the township lines (estimated at about 250) except the fractionals that would be on the north and west boundaries which no doubt will be changed before those fractionals are wanted, and the portion of the cession which lies southwest of the Des Moines River, and also for the subdivisions of as many townships and fractional townships selected with reference to the wants of purchasers and settlers, as in your judgment may be required to meet the demand.

With a view to future surveys west of the tract and the correct execution of the present work, it is deemed desirable that the Fifth Principal Meridian which begins in Arkansas Ter. at the mouth of the River St. Francis, should be extended within the present cession, numbering the townships and ranges in continuity with

the Missouri surveys. That is to say, extend with care such of the range lines of the Missouri surveys as will strike near as may be, without passing out of the cession, the point on the Red Cedar called for by the treaty, which will constitute a meridian to *survey from* in the southern portion of the tract; then let the nearest township line to the above named point be run eastwardly to the River Mississippi as a standard parallel upon which find the connection with the 5th meridian, which latter having run north and south through the whole limits of the cession, extend the surveys eastwardly therefrom to the river, carefully connecting the same, at all convenient points, with those of the State of Illinois and Wisconsin Ty. and westwardly as far as full townships can be made. If necessary to the better execution of the work you can authorize the running of two or more standard parallels.

I regret exceedingly that Congress omitted to appropriate for extra clerk hire in your office, a sum adequate to the new labor which has been thus unexpectedly imposed. Their earnest attention was called to the subject by this office, as will appear from the enclosed copy of a letter dated May 16 to the Hon. G. W. Jones which I presume in the hurry of business was overlooked. This omission, however, need not delay for a moment the prosecution of the field work, inasmuch as a suitable appropriation will no doubt be made by law for that object on a proper representation from you in your next annual report.

Together with a copy of the treaty, I herewith forward you, Lieutenant Lea's *Notes on the Wisconsin Ty.* just published, which latter purporting to contain a great deal of information derived from personal observation of the country, and although wanting the sanction of authority may be of service to you. Upon the map which gives the location of the towns to be laid off, are designated by fine red lines as nearly as practicable the proposed standard meridian and parallel and that portion of the fifth principal meridian falling within the tract to be surveyed. A complete copy of the field notes and maps of the boundaries of the cession, all of which have been surveyed, as also of the reservations are now in progress of being made at the War Department and will be forwarded to you when received.

The Surveyor General at Cincinnati replied to the foregoing letter on August 23rd in part as follows: "Besides the copies of the field notes and maps of the boundary lines of the cession, which you are procuring from the War Department, it would be desirable to obtain from your office, a copy of, at least, the connected map of the surveys in Missouri, bordering upon the south boundary of the tract now to be surveyed, and copies of the maps of the fractional townships on said boundary, showing the lengths of the lines closing thereon. Also, copies of the connecting maps of the public surveys on the east side of the Mississippi River bordering thereon, from a point opposite to the mouth of the Des Moines River, to the north boundary of Illinois, if the surveys have extended to that line. These maps with the field notes and maps of the cession from the War Department, when received, will enable us to lay down correctly on a map, the whole outline of the tract, and to adopt the best plan for the work."

ESTABLISHING THE FIFTH PRINCIPAL MERIDIAN IN IOWA

BURT'S INSTRUCTIONS

Surveyor General Lytle proceeded promptly with the surveys of the new tract. In October and November 1836 he issued a set of special instructions to Wm. A. Burt, Deputy Surveyor. They covered the ground with more detail than was customary because the conditions were unusual in the fact that the fifth principal meridian, to which all Iowa surveys were to be referred, must be carried up into Iowa on an offset. However, these instructions were to supplement the regular instructions to deputies which were issued from time to time by the Surveyor General. Burt's special instructions are important because all later surveys in Iowa conformed to them in substance. They were:

You will commence at post and mound in prairie on the northern boundary of the reservation of the Sac and Fox half breeds, where it is intersected by the line between ranges 4 and 5 west of the 5th P.M. in Township 67; which point of intersection is represented on the plats to be 11 chs. 44 lks. north of the corner of sec. 1 and 12, T. 67 N., R. 5 W. . . . From the corner referred to you will run a *standard line due north* to the corner of townships 78 and 79. From thence run a line of correction west to the west boundary of the purchase and east to the Mississippi River. On the correction line it would be well to make about two chains excess of measure to compensate for the convergence at the next correction line . . . The 5th P.M. is then to be continued up to towns 88 and 89, where a second correction line is to be run. At this corner you will make a prominent and conspicuous one; and inform Mr. Orson Lyon at Cassville by letter immediately of your arrival at the above corner with the 5th meridian, and give him such description of the corner, and directions how to find it that he may have no difficulty in doing so. Also give him the variation at that point, with such information or remarks that you may suppose to be useful to him in his part of the work . . .

Indeed it will be desirable, when you arrive with the 5th meridian on the second correction line, if you would at once run in with the correction line to the Mississippi River, which may be about ten or twelve miles distant, and perhaps not far below where the south boundary of Wisconsin Territory (the base line thereof) intersects the river. However, if you should find that by continuing the 5th meridian up to the river you could more readily communicate with Mr. Lyon (as the meridian may strike not far from Cassville) you may do so. And indeed I think this the most advisable course. From the point where you reach the river with the meridian you will make an accurate connection thereof with some known points or corners of the surveys east of the river.

DIVISION INTO TOWNSHIPS

Returning now to your own correction line between townships 78 and 79 you will commence running the town lines in your contract. As the territory east of the meridian will be first wanted for subdivision you will survey that part first. To make the survey east of the 5th meridian I recommend the following

course: Commence on the meridian say at corners of towns 79 and 80 and run random lines east six miles. Then survey and mark the line between ranges 1 and 2. T. 79, to temporary 6-mile posts. Then from the point, where your random line east would intersect the line just run, continue random line across range 2. Then bring up the line between ranges 2 and 3 to temporary 6-mile stake, and from its intersection with your random east line continue random line across range 3, and so on until you reach the Mississippi River.

Then run a *true* line west between towns 79 and 80, setting town corners at intersections thereof with the range lines previously run; and as you proceed west with this true line, run up your range lines through town 80, to temporary 6-mile posts.

Then commence in the meridian and run random line due east between towns 80 and 81 to the river. Returning west on true line between the same towns, run up another tier of range lines through town 81 and proceed as before.

This plan is suggested to you as the most convenient and best calculated to make *good work*. For you must bear in mind that the south and west sides of all the full townships are to be as near as practicable at right angles, as well as run by the cardinal points.

In the execution of this work, particularly in running the standard lines, you are well aware that the greatest accuracy is required; and much is expected from your long experience and superior skill in the sciences.

Covering the same district but in an additional set of instructions the surveyor general wrote, in part: "You will remember that an excess of two chains is to be given to the width of each range on the correction line. And it will be necessary to allow proportionate excess (corresponding to the natural convergency of north lines) on the first town run across each range line north of the Red Cedar River and west of the meridian of the angle of the boundary line where it crosses that river.

"At all these intersections of the boundary line you will be particular to ascertain the points of such intersections. To enable you the more readily to do this, a copy of the field notes of so much of the boundary line as bounds your district accompanies this.

"At each intersection of your range lines with the 2d correction line, note the distance and course to the corresponding town corner thereon.

"To your field notes append a description of each township, separately as it respects the surface, soil, timber, minerals, etc., as far as you may be able to ascertain or judge. Note, also, the supposed number of inhabitants settled in each township, with any other information deemed useful or interesting, concerning the country or surveys."

COMPLETION OF IOWA SURVEYOR GENERAL'S BUSINESS

In the main, surveys in Iowa were completed by 1859. On July 23, 1868, an act was passed making final appropriations "for compensation

of the surveyor general of Wisconsin and Iowa and clerks, for completing and winding up the business in his office, four thousand dollars: provided that when this appropriation shall have been exhausted, the said office shall be abolished."

Two years earlier Congress had passed "the act to remove the office of surveyor general of the State of Iowa to Plattsmouth, Nebraska . . . that it shall be the duty of the Secretary of the Interior, as soon after the passage of this act as may be, to cause the office of surveyor general of Iowa and Wisconsin to be removed to Plattsmouth in the Territory of Nebraska and to make the necessary provisions for immediate and effective operations; and when so removed the duties and jurisdiction of said surveyor general shall be co-extensive with the limits of the Territory of Nebraska, and shall include the State of Iowa, and shall constitute a surveying district."

Chapter III

GENERAL INSTRUCTIONS

Iowa surveys were made under general instructions current at the time of the survey and special instructions issued to the deputy surveyor holding the contract. It is not always clear which general set of instructions was to control but the resurveyor may assume that any survey made at a certain date was made under the latest preceding general set as shown herein. Any apparent discrepancies appearing in the original notes for the survey or on the plat of the survey will be found to comply with some requirement of the special instructions or with an earlier set of general instructions or will be an exception introduced by the deputy surveyor as his own idea. Surveyors should be familiar with the general instructions in this chapter for the period covering the surveys executed in the area where resurveys are located.

Thus upon a retracement of a survey which was made in 1847 anywhere in the public land states it would be expected that the general instructions of 1846 would apply and the notes and plats would be found to conform to these instructions.

To show what instructions were current before the time covered by the surveys of 1831-1855, the following "Tiffin" instructions are included here:

INSTRUCTIONS FOR DEPUTY SURVEYORS BY E. TIFFIN, SURVEYOR GENERAL UNITED STATES, 1815¹

INSTRUCTIONS FOR SUBDIVIDING TOWNSHIPS

1. When the township lines are completed, you must begin the survey of sections at the southeast corner of the township, and move on in continued progression from east to west and from south to north in order that the excess or defect of the township as to complete sections may fall on the west and north sides of the township, according to the provisions of the act of the 10th of May, 1800.

2. Each side of a section must be made one mile in measure by the chain, and quarter section corners are to be established at every half mile, except, when in the closing of a section if the measure of the closing side should vary from 80 chains or one mile, you are in that case to place the quarter section corners equidistant, or at an average distance from the corners of the section, but in running out the sectional lines on the west or north side of the township you will establish your quarter section posts or corners at the distance of half a mile

¹ (From Sherman's *Ohio Land Subdivision*, p. 193, and Stewart's *Public Land Surveys*, p. 143).

from the last corner and leave the remaining excess or defect on the west or north tier of quarter sections, which balance or remainder you will carefully measure and put down in your field notes in order to calculate the remaining or fractional quarter section on the north and west side of the township; also in running to the western boundary, unless your sectional lines fall in with the posts established there for the corners of sections in the adjacent townships, you must set posts and mark bearing trees at the points of intersection of your line with the town boundaries, and take the distances of your corners from the corners of the sections of the adjacent townships, and note that and the side on which it varies in chains, or links or both.

3. The sections must be made to close by running a random line from one corner to another except on the north and west ranges of sections, and the true line between them is to be established by means of offsets.

4. In fractional townships on rivers it will be necessary to vary from the foregoing rules; and the lines must be continued from rectilinear boundaries of the township which may be parallel to the river, perpendicularly to those boundaries until they meet the river; the sections, however, must be made complete on the sides of the township bounded by straight lines, and all excess or defect of measure must be thrown into the fractional sections on the river; the measure of the lines from the last entire sectional corner should be made very exact in order to calculate the fractional section with exactness.

5. Great care must be taken that the north and south lines be run according to the true meridian as required by law, and the east and west lines be run at right angles to them as far as is practicable in closing, but if on running on a true east and west line you find the post you are running for lies very much to the north or south of the lines, you are then to mistrust the measure by the chain, and if possible, the line on which the posts are established must be remeasured; also in running a meridional line by the compass, if you find the measurement of the closing line of the sections, that is a uniform convergency or diagonally [*sic*] of these lines; you may then reasonably mistrust the accuracy of the direction of your lines by the needle. In this case it will be well to endeavor to run parallel to the meridian adjacent on which section closes, in order that it may contain a just or legal quantity, viz., 640 acres or one mile square.

6. As the measurement by the chain is the principal source of errors in surveying you will be careful to attend to your chainmen that they carry the chain horizontally, and to prevent their losing a tally rod, you must be provided with a set of them pointed with iron or steel, and to allow no other to be used but the precise number which you shall have selected for that purpose.

7. In meandering rivers you will take the bearings according to true meridian of the river and note the distance on any course when the river intersects the sectional lines, and the calculations of the contents of the fractions are to be made by the tables of difference of latitude and departure, and returned on your plats; but the quantity or contents of the whole section only are to be put down; in all the other sections, and each of them is to be accounted one mile square or 640 acres, unless your closing lines deviate very much from 80 chains, in which case you will be careful to put down their true length on your plats.

8. You must frequently while in the field attend to the correction of your chain; for this purpose you should be provided with some measure taken from the standard chain in the office of the Surveyor General.

9. All random lines, as well as the true, are to be noted in your field book at the time of running them, and are to be kept in the order in which the work is executed; also you must be careful to note the variation of the random lines from the corners or posts which they were intended to strike.

10. All courses of whatever lines must be taken with the sight or your compass set to the variation and estimated according to the true meridian for which purpose the variation of the needle at the place where survey must be taken or previously known and your compass regulated to it before you commence running the lines.

11. No lines of whatever description are to be run, or marks of any kind made by any person but yourself, or who may be under the immediate inspection of yourself or some deputy surveyor duly authorized from this office.

12. Any considerable departure from these instructions will be considered as a forfeiture of the conditions of the contract or any claim for payment; and loose, inaccurate, or precipitate work will not be admitted, either as it respects surveys in the field or their returns in paper.

13. You will take care that your posts be well driven into the ground and that there be one or two sight trees marked between every quarter section corner; also at the section corners that there be marks for every section corner where they corner.

GENERAL INSTRUCTIONS FOR DEPUTIES

1. You will provide a good compass of Rittenhouse's construction, having a nonius² division and movable sights, and a two pole chain of 50 links; the chain must be adjusted by the standard chain in the office of the Surveyor General, and it will be of importance that both it and the compass be frequently examined in the field in order to determine any errors and irregularities which may arise from the use of them.

2. Whenever you may be obstructed by insuperable obstacles, such as ponds, swamps, creeks, rivers, etc., you will take the necessary offsets, or by work of traverse or trigonometry, in order to ascertain the distance on any line which is not actually run.

3. The courses 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 township or sectional lines; also the distance of those points from the sectional corners and from the commencement of any course where you are meandering the river; you will likewise not fail to make special notice of all streams of water which fall in your way with their width and course from whence they appear to come or run.

4. All township or sectional lines which you may survey are to be marked in the manner hitherto practised in the surveys of the United States lands, viz.: all those trees which your line cuts must have two notches made on each side of the tree where the line cuts; but no spot or blaze is to be made on them, and all or most of the trees on each side of the line, and near it, must be marked with two spots or blazes diagonally or quartering towards the line.

² Nonius. Merr. dict. definition: probably Latinized names of Nunes, name of a Portuguese mathematician (1492-1577). A device formerly used in graduating instruments, etc., subsequently improved into the vernier. Rittenhouse was a famous English scientist and designer of surveying instruments.

5. The posts must be erected at the distance of every mile, and half mile from where the town or sectional line commenced (except a tree may be so situated as to supply the place of a post) which post must be at least three inches diameter and rise not less than three feet. All mile posts must have as many notches cut on two sides of them as there are miles distance from where the town or sectional line commenced, but the town corner posts, or trees shall be notched with six notches on each side, and the half mile sectional posts are to be without any marks; the places of the posts are to be perpetuated in the following manner, viz.: at each post the courses shall be taken and the distances measured to two or more adjacent trees in opposite directions, as nearly as may be, which trees, called bearing trees, shall be blazed on the side next the post and one notch made with an axe on the blaze; and there shall be cut with a marking iron on a bearing tree, or some other tree within and near each corner of a section, 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, but for quarter-section corners, you are to put no numbers on the trees; they are to be distinguished by this mark, $\frac{1}{4}$ S.

6. You will be careful to note in your field book all the courses and distances you shall have run, the names and estimated diameters of all corners or bearing trees, and those trees which fall in your line called station or line trees, notched as aforesaid, together with the courses and distances of the bearing trees from their respective corners, with the letters and numbers marked on them as aforesaid; also all rivers, creeks, springs and smaller streams of water, with their width, and the course they run in crossing the lines of survey, and whether navigable, rapid or mountainous; the kinds of timber and undergrowth with which the land may be covered, all swamps, ponds, stone quarries, coal beds, peat or turf grounds, uncommon natural or artificial productions, such as mounds, precipices, caves, etc., all rapids, cascades or falls of water; mineral, ores, fossils, etc.; the quality of the soil and the true situation of all mines, salt licks, salt springs and mill seats, which may come to your knowledge are particularly to be regarded and noticed in your note books.

7. In all measurements the level or horizontal length is to be taken, not that which arises from measuring over the surface of the ground when it happens to be uneven and hilly; for this purpose the chainmen ascending or descending hills must alternately let down one end of the chain to the ground and raise the other to a level as nearly as may be, from the end of which a plumb should be let fall to ascertain the spot where to set the tally rod or stick; and where the land is very steep, it will be necessary to shorten the chain by doubling the links together, so as to obtain the true horizontal measure.

8. Though the line be measured by a chain of two perches, you are notwithstanding to keep your reckoning in chains of four perches (or) of one hundred links each, and all entries in your field books, and all your plans and calculations must be made according to the decimal measure of a chain.

9. Your courses and distances must be placed in the margin of your field books on the left for which purpose it should be large, and your remarks made on the right in the manner following:

CHAINS LINKS

north		Between sections 35 and 36. Town 4. Range 6.
20	30	A white oak 20 inch diameter.
37	40	A stream 30 links wide. S.E.

CHAINS	LINKS	
40	--	Set half mile post, from which a B oak 18 inch diameter bears S. 50 E. 40 links, and a sugar tree 15 inch diameter bears N. 10 W. 34 links.
	east	Between No. 25 and 36 Town 4 Range 6 on a random.
16	40	A brook 30 links wide, course S. 20 W.
40	00	Set temporary quarter section post. This half mile over broken land. Timber oak, ash, etc.
64	30	A stream 25 links wide, course SE.
79	90	Intersected N. and S. line 20 links south of section corner. Over hilly land, soil rich and good for farming. Timber oak, hickory, poplar, ash, etc.
	WEST	Between sections 25 and 36 Town 4, Range 6 on true line.
39	95	Moved temporary post to the average distance for $\frac{1}{4}$ section corner, from which a black jack 10 inch diameter bears S. 50 E. 100 links, and a white birch 19 inch in diam. bears N. 25 W. 20 links.
55	00	A white oak 11 inch in diameter.
79	90	Section corner.

In this manner you must enter all courses and distances in your field book; the date must follow the close of each day's work, which field book, written with a fair hand, of each township separately, or a true and fair copy, together with the original you will return to the office of the surveyor general.

10. The plat of each township and fractional part of a township must be neatly and accurately protracted on durable paper, by a scale of 2 inches to a mile, or 40 chains to an inch, and must be in such measure and proportions in every line and part as actually was determined by measurement in the field. A compass having the true and magnetic meridian, and the scale by which the lines are laid down, are to be placed on the SE corner of the plat.

11. The following certificate must be inscribed on your plat and signed by you:

Pursuant to a contract with, and instructions from-----Surveyor General of the United States, bearing date the-----day of-----I have admeasured, laid out and surveyed the above described township (or fractional part) and do hereby certify that it had such marks and bounds, both natural and artificial as are represented on said plat and described in the field notes made thereof, and returned with the plat into the Surveyor General's office.

Certified this-----day of-----

SUBDIVISION INTO SECTIONS

Begin at N the southeast corner of the township, and run west 40 chains and establish the quarter section corner if it be not already established; continue 40 chains farther and establish the corner of sections 36 and 35; thence run a true north course 40 chains and mark the quarter section corner between 35 and 36; continue 40 chains farther on the north line and establish the corner 25-26-35 and 36. From this corner run a random line for the post or corner M without blazing; at the distance of every 20 chains on this line set up a stake or post or mark some other mark on the random line; if you strike the post or corner M exactly you have only to blaze the lines back and establish the quarter section corner at 1. and the

corner between 25-26-35 and 36; but if running for the post *M* you fall north of it you must note the departure or deviation in your field book, and return on the true course, observing to correct it by means of offsets from your marks made on the random line.

From the corner of sections 25-26-35 and 36, run due north one mile setting the half mile post as before at 2 on the line from *O* and *F*; return south to *O* and establish at *O* and *P* your quarter section and section corners; then run north from *P* and establish quarter section and section corners as before, and run a random line from the section corner on the line *P E* to the corresponding corner on the line *O F*; proceed in this manner till you arrive to the last corner towards the western boundary of the township from *M* to *U*, viz., between sections 29-30-31 and 32; from this corner run west and at the distance of 40 chains from it establish the quarter section corner at 6 in the line from *M* to *U*; continue west till you intersect the town boundary, suppose at *U*, note carefully the distance of the point of intersection from the last section or quarter-section corner, and also the distance of this point from its section corner of the adjacent township west of you, or the distance of *U* from *M* and on which side it lies, viz., either north or south; at the point of intersection *U* set the section post or corner and take bearing trees.

In this manner you will proceed until your township is completed, observing always to move either in a range of sections from that at the southeast corner of the township to the western boundary, or from that section to the northern boundary, but when you shall have completed the sections to the north boundary of the township you will proceed from the last section corners, establish quarter section corners at 40 chains from them, and continue north till you intersect the town boundary in the same manner as on the western side of the township, observing to note the distance at which you intersect the north boundary from the section or quarter section corner you left last. Also you will be careful to note the distance of the point of intersection from the corner of the section of the adjacent township and whether it be on the east or west side of it; then the distance from 6 to *F* or from 6 to *E* on the line *OF* and *PE*, must be carefully noted in your field notes and also the distance from *F* where you intersect *O* the post on the town above and on which side, whether east or west.

GENERAL INSTRUCTIONS OF 1831³

GENERAL LAND OFFICE

23rd September 1831

SIR:

I herewith communicate for your guidance and direction in the discharge of your official duties, the requirements of the Department in reference to the township surveys, and the mode of making the returns thereof, in order that you may model and adopt your contracts with your deputies, and instructions and forms of field books, precisely to suit those requirements.

In the preparation of the township plats it is requisite that they exhibit a perfect delineation of the country as represented in the field notes of the survey.

1st. The plats are to be so constructed as to indicate both by protraction and by figures, the courses and distances of all lines: viz. The exact distance between the posts planted at the corners of each section or fractional section, and the *courses of the lines when from any cause, they vary from the cardinal points*, also the precise delineation by courses and distances, of private claims, reservations, and other tracts of land not conforming to sectional lines.

2nd. Whenever the continuation of a surveyed line is interrupted by an *impassible swamp or from any other cause*, the distance of the line actually run between the starting and finishing posts, is to be truly represented by the platting and also by figures.

3rd. The distance on a surveyed line at the points where streams cross the same, is to be indicated by *figures*, and the general course of such streams where they are *not navigable*, between such different points of intersection, is to be delineated on the plat as nearly as the same can be conjectured. The courses and distances of the meanders of *navigable streams* are to be truly delineated and also represented by *figures on the plat* opposite the delineation, wherever it is practicable so to do, and where the same are too numerous to admit of their exhibition by *figures* on the plat, in that mode, the same are required to be exhibited in a detached tabular form, either on the face of the plat, or connected therewith as may be found most expedient. The width of all water courses, rivers, creeks, etc., is to be represented in *figures* on the plat.

4th. The plat is to exhibit the received names of all rivers, creeks, lakes, swamps, prairies, hills, mountains, and other natural objects, and the surveyor should be instructed never to give *original* names to such objects, where names have heretofore been given. All lakes and ponds of *sufficient magnitude* to justify such expense, are to be *meandered* and platted agreeably to courses and distances, which are also to be exhibited by figures. In passing such ponds or lakes as are not to be meandered, offsets are to be taken, which offsets are to be carefully noted on the plat to show that the distance across has been accurately ascertained. Such ponds or lakes are to be exhibited on the plat as accurately as practicable, from careful ocular observation to be made by the Deputy and noted in his field book.

³ Circular from General Land Office to Surveyor General, the original of which has been preserved at Des Moines in the old files of the Surveyor General.

5th. Swamps are to be represented in the ordinary method by slightly shaded *black* lines and dots, and the outlines of the same should be distinctly exhibited.

6th. *Prairies* are to be represented by slightly shaded *green* lines and dots, and the outlines of the same to be distinctly exhibited.

7th. The plats should also exhibit as accurately as practicable, *all mines, salt springs, salt licks, and mill seats*, also *towns, villages and settlements*, and the names of the same, also *forges, factories, cotton gins*, and all other such items of information, also the *general course of travelled roads and tracks*, denoting the place to which they may lead.

8th. The exterior lines of the township plat should be double the thickness of the sectional lines and both of them should be in *black* ink. The lines denoting the quarter section and the sub-divisions of fractional sections should be in *red*.

9th. The quantities of the subdivisions of fractional sections are to be indicated by *red figures* within the respective subdivisions. The numbers and quantities of sections and fractional sections are to be exhibited in black figures at the center of each as nearly as practicable, and in cases where the marks and figures on the plat are too numerous to admit of the convenient exhibition of the quantities in that way, the quantity of each section and fractional section is to be exhibited in a neat *tabular statement* on the *right side* of the plat, and where there are private claims in the township, the quantities of such claims are to be exhibited under a separate head in the tabular statement which is to exhibit *separate totals of public lands and private claims*. Where any private claim, Indian or other reservation, etc., is exhibited, the name of the *confirmer* or *reservee* must be given; also such other reference as will clearly identify the tract with the Report by which it was confirmed or the Treaty, etc., under which the individual claims the title.

In cases where the quantities are exhibited in the center of the section or fractional section, and it is not necessary to resort to a *tabular statement*, the sum total of the public lands in the township is to be exhibited as *one item* near the foot of the plat.

10th. At the foot of each plat the Surveyor General must give an official certificate of the following purport, viz., "The above map of Township No. __, of Range No. __, is strictly conformable to the field notes of the survey thereof on file in this office, which has been examined and approved (or if any exceptions are taken to the field notes by reason of their not standing the test of correct platting, such exceptions are to be stated on the margin of the plat as before mentioned, and exhibited on the face of the plat by red dotted lines, and alluded to in the certificate thus "with the exception stated in the margin hereof.") The certificate is then to be closed by indicating the name of the deputy or deputies by whom the exterior boundary lines, and the subdivision lines were respectively surveyed, showing the sum total of miles run by each deputy surveyor, also the date of the contract, the quarter of the year in which the survey was made, and the quarter in which the same was paid for and charged in the accounts of the Surveyor General.

11th. All lines in a township survey which have not been actually run must be represented on your plat of survey by *red dotted lines*, and any portion of a survey *found* or *suspected* to be erroneous, must also be represented by red dotted

lines, and payment for the same is to be suspended until the error is corrected, or the cause of suspicion done away to the full satisfaction of the Surveyor General; and in every case where the survey of a township is incomplete *from any cause*, such cause must be fully set forth by *marginal note* on the *face of the plat*, and certified in the mode designated in the 10th article of this letter.

12th. *Navigable streams* are declared by law to be *public highways*. Except in cases where navigable streams constitute the boundary line between two land districts, and where the ranges and townships in each district are numbered from different meridians and base lines, they are not to interrupt the regular survey of the township lines, which are to be continued across such stream for the exact distance. Each border of such stream is however to be meandered by course and distance, and a fractional portion of the same township will be constituted on each side thereof to be denominated, as the case may be, the fraction of township north or south, or east or west of such stream, having special regard, in such designation, to the *general course* thereof from its source to its mouth.

A deputy surveyor continuing surveys on the opposite banks of streams must invariably be made to show the connections of such survey with certain established posts or points in the opposite surveys, which connections, as well as the mode by which the same was ascertained, are to be shown in the field book and exhibited in the plat of survey, and in passing up or down rivers, frequent connections with the surveys across should be made and exhibited both in the field book and plat.

The *width of navigable streams and bayous* binding on the surveys, should frequently be ascertained by trigonometrical process. Where the width of the same does not sensibly vary in the township, the measurement there is to be made at the two extreme points of intersection of such objects with the township line; but where there is a sensible variation in the width, measurement thereof must be made as often as may be justly deemed necessary for the accuracy of the survey in connection with the adjoining lands, and the correct exhibition thereof in the township plats.

13th. Where it is necessary to make a return to this office of township *boundaries* merely prior to the subdivision of such townships into sections, and the rendition of the regular plats of survey, such boundaries are to be platted in connection on a scale of from two to three inches to six miles.

14th. The paper to be used in your plats of survey must be of the best quality and of uniform size.

The descriptive notes are to be written on paper of the folio post size, best quality. The records of the plats and field notes to be kept in your office, must be made out on paper of the best quality. Great care and neatness are to be observed in the execution of the work, and in the particular examination thereof after the same is completed.

SURVEYS AND CONTRACTS

15th. You are to require bond and approved security for the due execution of all surveying contracts in the penalty of *double* the *value* of the contract, and in case of failure to comply with the terms of a contract, unless such failure arise from causes satisfactorily proved to be beyond the control of the contractor, immediate measures are to be taken to recover the penalty of the bond, agreeably to law, and the deputy surveyor who has improperly failed to fulfil his engage-

ments, is afterwards not to be employed by you, and of every such failure you are required to give immediate notice to the department.

The surveys are to be executed under the personal and immediate superintendence of the contractor. *Sub-contracts are illegal*. The contract and bond of the deputy are expressly to provide against sub-contracts.

16th. The act of 18 May 1796 (*Land Laws*, new edition, p. 420) provides, that the public lands "shall be divided by North and South lines run according to the true meridian, and by others crossing them at right angles, so as to form township lines of six miles square.

"The corners of the townships shall be marked with progressive numbers from the beginning; each distance of a mile between the said corners, shall be also distinctly marked with marks different from those of the corners."

The same law requires that "Townships shall be subdivided into sections, containing, as nearly as may be, six hundred and forty acres each, by running through the same, each way, parallel lines at the end of every two miles, and by marking a corner on each of the said lines at the end of every mile: The sections shall be numbered respectively, beginning with the number one in the northeast section, and proceeding west and east alternately, through the township, with progressive number, 'till the thirty-six be completed.

"And it shall be the duty of the deputy surveyors to cause to be marked on a tree near each corner made as aforesaid, and within the section, the number of each section, and over it the number of the township within which such section may be; and the said deputies shall carefully note in their respective field books, the names of the corner trees marked, and the number so made."

The act of 10 May 1800 (*Land Laws*, new edition, p. 456) prescribes the mode of subdividing sections into half sections of three hundred and twenty acres each, as nearly as may be. "By running parallel lines through the same from east to west, and from south to north, at the distance of one mile from each other, and marking corners at the distance of each half mile on the lines running from east to west, and at the distance of each half mile on those running from south to north." And making the marks, notes and descriptions prescribed to surveyors by the act of 18th May 1796. The same act also provides, that "In all cases where the exterior lines of the townships thus to be subdivided into sections or half sections, shall exceed, or shall not extend six miles, the excess or deficiency shall be specially noted, and added to or deducted from the western and northern ranges or sections or half sections in such townships, according as the error may be in running the lines from east to west, or from south to north; the sections and half sections bounded on the northern and western lines of such townships shall be sold as containing only the quantity expressed in the returns and plats respectively, and all others as containing the complete legal quantity." By a vigilant and faithful attention to duty on the part of the deputy surveyor, the excesses and deficiencies alluded to by the law, except to a trifling extent, will be of rare occurrence;

The act of 11 Feb. 1805 entitled, "An Act Concerning the Mode of Surveying the Public Lands of the U. S." (*Land Laws*, new edition, p. 515) prescribed general regulations for dividing townships into sections, and subdividing such sections into half sections and quarter sections. The following is a summary of those regulations:

The lands are to be laid off in townships of precisely six miles square, by

lines running due north and south, and east and west. On each of those lines precisely at the distance of one mile apart, corners are to be established for sectional lines. Parallel lines are to be run through the township each way, from each sectional corner to the corresponding sectional corner on the opposite side of the township, on each of which lines sectional corners are to be established at the distance of one mile apart, which process will divide the township into thirty-six sections. In running the exterior township lines, and also the interior sectional lines, intermediate half mile posts or corners, (precisely equidistant between the corners of the sections) are to be established as the boundaries of quarter sections.

17th. Each deputy surveyor is to provide himself with two, two-pole chains containing each thirty-three feet and subdivided into fifty links which are to be regulated by the *Standard Chain* in the Surveyor's office. One of which chains is to be specially reserved by the deputy as a standard for his field work, and by which he will adjust the one in active use, at least every other day, if not oftener. Each deputy will also provide himself with a good compass with a nonius or theodolite (which latter in some respects, is preferable, by reason of its peculiar adaptation to the taking of long sights) which will be compared with the standard in the Surveyor's office.

18th. The surveys are required by law to be made agreeably to the true meridian, and at right angles therewith. The variation of the magnetic meridian is to be observed and ascertained from time to time, as often as the Surveyor General may deem expedient, and is always to be indicated on the township plat.

19th. The greatest care is to be taken in levelling the chains and plumbing the pins, so as to obtain the *true horizontal distance*, where the surface of the country is irregular and hilly.

The oath to be taken by the chainmen must specially provide for such levelling and plumbing. The deputy surveyor must ever be vigilant over the conduct of his subagents (chainmen, marker and flag bearers) whose oaths with that of the Deputies, are to be filed in your office.

You are to enjoin on your deputies a strict regard to the moral integrity of these subagents. None are to be employed in whom *implicit* confidence cannot be reposed, as the interest of the public service is at stake.

AS TO MARKING

20th. The greatest possible caution is to be observed in marking the corners of townships, etc., in a plain, distinct and permanent manner.

When a tree is not found immediately at the corner, a corner is to be established by planting a post on which is to be marked the number of the township, over which is to be marked the number of the range, and underneath the number of the section.

The bearing and distance, also the names and the respective diameters of the nearest trees from such corner are to be carefully taken and noted in the field book. The nearest of such trees (where there are more than one) is to be *marked* to correspond with the *marked corner*. The mark should be in a *regular chop, squared off*, to be made into such tree, so as always to be distinguished from a mere *blaze*. The letters "B. T." to denote the fact of its being a "bearing tree" should be distinctly cut into the wood some distance below the other marks. All

these particulars are to be used most intelligibly and minutely noted in the field book. The posts used in forming the corners of townships must always be larger (for the sake of distinction) than those which denote the sectional and quarter-sectional corners, and should be neatly squared-off at the top to correspond with the cardinal points.

The posts must always be made of the most durable wood that can be had, and should be set in the earth to depth of two feet and very securely rammed in with earth and stone.

The sectional posts are to 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 sides of the post will be numbered to correspond with the number of the section it faces. Each half mile post on a section line and quarter section post on a township line, should be marked to indicate that it is a quarter sectional (" $\frac{1}{4}$ S") post, and the nearest adjoining tree on *each side* of such post, must be similarly marked. The surveyor to note in his field book the kind of tree, its diameter, bearing and distance from the true corner.

Posts denoting the same kind or character of boundary, should be of uniform construction, and there should always be a striking difference between posts denoting different kinds of boundary.

In prairie countries where bearing trees cannot be had, mounds, to be covered with sod are, agreeably to contract, to be erected. Such mounds should be of uniform size and conform precisely to instructions to be given by you. As mounds are subject to be worn away by the action of the weather, and other causes, I would recommend that a stone be planted in the center of the mound and that a few handfuls of charcoal be enclosed therein. I would further recommend that at each corner of a square which will enclose the mound, and conform to the cardinal points, there be planted a chestnut, hickory nut, walnut, or acorn.

A stake to be set up in the center of the mound, to which is to be fastened a finger board on which is to be designated in black oil paint, the appropriate numbers.

All the *particulars* relative to the construction of a mound are to be minutely indicated in the field book.

The perpetuation of the corners of the Public Surveys is a subject of *primary importance*. Every possible care and precaution to secure correct and durable corners, must be observed by your agents, whose fidelity you should test by every means in your power.

AS TO FIELD BOOKS

21st. You are to furnish your deputy surveyors with a printed specimen form of field books, which is to be so constructed as to exhibit every particular required, either by law or instruction, so as to permit of a perfect topographical exhibition of the country, and accompany such form with special instructions on every point in relation to which it can be presumed that instructions are necessary.

In the field books, the number of miles, chains, and links run on a line are to be exhibited in a column, which is to be added up at the foot of each page and carried forward from page to page, so as to form at the conclusion of the book, the aggregate of miles, chains and links run in the township or fractional township.

The act of Congress approved 18 May 1796 (*Land Laws*, new edition, p. 420) requires that "every surveyor shall note in his *field book* the true situation of all mines, salt licks, salt springs, and mill sites which shall come to his knowledge, all water courses over which the line he runs shall pass, also the quality of the lands. These field books shall be returned to the Surveyor General, who shall thereupon cause a description of the whole lands surveyed, to be made out and transmitted to the officers who may superintend the sales. He shall also cause a fair plat to be made of the townships and fractional parts of townships contained in the said lands, describing the subdivisions thereof and the marks of the corners. This plat shall be recorded in books to be kept for that purpose, a copy thereof shall be kept open at the Surveyor General's office for public information, and other copies sent to the places of sale, and to the Secretary of the Treasury."

As the protraction of the surveys at the office of the Surveyor General, from the field books furnished by his deputies, is the test of the accuracy or incorrectness of the survey, the greatest caution is to be observed in making such protractions.

The field books are to indicate the examination and approval thereof (or disapproval as the case may be) by the Surveyor General, with the date of such examination and approval under his own proper signature, also the date of the contract, the quarter of the year in which the land was surveyed, and payment made therefor.

The field books are to be signed by the deputy surveyor, and also by the chainmen, marker, and flagbearers employed in the survey.

SUBDIVISIONS OF SECTIONS AND FRACTIONAL SECTIONS

22nd. The act of 24th April 1820 entitled "An act making further provision for the sale of public lands." (*Land Laws*, new edition, p. 770) requires that the public lands be offered for sale in half quarter sections, and requires that the lines supposed to divide the quarter sections into half quarter sections are to be run *north* and *south*. This law also requires that the corners and contents of half quarter sections shall be ascertained in the manner and on the principles prescribed by the act of 11th Feb'y 1805 (*Land Laws*, new edition, p. 515).

The same act requires that "fractional sections containing one hundred and sixty acres and upwards, shall in like manner as nearly as practicable, be subdivided into half quarter sections under such rules and regulations as may be prescribed by the Secretary of the Treasury; but fractional sections containing less than one hundred and sixty acres, shall not be divided, but shall be sold entire.

The instruction of the Secretary of the Treasury under the aforesaid act is, that the lines of the subdivisions of fractional sections containing one hundred and sixty acres or upwards, may run either north and south or east and west, so as to preserve to the respective subdivisions the most compact and convenient forms.

The lines of the subdivisions of quarter sections and fractional sections are to be merely indicated on the maps. It is not contemplated by the existing laws that they should be actually surveyed at the expense of the United States.

In the subdivisions of fractional sections you are requested to observe as a general rule, points equidistant between the half mile posts, as the supposed

boundaries whether north and south or east and west, between the subdivisions.

I am, very respectfully, Your Obt. Servt.

(Signed) ELIZAH HAYWOOD

P. S. It is invariably required that you furnish to this office, and to the registers of the proper land offices, copies of the same township plats and descriptive notes, at the same time. A failure to observe this rule, will necessarily embarrass the operations of the Government in the sale of public lands.

E. HAYWOOD'S INSTRUCTIONS CANCELLING ORDER REQUIRING FINGERBOARDS
AND BRANDING IRONS

GENERAL LAND OFFICE

24 Oct. 1832

SIR:

I have received your letter of 21st ult. in reference to certain points in my letter of instruction of 23rd Septbr Last.

Inasmuch as you have suggested so many difficulties attending the use of branding irons in various situations in which the surveyors may be placed, I request that you will consider so much of the 20th article of my letter of instructions of 23rd Sept last as relates to that peculiar mode of marking, as being hereby suspended untill you receive further instructions. Meanwhile you will continue the mode of marking hitherto in use, enjoining on your surveyors the observance of every particularity necessary to effect the primary object of that instruction, which is the proper designation of boundaries, and the perpetuation of the same.

You propose to have *red* paint traced in the groove cut by the common marking irons to give a conspicuous appearance to the letters or figures. I see no objection to this mode.

The objections to the charring and tarring of the posts appear to be principally the loss of time attending those operations for which the surveyors would require extra pay. Under these circumstances, as increased pay cannot be granted, those precautions against the decay of the posts, must by necessity be abandoned.

I am not satisfied with some of the reasons assigned by you against the use of *finger boards*,—but, although desirous of adopting them as a precaution against error of entry, and for increased facility in the discovery of boundary lines, it is not intended to introduce any innovation which would unnecessarily retard the execution of the public surveys. If surveyors cannot be found to undertake the placing of finger boards without increased pay, the plan cannot be put into operation.

I am, very respectfully, Your Obt. Servt.

E. HAYWOOD

GIDEON FITZ

Surveyor of Public Lands, Washington, Mississippi

GENERAL INSTRUCTIONS (1834) TO DEPUTY SURVEYORS
IN ILLINOIS AND MISSOURI⁴

St. Louis,

183—
SURVEYOR'S OFFICE

To

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 any peculiar circumstances.

You will provide yourself with a compass of excellent quality and approved construction, having a *nonious division*, and moveable sights; also, with two two-pole chains, of 50 links (of equal length) 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 in your Field Book 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.

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;—and you will be ever vigilant over their conduct.

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 a statement of their compensation; and whenever you may employ any others, you will insert their names, together with their oaths and compensation, 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 in your Field Book, 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.

(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 fulfil the duties of a Chain Carrier; that I will level the chain, and plumb the pins, so as to obtain the true horizontal distance;

⁴ Across face of these 1834 Instructions is written the following: Received January 9, 1834, with letter for U. S. Surveyor General.

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 183

C. D. Deputy Surveyor.

(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 183

C. D. Deputy Surveyor.

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.

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.

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

Range lines (N. and 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 the 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.

All other E. and 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.

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

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 $\frac{1}{4}$ inches diameter; they must be neatly squared off at top, and placed so, that the corners will correspond to 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.

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.

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.—Or in lieu of posts, you may insert endways into the ground, to the depth of 7 or 8 inches, a stone, which shall be not less than 12 inches wide, 14 inches long, and 3 inches thick.

You will ascertain and state in your field notes, the course and distance from the several section and township corner posts, trees and 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; 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 the 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.

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 three 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 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 mounds; and in the mound you will insert a post of the dimensions and marked as before directed; 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 stones you will erect a mound similar to that directed to be made over the deposited 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, and to the depth of 7 or 8 inches, a stone, which 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, must be particularly described in your field notes.

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, conditioned in every respect, with charcoal or stone deposited beneath, as before described 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.

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 will be only *two feet six inches high*, by four feet square at the base, and two feet square at the top.

Quarter-section corners will be perpetuated by a post (of durable wood) 3 inches diameter, placed in the ground and marked $\frac{1}{4}$ 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 $\frac{1}{4}$ 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 deposit need be made—the mound, to be of similar construction to those for section and township corners, except, that they will be only two feet high, three feet six inches square at the base, and 1 foot 6 inches square at the top.

Whenever your course may be obstructed by insuperable obstacles, such as ponds, swamps, marshes, lakes, rivers, creeks, etc., you will prolong the line across such obstacles by taking the necessary right angled 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.

The townships are to be laid on 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 northeast corner of the township, and going west and east, alternately through the township, with progressive number ending with 36, which will be in the southeast corner thereof.

The courses 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.

Any excess or deficiency in the length of any township boundary line, or excess or 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 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. 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 the 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.

In subdividing townships you will commence at the corner to sections 35 and 36 on the south boundary of the township, (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.

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.

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 quarter section corner 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

quarter section post, and place it and establish the 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 average distance.

The east and west lines, in the west range or sections, will be run west on true lines; the quarter section corner will be established at 40.00 chains; the corner 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.

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 land, 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 corner, to the said river or other 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 and south of each other of the fractional corners on the opposite banks, exceed 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.

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 and 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.

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.

At the end of every half 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 it is fit or unfit for cultivation; and, particularly, whether the bottom land is liable to inundation or not; and, if it shall be liable to inundation, 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 which they predominate.—The description of each half mile must be full, 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, etc., 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.

The plots or sketches which you are to return, will exhibit, as accurately as practicable, from careful ocular observation (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 connections 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.

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 foolscap 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, according to 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 resurveys and corrections, and the date must follow each day's work.

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 Book, and all plans and calculations are to be made according to the decimal measure of a chain.

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.

The Field Books in which you copy your notes, will be according to a form to be prescribed by this office.

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.

Your Field Books, 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, according to a form to be prescribed by this office, in conformity with the requirements of your contract and instructions. The certificate to each book will state as many of the following facts as are applicable to the notes of the surveys contained therein, viz:—That all the witness trees to township and section corners, were marked with a blaze and notch facing the several corner posts; 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 all the section and township corner posts were inserted two feet into 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 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 $\frac{1}{4}$ S. was marked on the blaze above the notch; and also, that $\frac{1}{4}$ S. was marked on each corner post, and that the posts were at least 3 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 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.

(Form of keeping field notes of exterior boundary line 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 & 36, of Townships 20 & 20, 21 & 21 North, Ranges 6 & 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 notes as follows, viz:

If first book, oaths of chain-men, axe-men and flag-men, and a statement of their compensation.

A. B., *hind chain-man,*
 C. D., *fore chain-man,*
 E. F., *flag-man,*
 G. H., *axe-man.*

each at a compensation of twenty dollars per month.

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 5 chains southwest of the corner to Townships 20 & 20, 21 & 21 North, Ranges 6 & 7 east of the 4th principal meridian, and found it to be $8^{\circ} 20$ min. east. I therefore adjust my compass to that variation, and commence at the corner to Sections 1, 6, 31 & 36, of Townships 20 & 20, 21 & 21 North, of Ranges 6 & 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

NORTH Along the east boundary of Section 36, Township 21, north of the base line.
CHAINS 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 southwesterly; 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.

The S. 27.60 chains, level, creek bottom; subject to occasional inundation of about 4 feet, as appears from the water marks on the trees. The soil is good and fit for cultivation; timber, walnut, cherry and white oak; undergrowth, pawpaw and spice. The remainder of the line is too hilly and broken for cultivation, although the soil is good. Timber, hickory, white oak and walnut; undergrowth, redbud and dogwood.

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, Township 21 north, Range 6 east of the 4th principal meridian, 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.

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. The south 13.80 chains, rolling land; the remainder, river bottom. The soil on the half mile, is rich and fit for cultivation; timber white oak, poplar and hickory; undergrowth, sas-safra and dogwood.

43.50 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 southwesterly 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 northwest 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 & 36; the distance across the swamp, on the line, being 15.58 chains.
- CHAINS
72.54 A white oak, 18 inches diameter.
- 80.00 Set a post, corner to Sections 24 & 25, Township 21 north, Range 6 east, 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. Except the swamp, 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 pin oak; no undergrowth. The swamp is covered with bushes of various sorts.

September 23, 1832

- Proceed in a similar manner along the east boundary of Sections 24, 13 & 12; then along the east boundary of Section 1, as follows, viz:
- NORTH CHAINS
17.52 Along the east boundary of Section 1, Township 21 north, Range 6 east of the 4th principal meridian.
- 18.76 A road between Holmin's Ferry to the southwest, and Princeton to the northeast.
- 19.75 A white oak, 16 inches diameter.
- 32.50 A creek, generally called White Water, but by some Crooked Creek, 200 links wide, runs northeast—gentle current, not navigable. This creek is crossed by the road, noted above, at about 5 chains to the southwest.
- 33.00 A hickory, 15 inches diameter.
- 40.00 Left the timber and entered Prairie—bears southeast and northwest.
- 59.32 Raised a mound, in which set a post for quarter section corner. The timbered land is gently rolling; the soil is good, and fit for cultivation. Timber, white oak, hickory and walnut; undergrowth, dogwood and sumach. The prairie is level; soil rich and fit for cultivation.
- 63.73 Left the prairie and entered timber—bears northeast and southwest.
- 80.00 A white walnut, 16 inches diameter.
- Set a post, corner to Sections 1, 6, 31 & 36, of Townships 21 & 21, 22 & 22 north, Ranges 6 & 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 27.1-2° 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, sassafrass and hazel.

September 29, 1832

Suppose that the corner to Townships 21 & 21, 22 & 22 north, of Ranges

- 5 & 6 east, had been established, you would then proceed as follows:
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.
- 86.00 Set a post for temporary corner to Sections 35 & 36, Township 22 north, Range 6 east.
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 remarkably fine spring, about 30 links to the north, runs northeasterly.
- 40.00 Set a temporary quarter-section corner post.
- 69.00 A quarry of excellent lime stone.
- 86.00 Set a post for temporary corner to Sections 34 & 35, Township 22 north, Range 6 east.

September 30, 1832

- Continue in this manner along the south boundary of Sections 34, 33 & 32; and then run
- On a random line, along the south boundary of Section 31, Township 22 north, Range 6 east of the 4th principal meridian.
- 00.57 The southeast bank of a navigable lake, which lies mostly to the north of the line, it being about 2 miles in a northeastern 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 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 21, 22 and 22 north, Ranges 5 and 6 east. Then, from said township corner, run
- EAST On a true line along the south boundary of Section 31, Township 22 north, Range 6 east of the 4th principal meridian.
- 00.32 A branch, 7 links wide, runs southeast.
- 17.50 A white oak, 18 inches diameter.
- 18.00 Bear Grass Creek runs south.
- 33.75 A hickory, 12 inches diameter.
- 42.75 Set a quarter-section corner post, on the true line, 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.
Land, rolling; soil, good and fit for cultivation; timber, white oak, black oak and hickory; undergrowth, pawpaw and spice.
- 57.60 Intersected the northwest bank of the navigable lake, (noted on the random line,) where set a post, corner to fractional Sections 6 & 31, of Townships 21 and 22, north, from which post a hackberry, 18 inches diameter,

CHAINS bears N. 23° W., 18 links; and a white oak, .15 inches diameter, bears S.
EAST 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

North 15.82 chains, regained the true line on the south boundary
of Section 31, 25 links east of the southeast margin of the lake; I there-
fore blazed the line back, west 25 links to the southeast 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 21, 22 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, count-
ing the distances from the township corner.

81.90 A burr oak, 48 inches diameter.

82.75 Set a post on the true line for corner to Sections 31 and 32, Township 22
north, Range 6 east, 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 cul-
tivation; timber, white oak, burr oak and sycamore.

31st [sic] of September, 1832

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

On a true line along the south boundary of Section 36, Township 22
north, Range 6 east of the 4th principal meridian.

14.50 Entered a field of about 40 acres, bearing northeast and southwest; it lies
mostly south of the line.

20.17 A spring branch runs southeast, and empties into a creek in about 10
chains. The spring is about 5 chains in a northwestern direction, and is
outside of the field.

30.00 Left the field, bearing northeast and southwest.

33.09 A white oak, 28 inches diameter.

40.00 Set a post for quarter section corner on the true line, from which a hick-
ory, 17 inches diameter, bears north 18° west, 14 links; and a white oak,
15 inches diameter, bears north 27° east, 42 links distant.
Land, rolling; soil, good and fit for cultivation; timber, white oak, hickory
and black oak; undergrowth, hazel and vines.

42.10 A creek, 50 links wide, runs north 80° east; the current is rapid. About
5 chains up stream, in a southwesterly direction, is a mill seat, there be-
ing rock on both banks, and a fall of about 50 feet in 20.00 chains.

47.20 Diggins for lead, called New Design.

59.60 A smelting furnace, owned by J————— H—————.

75.82 A wagon road, leading from Kingston and Holmes' Ferry to Galena, bears
northwest and southeast.

- 30.00 The corner to Townships 21 and 21, 22 and 22 north, Ranges 6 and 7 east. Land, rolling; soil, good, and fit for cultivation; timber, hickory, walnut & white oak; undergrowth, briars and hazel.

1st of October, 1832

Form of field notes in sub-dividing a township (say Township 21 north, Range 6 east of the 4th 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 $\frac{1}{4}$ of an inch too long. Last night (14th of April, 1833) about 20.00 chains northwest of the corner to Townships 20 and 20, 21 and 21 north, Ranges 6 & 7 east, I ascertained the variation of the needle, by polar observations, to be $8^{\circ} 35$ min. east; I, therefore, adjust my compass at that variation; and, to determine the course of the east boundary of the township, commence at the corner, to Townships 20 and 20, 21 and 21 north, Ranges 6 and 7 east, and run—Thence, north on a blank line; at 40.00 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 a blank line,) 39.97 chains, fell 18 links west of the quarter-section corner; 80.05 chains fell 37 links west of the corner to Sections 24 & 25. Therefore, to run parallel to said east boundary of Township 21 north, Range 6 east, my compass must be adjusted to an assumed variation of $8^{\circ} 20$ min. east; which is 15 minutes less than the true variation. I adjust it to that assumed variation, (viz: $8^{\circ} 20$ min. east) and commence at the corner to Sections 35 and 36, on the south boundary of the township, and run—Thence

- NORTH CHAINS Between Sections 35 and 36, Township 21. north, Range 6 east of 4th principal meridian.
- 17.62 A sugar maple, 18 inches diameter.
- 27.60 A creek, called White Oak Creek, 40 links wide, gentle current, runs northwest.
- 40.00 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, 18 $\frac{1}{2}$ links.
- 40.32 Entered river bottom; bears E. and W.
- 47.60 The right bank of White River, a navigable stream, at an eastern bend thereof, runs northeasterly. 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 be-

CHAINS fore described corner of fractional Sections 35 and 36, as follows, viz:
 EAST North 27, east 16.00 chains.
 North 14, east 4.00 chains.
 North 3, west 2.00 chains.

North 39, west 12.93 chains, regained the line between Sections 35 and 36, on the right bank of White River, where set a post, corner to 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° W., 134 links distant. This corner is 30.17 chains north of the corner established at 47.60 chains, on same bank of the river; and is 77.77 chains north of the corner to Sections 35 and 36, on the south boundary of the township. 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, Township 21 north, range 6 east, from which a white oak, 14 inches diameter, bears north 17° E., 18 links; a white oak, 12 inches diameter, bears south 25° W., 13 links, and a walnut, 14 inches diameter, bears south 58° E., 32 links distant. There is no tree within a reasonable distance in Section 26.
 On a random line between Sections 25 and 36, Township 21 north, Range 6 east of the 4th principal meridian.

40.00 Set a temporary quarter-section corner post.

80.18 Intersected the east boundary of the township 37 links south of the corner to Sections 25 and 36; from which corner I run

WEST On a true line, between Sections 25 and 36, Township 21 north, Range 6 east of the 4th principal meridian.

17.60 A white oak, 15 inches diameter.

29.40 A branch, 26 links wide, runs southwest.

40.09 Set a quarter-section corner post on the true line, at average distance; 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.

40.15 Left hills and entered bottom; bears northwest and southeast.

65.17 A walnut, 36 inches diameter.

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

15th of April, 1833

NORTH Between Sections 25 and 26, Township 21 north, Range 6 east of the 4th principal meridian.

27.62 A white oak, 12 inches diameter.

29.34 Intersected the right and southerly bank of White River, a navigable stream; runs easterly. Set a post, corner to 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 flagman 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 & 26, E. 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 21° west, making the distance across the river 11.23 chains; therefore, at (29.34 more 11.23) equal to
- NORTH CHAINS
- 46.57 Set a post on the left and north bank of White River, for corner to fractional Sections 25 and 26, Township 21 north, Range 6 east, from which a hickory, 13 inches diameter, bears south 65° east, 125 links; and a white oak, 17 inches diameter, bears S. 72° west, 19 links distant.—The place of the quarter-section corner is in the river; it cannot therefore be established.
- 56.42 A white oak, 13 inches diameter.
- 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.
- EAST
- 21.32 On a random line, between Sections 24 and 25, Township 21 north, Range 6 east of the 4th principal meridian.
- 21.32 Intersected the left bank of White River, a navigable water course, runs northeasterly; set a post, corner to 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 N. 35° W., 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
- WEST
- 21.32 On a true line between Sections 24 and 25, Township 21 north, Range 6 east.
- 4.06 A black oak, 13 inches diameter.
- 21.32 The corner of Sections 23, 24, 25 and 26.

16th of April, 1833

- 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 Township 21 north, range 6 east of the 4th principal meridian, and run—Thence
- WEST
- 21.32 On a true line, between said Sections 24 and 25, Township 21 north, Range 6 east of the 4th principal meridian.
- 17.60 A white oak, 8 inches diameter.
- 32.40 A brook, 15 links wide, runs southwest.
- 40.00 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 S. 35° E., 14 links distant.
- 45.38 Intersected the right & southeasterly bank of White River, which runs northeasterly; set a post, corner to fractional Sections 24 and 25, Township 21 north, Range 6 east from which a white oak, 14 inches diameter, bears N. 80° E., 17 links; and an elm, 14 inches diameter, bears S. 17° E., 45 links distant. The post, corner to fractional Sections 24 and 25, es-

tablished on the left bank of White River, at 21.32 chains east of the corner to Sections 23, 24, 25 and 26, (see page 31 of this book,) bears S. $87\frac{1}{4}^{\circ}$ W., 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. The Section, therefore, closes within the limits specified in my instructions.

- NORTH CHAINS Between Sections 23 and 24, Township 21 north, Range 6 east of the 4th principal meridian.
- 0.82 Left bottom and entered upland.
- 3.20 Entered prairie, bears N.E. and S.W.
- 40.00 Raised a mound, in which set a quarter section corner post.
- 62.00 A branch, 6 links wide, runs east.
- 30.00 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, of Township 21 north, Range 6 east.
- EAST On a true line, between Sections 13 and 24, Township 21 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 S. 17° W., 183 links; and a hickory, 18 inches diameter, bears N. 74° W., 14 links distant. I then go to the corner of Sections 13 and 24, on the east boundary of the township, and run thence.
- WEST 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 southeast. Set a post, corner to fractional Sections 13 and 24, from which an elm, 8 inches diameter, bears S. 42° E., 18 links, and a gum, 13 inches diameter, bears N. 46° 15 min. E., 73 links. Determined the distance across the river by causing my flag to be set on the opposite or right bank thereof, west from this corner, on the line between Sections 13 and 24, and run south 3.76 chains to a point under the bank of the river; from which the flag, set as aforesaid on the opposite bank bears N. $73\frac{1}{2}^{\circ}$ W., which gives 12.76 chains the distance across the river west from the post, corner of fractional Sections 13 and 24, on the right 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
- 30.80 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 N. 57° W., 19 links; and a hickory, 15 inches diameter bears S. 69° W., 13 links.
- 37.54 Intersected the right bank of White River, runs northeast, where set a post, corner to fractional Sections 13 and 24, from which a red elm, 13 inches diameter, bears S. 16° E., 79 links, and a pin oak, 15 inches diameter, bears N. 87° E., 19 links.—From this corner, the corner to fractional Sections 13 and 24, on the right bank of White River, 29.35 chains east of the corner to Sections 13, 14, 23 and 24, bears S. $87\frac{1}{4}^{\circ}$ W.—I run thence south ?? links to a point from which the aforesaid corner of fractional

Sections 13 and 24, on the left bank of the river, bears west.—The section, therefore, closes within the prescribed limits.

NORTH CHAINS
 00.16 Between Sections 13 and 14, Township 21 north, Range 6 east of the 4th principal meridian.
 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 $3\frac{1}{4}$ 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 Section 11, 12, 13 and 14, Township 21 north, Range 6 east.

17th of April, 1833

A.B. Hind chain-man.

C.D. Fore chain-man.

Mr. 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, at a compensation of Twenty Dollars per month.

(J.K.'s oath to be entered here.)

Proceed 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.

40.00 Raised mound, in which set a post for quarter section corner.
 49.50 Left prairie and entered timber.
 62.00 A creek 50 links wide, not navigable, runs northeast; rapid current.
 80.76 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 S. 26° E., 14 links, and a hickory, 13 inches diameter, bears S. 42° W., 13 links distant.

18th of April, 1833

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

40.00 Raised a mound, in which set a post for quarter section corner.
 80.00 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, the edges facing north and south, for corner to Sections 26, 27, 34 and 35.
 EAST On a true line between Sections 26 and 35, of Township 21 north, Range 6 east of the 4th principal meridian.
 40.00 Raised a mound, in which set a post for quarter section corner.
 46.17 Left the prairie and upland, and entered timbered bottom land.
 60.32 Intersected the left bank of White River, where set a post, for corner to

fractional Sections 26 and 35, from which a hickory, 17 inches diameter, bears S. 65° W., 13 links, and a black walnut, 16 inches diameter, bears N. 72° W., 142 links distant.

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

WEST On a true line, between Sections 26 and 35, Township 21 north, Range 6
CHAINS east of the 4th principal meridian.

5.61 Intersected the, right and easterly bank of White River, runs northwest-
erly; at said intersection set a post, corner to fractional Sections 26 and
35, Township 21 north, Range 6 east, from which an elm, 18 inches diame-
ter, bears S. 85° E., 13 links; and a white oak, 14 inches diameter, bears
N. 27° E., 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. The section does not, therefore,
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 & 35; I go to the corner to said sections on the
south boundary of the township and run—Thence

NORTH With the line already surveyed between Sections 34 and 35, Township 21
north, Range 6 east of the 4th principal meridian (see page 36 of this
book).

40.13 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 distances 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 The corner established by me for Sections 26, 27, 34 and 35.—I therefore
remove the stone, corner to said sections, and at

80.00 Set it for the corner to Section 26, 27, 34 and 35, said stone being as de-
scribed on page 36, 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 wid-
est end 10 inches in the ground, with the edges facing north and south.
Then run

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

40.00 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 sur-
veyed between Sections 26 and 35, & described on page 37 of this book, and
destroy it by leveling the mound & removing the post, & 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.

49.75 Entered timber.

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 37 of this book, by removing the post and defacing the marks on the witness trees.
- NORTH CHAINS
 40.00 Between Sections 26 and 27, 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.
 86.00 The middle of a ravine, which runs southwest.—I therefore select the most suitable plot of ground in the vicinity, and deposite 3 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 N. 26° W., 144 links from the true place of said corner to Sections 22, 23, 26 and 27, Township 21 north, Range 26 east.

19th of April, 1833

- 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
- WEST
 On a true line between Sections 30 and 31, Township 21 north, Range 6 east of the 4th principal meridian.
 40.00 Raised a mound, in which set a post for quarter section corner.
 72.00 Entered timber—bears N.E. and S.W.
 80.42 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 5 east, from which a burr oak, 17 inches diameter, bears S. 25° E., 18 links, and a white oak, 17 inches diameter, bears N. 27° E., 184 links distant.

27th of April, 1833

(Form of keeping field notes of the meanders of a navigable water, 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 southeasterly bank of White River, and run thence down stream, with 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, come from the southeast—Thence
 N. 40° E., 30.00—Thence
 N. 18° E., 00.40—to the corner of fractional Sections 24 and 25, Township 21 north, Range 6 east, 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 southeasterly 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; undergrowth, 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.

(Form of certificate for your original field notes.)

I certify, that the foregoing notes on pages 1 to 65 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 _____ 183____, under my contract with, and instructions from, Elias T. Langham, Surveyor of the Lands of the United States, in Illinois and Missouri, bearing date the _____ day of _____ 183____. 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 which, the work was performed on the ground.

Then state such of the facts designated on pages 15, 16 and 17, as are applicable to the case.—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 pages 1 to 73 inclusive, are correctly transcribed from the original field notes, etc.

GENERAL INSTRUCTIONS [1843] TO DEPUTY SURVEYORS
FROM THE SURVEYOR'S OFFICE AT LITTLE ROCK, ARK.

(As printed by Eli Colby of the *Arkansas Times and Advocate* in 1843)

TO DEPUTY SURVEYORS:

In the execution of surveys under the authority of this office the following general instructions have been prepared for the guidance of the deputy surveyors, and must be strictly adhered to in all cases not otherwise provided for by special instructions.

You will provide yourself with a compass of excellent quality and approved construction, having a nonius division; also with two two-pole chains of fifty links (of equal length) each, both of which must be adjusted to a standard measure in this office, one to be kept for a standard and the other used in surveying. The chain you use in surveying must be compared and adjusted to your standard at least once in every two days, and their difference, if any, noted in your field book; and if there is no difference, state in your field book the fact of your having compared them and found them to agree.

You must likewise provide yourself with a full set of talley 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.

It is enjoined on you not to employ any person whose principles are known or supposed to be corrupt, as chainman, marker, or any other important business connected with the execution of the surveys which you may have to perform; nor is any one to be employed in the capacity above stated who is not a free white person, and who has not attained years of discretion sufficient to understand the nature and solemnity of an oath.

Each of your field books will commence (on the third or fourth page from the beginning thereof) with a list of your chainmen, blazers, and flagmen 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 chainman, blazer, or flagman is dismissed, or quits work from any cause whatever, note it in your field book.

FORM OF OATH FOR ASSISTANTS

State of Arkansas.

County of.....

I, A..... B....., do solemnly swear, (or affirm, as the case may be) in the presence of Almighty God, that, in measuring where the surface of the ground is hilly or irregular, I will level the chain and plumb the pins, so as to obtain the true horizontal distance, and faithfully and impartially execute and fulfill in all things the duty which may be assigned to me, as chainman, or

blazer, or any other service which may be required in executing the surveys of the public lands, to the best of my abilities, so help me God.

A----- B-----

Sworn to and subscribed before me in the county and state above mentioned, this-----day of-----, A. D. 18-----

E----- F-----, *Deputy Surveyor.*

No lines of whatever description are to be run, or marks of any kind made, by any person but yourself, or persons under your immediate personal inspection. Subcontracts are illegal.

The townships are to be laid off as nearly six miles square as possible, by lines running north and south six miles (called range lines) and the corresponding corners joined by lines running east and west (called township lines); and they (the townships) are to be subdivided into 36 sections, each to be one mile square as nearly as may be. The sections to be numbered by beginning with No. 1 in the northeast of the township, and going west and east alternately through the township with progressive numbers, ending with 36 in the southeast corner thereof.

If by reason of local attraction, or other cause whatever, any lines cannot be accurately run with the use of the needle, the manner of operating must be fully and explicitly noted in your field book.

TOWNSHIP BOUNDARY LINES, HOW RUN

All township boundary lines must be run with the compass adjusted to the true meridian, unless otherwise instructed by this office. The variation of the needle should be taken by an astronomical observation at least once in every fourth range and township, and the results entered in your field book.

Range lines will be run north or south, as the case may require, and corners for quarter sections and sections will be established thereon, at every half mile and mile for the quarter sections and sections to the *west*, and *not* for those to the *east* of the line, except at township corners. [This provides for double corners on range lines. Ed.]

East and west *standard* lines will be run east or west, as the case may require, and corners established thereon, at every half mile and mile, for the quarter sections, sections and townships *north* of the line, and not for those *south* of it.

All east and west township boundary lines, other than standard lines, will be run west on randoms, and corrected east from township corner to township corner; and the excess or deficiency in the length of the boundary must be added to or deducted from the south boundary of section 31 west of the quarter section corner. The section and quarter section corners east of the quarter section corner on the south side of section 31 will be established on the corrected line at every half mile and mile therefrom.

At the intersections of all lines (randoms excepted) with navigable water courses, you will establish corners for fractional sections.

Whenever your course may be obstructed by impassable obstacles, you will state in your field book the precise way you may adopt to prolong the line across.

SUBDIVISIONAL LINES OF A TOWNSHIP, HOW RUN

Subdivisional lines of a township will be run with the compass adjusted to

the east boundary thereof, and the operation of ascertaining it, and the result must be minutely stated in your field book.

In subdividing townships you will commence at the corner to sections 35 and 36, on the south boundary of the township, and move on in continued progression, in order that the excess or deficiency of the township, as to complete sections, may be thrown upon the lines between the northern and western tiers of sections, north and west of the quarter section corners on those lines.

All *north* and *south* subdivision lines, except those between the northern tier of sections, must be one mile in measure by the chain, at the end of which distance, section corners; and at 40 chains on each section line, quarter section corners must be established. In running north between the northern tier of sections establish the quarter section corners on the lines at 40 chains, so as to throw the excess or deficiency in the length of the lines north of the quarter section corners; at the intersection of those lines with the north boundary of the township establish corners (the bearing trees to be taken in the sections for which the corner stands), from each of which ascertain the distance to the nearest known corner on the boundary. [Provides for double corners. Ed.]

In fractional townships on navigable rivers it may be necessary to run the lines from the rectilinear boundary of the township, whether north, south, east or west, as the case may be, and throw the fractional sections on the river; it is preferable, however, where the exteriors of a township are one continued line, that the subdivision *north* and *south* lines should progress from south to north in their usual order, unless the barrier be insuperable.

If it should become necessary to run the lines between the northern tier of sections south from the corners on the north boundary of the township, you will take two bearing trees at each of those corners, which trees must be on the south side of the boundary, and in the sections for which the corner stands.

The *east* and *west* section lines, except those in the west tier of sections, and those which cross navigable water courses, will be run from the proper section corners, on random lines (without blazing) for the corresponding section corners; temporary quarter section corner posts will be set at 40 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 back, by running in a direct line for the corner first run from, and remove the temporary quarter-section corner post, and place it, and establish the corner on the true line equidistant, or at the average distance between the section corners.

Where a township is not rectangular it may be convenient to deviate from the cardinal points in *running random lines*, in order to intersect near to the corner run for. There are no objections to this mode; but the exact course at which you run must in every instance be stated in your field notes.

The east and west lines in the west tier of the sections will be run west on true lines, and the quarter section corners established at 40 chains, in order to throw the excess or deficiency in the length of the lines west of the said quarter section corners; at the intersection of these lines with the west boundary of the township establish corners (the bearing trees to be taken in the section for which the corner stands), from each of which measure the distance to the nearest corner on the boundary. If it should become necessary to survey the lines between the western tier of sections east on true lines, or you should be required by special instructions to survey them west on random lines and correct them back from

the corners on the range line, you will in either of these instances take two additional bearing trees on the east side of the range line at each section corner thereon for the sections in the township east of such range line, and make an entry of the same in your field book.

Whenever your east and west subdivision lines, other than those in the west tier of sections, cross a navigable river (or other water course) you will run from the proper section corners both east and west on true lines to the said river, and establish corners at each intersection on opposite banks, and make an accurate connection between corners thus established.

When from wide closes and the excess or deficiency in the length of the section lines of a township which you may be subdividing, you are led to believe that error exists, say to the amount of 1 chain and 50 links, in any particular mile of an exterior line, you will remeasure the suspected line and make an entry of the fact in your note book. But when the error is found to exceed 1 chain and 50 links or you find that each mile of an exterior line of a township is uniformly 100 or more chains [*links*] longer or shorter than a mile, you will in either of those cases make a resurvey of each boundary, and obliterate the old or former corners; provided, however the subdivisional lines of the adjacent township have not been surveyed and closed upon said boundary; if the lines in the township adjacent have been surveyed and closed thereupon you are only required to remeasure the boundary from section corner to section corner as formerly established.

MEASUREMENT

As measurement by the chain is the principal source of errors in surveying, you cannot be too particular in your attentions to your chainmen. When the ground is uneven make them in every instance level the chain and plumb the pins so as to obtain the true horizontal distance.

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 100 links each; and all entries in your field book, and all plats and calculations are to be made according to the decimal measure of a chain.

In the measurement of lines, whether exterior or subdivisional, the distances to objects on each mile must be counted from the particular section corner started from, and the count to cease as soon as the next section corner is reached.

All lines, both exterior and subdivisional, which have been run on randoms, must, when corrected back, be chained, so that the distance to all objects and offsets around impassable barriers shall appear in the notes of the corrected instead of the random lines. The length of the line as found on running the random will be used unless upon the measurement of the corrected line you find palpable error.

MEANDERING

All rivers that may bound or pass through your district, which are navigable, and all lakes of sufficient magnitude to justify the expense, must be accurately meandered; the courses and distances of the meanders to be entered in your field book, of the subdivision of the township, in the order the work is performed on the ground.

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, and whether up or down stream; and also, which side of the lakes, whether on the north, south, east, west, SE, SW, NW, or NE, sides. When closing meanders on a surveyed line, where no corner has been established, or if established has been destroyed, you will establish a corner on said line for the proper fractional sections, and measure therefrom and state in your field notes the distance to the nearest corner on said line.

If you should be compelled to base lines upon meanders, the latitudes and departure made in arriving at the line to be established must, in all such cases, be explicitly stated in your field book.

LIMITS WITHIN WHICH YOUR SURVEYS MUST CLOSE

After having made allowance for inaccuracy or obliquity in adjoining surveys, an excess or deficiency in the close or length of a township boundary line of more than 5 chains, of a section line of more than one chain, and of a mile of meanders, of more than 1 chain and 50 links, will be sufficient to cause a distrust in the accuracy of the survey, and will render a resurvey necessary, since no survey will be received that does not close within those limits; it will therefore be necessary for you, whilst on the ground, and immediately after surveying each township and section line and the line of meanders through each section, to test and satisfy yourself that they each close within the above prescribed limits; if they should not a resurvey must necessarily be made. By pursuing this course—which is hereby enjoined—you will save the time of the office, and the consequent trouble and expense to yourself of returning to correct errors, which would otherwise be overlooked.

LINES, HOW MARKED

All trees which your lines, both exterior and subdivisional (randoms excepted), strike, must have two notches cut on each side of each tree, exactly where the line strikes and leaves them, which places you can indicate to your blazer by striking the point of your jacob staff into the tree at the spot for the notches; no other mark or blaze whatever is to be made thereon: at least one or two of these line trees on every half mile, with its name and diameter, and the distance thereto must be accurately noted in your field-book. All trees on each side of the line and near thereto (except randoms) must be marked with two spots or blazes, diagonally, or quartering towards the line. For the purpose of having the lines of survey well blazed, you are required to have two good blazers constantly employed, blazing the same line at the same time.

CORNERS, HOW MADE

Township, sectional, fractional section and quarter section corners will be perpetuated by setting a post of the most durable wood that can be procured in the vicinity thereof, firmly in the ground at the exact point for the corner:

In lieu of posts you may use stones, which are to be, each not less than equal

to 6 inches square; the shape is not very material—an oblong, twelve or fourteen inches in length, set to the depth of seven or eight inches in the earth, would be the most preferable. Whether posts or stones are used, the fact must be stated in your field book. Posts used for township, section and fractional section corners, must be at least four inches, and those for the quarter section corners, three inches in diameter; they must be neatly squared off from about half way to the top, and placed in the ground so that the corners thereof will correspond to the cardinal points. If a tree should happen to be on the exact point for a corner, it must be well blazed on the sides toward the sections for which it stands as a corner, and the fact, with the kind and diameter of the tree, stated in your field book. From a township, section, and fractional section corner, you will ascertain and state in your field notes, the course and distance to a tree in each section for which said corner is made or stands; each of said trees you will mark with a blaze facing the corner; on this blaze which must be neatly made, you will mark with a marking iron, in a plain, distinct and permanent manner, the letter "R," with the number of the range, and under this the letter "T," with the number of the township, and under this the letter "S," with the number of the section; for instance, suppose a tree stood in section 1 as a bearing tree to the corner of sections 1, 2, 11 and 12, T. 1 N., R. 12 W., the marks on it would be as follows: "R12W, T1N, S1." In no instance should a bearing tree be taken in a section for which the corner is not established, unless compelled on account of the scarcity of trees, in which case the tree will only be marked with the letters "B.T.," and the fact stated in your field notes. When at any corner there is not a tree within a reasonable distance, in each of the sections for which the corner stands, which can be used as a bearing tree, the fact must be stated in your field notes. When there are but two trees within a reasonable distance of a corner, and those two should happen to be in the same section, you will take the bearing and distance to both, and mark one of them with the number of the section, township, and range, and the other with the letters "B.T.," and the fact of there being no other trees must also be stated in your field notes.

Two bearing trees must be taken at the quarter-section corners, which trees must be marked with a blaze facing the corner, and this " $\frac{1}{4}$ S" on the blaze.

You will select for bearing trees those which are the soundest and most thrifty in appearance, and of the size and kinds of trees which experience teaches will be the most permanent and lasting. In prairie or any other countries where bearing trees cannot be found within a reasonable distance, say 10 chains of a corner which you are to establish, you must in that case, and in all similar ones, erect mounds of earth covered with sod, to perpetuate such corners.

The mounds must be for quarter sections and section corners two feet six inches high and two feet in diameter at the base; for township corners, three feet high and three diameter at the base. At all corners where mounds are necessary you will deposit therein, at or near the bottom, a rock or rocks weighing not less than ten pounds, a cylinder of charcoal not less than six inches long and two inches diameter, or a quantity of glass or cinder from a blacksmith's shop, not less than half a pint.

Whenever a corner, whether a quarter section, section, or township corner, shall be inaccessible, a witness corner will be made on each margin of the obstacle, at the points where the surveyed lines intersect and leave it; for example, suppose the inaccessible corner is the corner for four townships or sections, four witness

corners will, in that case, have to be established, one on each of the surveyed lines where they intersect the obstruction.

THE FIELD BOOK

Entries to be made in the field book in addition to those already required to be made, to-wit: the distances from corner to corner; the name, diameter, course and distance to all bearing trees (the name of the bearing tree to be fully written out, and never abbreviated), the courses and distances of the meanders of navigable water courses; the closes of your lines at their intersections with exterior or other lines; the fallings of random lines; offsets around obstacles; the name, size and precise distance to the line trees; the distance to and where you leave all lakes, streams, swamps, fields, prairies, traveled roads and tracks (denoting the places to which, and from which they lead), creek and river bottoms, mountains, hills, bluffs, and other natural objects, with their courses as well as you can conjecture; the distance to all mines, salt and other mineral springs, salt licks, forges, factories, cotton gins and other houses; the distance to and where you leave towns and villages with their names. The location of other objects that are not on your lines which may come to your knowledge, such as salt springs, lead mines, houses, fields, etc., must also be noted in your field book. You will never give original names to such objects as have been already named.

At the end of every mile in running either exterior or subdivisional 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, whether 1st, 2nd, or 3rd rate, or unfit for cultivation, and if liable to inundation state to what depth; of the kinds and quality of the timber and undergrowth. The description of each mile, must be for that particular mile, and not refer to any previous description.

All notes of corrections and resurvey and the cause thereof, must be entered in your field book as such, and reference must be made from the erroneous to the page which contains the resurvey, by writing the word "resurveyed," and the page upon which the resurvey is to be found, across the notes of the erroneous survey; the resurvey must be headed as such.

The entries must be made in the order from day to day as the work is executed on the ground, including all resurveys and corrections, and the date must follow each day's work.

If in the subdivision of a township, the notes of the random and true line (between the same sections) are taken on different pages, and are separated by intervening notes of other lines, reference must be made from the random to the page containing the notes of the true line.

You must, at the beginning of each of your field books, and at the commencement of each day's work, when starting a section line, write out in full, the name of the township, whether north or south of the baseline and east or west of the 5th principal meridian.

No memorandum or writing of any description should be made in the field book except such as relates exclusively to the surveys.

Your books into which your original notes are to be taken in the field will be of a size to be prescribed by this office; they must be of the best quality of paper, and the entries must be made in the plainest and fairest hand-writing, so

plain and intelligible that a letter or figure cannot by possibility be taken for anything else than what is intended, or your meaning in any way whatever misconstrued.

The notes of the subdivision of each township must be kept in separate books. The meanders in a township are considered as subdivisational work. The notes of exterior lines must be kept to themselves in books of a convenient size.

The two outside pages of your field books must be left blank, and kept as clean as possible by a cover of leather or paper; which cover can be taken off when the books are returned to this office.

Your field books must be paged, and a neat index made in the front of each, immediately preceding the page containing the oaths of your chainmen.

If an instance should occur from inclemency of weather that you cannot write in your field book without obliterating and defacing your notes, you can, in that case, take notes on a detached piece of paper, which however, you must write off into your regular field book in the proper place as soon as the weather will permit; and the scraps must, in all such cases be returned with your regular original field book to this office, that they may be compared.

You will leave a margin of at least half an inch on each edge of every page of your field book, so as to admit of binding, and also to prevent the obliteration of the notes.

In taking your field notes you will abbreviate only those words which are abbreviated in the form for keeping the field notes hereto appended.

You must make, or have made out, and return with your original field books, a fair and correct copy thereof, to be on a form to be prescribed by this office. And you will also make out and return with your original field notes an accurate plat or sketch of your surveys, which must exhibit the true situation of all objects noted in your field book; and it would be well to make on the temporary outside cover of each field book, a plat, upon which you could portray, while on the ground, those objects.

FORM OF KEEPING FIELD NOTES OF EXTERIOR BOUNDARY LINES OF TOWNSHIPS

If first book, give oaths of assistants. Then say: Chain compared with the standard and found to be correct—

Adjusted my compass to the true variation of the needle, which is -----E.

Suppose the line to be surveyed is the east boundary of Township 1 north, range 12 west:

CHAINS	North along the east side of section 36, Township 1 north of the baseline, Range 12 west of the 5th principal meridian.
20.10	A brook 20 links wide runs NW.
35.00	A red oak 15 inches in diameter.
40.00	Set a $\frac{1}{4}$ sec. corner post, from which a red oak 10 in. dia. bears N. 30 W. 16 links, and a hickory 18 inches dia., bears S. 15 $\frac{1}{2}$ E. 10 links.
55.25	An impassable lake bears NE. and SW., thence offset.
	East 10.00 chains.
	North 5.00 chains.
	East 2.50 chains.
	North 3.75 chains across the lake.

- 64.00 West 12.50 chains to the true line in advance of the lake; blaze the line south to the lake 3.25 chains; which is 5.50 chains wide on the line.
- 71.00 A black walnut 8 inches dia.
- 80.00 Set a post for corner to sections 25 and 36, from which a hickory 6 inches dia. bears S. 18 W. 11 links, and a white oak 20 inches dia. bears N. 72 W. 36 links.
- Land level, and first rate soil; timber, oak, hickory, hackberry, walnut, etc.; undergrowth, green briars, vines, etc.

Proceed in the foregoing manner along the east boundary of sections 25, 24, 13 and 12; then along the east side of section 1 as follows:

- CHAINS North along the east side of sec. 1, T. 1 N., R. 12 W.
- 8.00 A bayou 100 links wide runs NE.
- 9.50 A road leading from-----to-----bears NE. and SW.
- 12.16 Entered bottom of-----river, bears E. and W.
- 21.54 An ash 10 inches dia.
- 35.66 Intersected the right bank of-----River, runs E.; navigable; where set a post for corner to fractional sections 1, T. 1 N., R. 12 W., and 6, T. 1 N., R. 11 W., from which a cottonwood 30 inches dia. bears S. 41 W. 18 links, and a cottonwood 35 inches dia. bears S. 60 E. 28 links.
- 48.52 To the left bank of the-----River; distance across obtained by calculation; where set a post for corner to fractional sections 1, T. 1 N., R. 12 W., and 6, T. 1 N., R. 11 W., from which an elm 18 inches dia. bears N. 69 E. 18 links, and a sweet gum 15 inches dia. bears N. 19 W. 40 links.
- 63.11 A sweet gum 15 inches dia.
- 71.81 Left bottom which bears NE. and SW. and entered upland.
- 86.00 Set a post for corner to sections 1, 6, 31, and 36, and to Townships 1 and 2 N., Ranges 11 and 12 W., from which a red oak 10 ins. dia. bears S. 10 E. 11 links; a post oak 24 inches dia. bears S. 46 W. 23 links; a white oak 14 ins. dia. brs. N. 18 W. 38 links; and a white oak 10 ins. dia. brs. N. 35 E. 50 links.
- Land south of the bottom second rate soil; timber, oak and hickory; no undergrowth; the bottom first rate soil; timber, sweet gum, elm, cottonwood, etc., with heavy cane; north of the bottom, third rate soil and rocky; timber, mostly oak, some hickory; undergrowth, oak bushes.
- 1st-----18-----

Suppose the corner to Townships 1 and 2 north, Ranges 12 and 13 west had been established. Then proceed as follows:

Chain compared with the standard and found $\frac{1}{2}$ inch too long, which I adjusted.

CHAINS West on a random line along the south side of section 36, Township 2

- CHAINS north of the baseline, Range 12 west of the 5th principal meridian.
 40.00 Set a temporary $\frac{1}{4}$ corner post.
 80.00 Set a post for temporary corner to sections 35 and 36.

Proceed in this manner along the south side of sections 35, 34, 33, and 32; then along section 31 as follows:

- CHAINS West on a random line along the south side of section 31, Township 2 north, Range 12 west.
 16.00 A navigable lake bears north and south 10.66 chains wide; distance obtained by calculation.
 40.00 Set a post for temporary $\frac{1}{4}$ section corner.
 81.50 Intersected the range line 2.50 links south of the corner to Townships 1 and 2 north, Ranges 12 and 13 west.
- 2d-----18-----

Chain compared and found correct.

- CHAINS East corrected the line along the south side of section 31, Township 2 north of the baseline, Range 12 west of the 5th principal meridian.
 13.10 Entered A. B.'s field; bears NW. and SE.
 25.00 Left the field; bears NE. and SW.
 25.88 An ash 10 inches dia.
 41.50 Set a $\frac{1}{4}$ section corner post, from which an ash 15 inches dia. bears N. 18 E. 19 links, and an elm 18 inches dia. bears N. 35 W. 25 links.
 55.23 Set a post on the west side of the lake, corner to fractional sections 6, T. 1 N., R. 12 W., and 31, T. 2 N., R. 12 W., from which a hackberry 6 inches dia. bears N. 60 W. 56 links, and sweet gum 12 in. dia. brs. S. 42 W. 47 links.
 65.79 To the east side of the lake; distance across obtained by calculation; where set a post for corner to fractional sections 6, T. 1 N., R. 12 W., and 31, T. 2 N., R. 12 W., from which a box elder 10 in. dia. brs. N. 28 E. 14 lks.; and a willow oak 15 in. dia. brs. S, 64 E. 18 lks.
 71.33 A white oak 15 in. dia. on the bank of a bayou, 50 lks. wide, runs SE. of the lake.
 81.50 Set a post for corner to sections 31 and 32, from which a hickory 15 in. dia. brs. N. 18 W. 20 lks. Land level and 2d rate, soil inclined to be wet, subject to overflow from the lake, about two feet deep. Timber, oak, hickory, hackberry, sweet gum, etc. Undergrowth, small cane, green briars and vines.

Proceed in this manner along the south boundary of sections 32, 33, 34, and 35, thence along section 36, as follows:

- CHAINS East on a true line along the south side of section 36, T. 2 N., R. 12 W.
- 3.25 A spring branch runs SE., the spring 10 lks. to the north.
 - 23.18 A white oak 20 in. dia.
 - 25.30 Road leading from-----to-----brs. south.
 - 40.00 Set a post for $\frac{1}{4}$ sec. corner, from which a white oak 16 in. dia. brs. N. 27 E. 15 lks., and a white oak 12 in. dia. brs. N. 44 W. 29 lks.
 - 58.42 A white oak 12 in. dia.
 - 60.10 A creek 10 lks. wide runs SE.
 - 80.00 The corner to Townships 1 and 2 north, Range 11 and 12 west. Here describe the land, etc.

3d-----18-----

FORM OF KEEPING FIELD NOTES IN SUBDIVIDING A TOWNSHIP

(Suppose Township 1 north Range 12 west is the township to be subdivided.)
 4th-----18-----commenced the subdivision of Township 1 north of the baseline, Range 12 west of the 5th principal meridian.

(If first book of survey, give oaths of assistants)

Chain compared and found to agree with the standard measure.

Adjusted my compass to the east boundary said township in the following manner:

With my compass set to a variation of $7^{\circ} 30''$ east I run north along the east side of section 36. At 39.98 chains a point 52 links east of the $\frac{1}{4}$ section corner; at 80.03 chains a point 107 links east of the corner to sections 25 and 36. I therefore adjust my compass to a variation of $8^{\circ} 15''$ east.

(If the east boundary of the township had been surveyed by yourself immediately previous, you will adjust your compass for subdividing as follows:)

By reference to the notes of the survey of the east boundary of the township as surveyed by me in-----, 18----, I find the said boundary to have been run at a variation of ---- $^{\circ}$ east. I therefore adjust my compass to the same degree.

- CHAINS North between sections 35 and 36, Township 1 north of the baseline, Range 12 west of the 5th principal meridian.
- 11.53 A hickory 12 in. dia.
 - 24.00 Entered cane, which brs. E. and W.
 - 26.50 To the south side of-----Lake, which I consider navigable, bears west and NE.; where set a post for corner to fractional sections 35 and 36, from which a sweet gum 18 in. dia. brs. S. 38 E. 17 lks., and a hackberry 12 in. dia. brs. S. 45 W. 12 lks.
 - 38.75 The north side of the lake; distance obtained by calculation; where set a post for corner to fractional sections 35 and 36, from which an elm 12 in. dia. brs. N. 14 E. 16 lks., and a cottonwood 30 in. dia. brs. N. 33 W. 9 lks.
 - 40.00 Set a $\frac{1}{4}$ corner post from which a sassafras 8 in. dia. brs. N. 48 E. 21 lks., and an elm 18 in. dia. brs. S. 28 W. 39 lks.
 - 56.00 Left the cane which bears NE. and SW.
 - 63.50 A hackberry 12 in. dia.
 - 79.00 Entered a hurricane which bears NE. and SW.
 - 80.00 Set a post corner to sections 25, 26, 35, and 36, from which a hickory 12 in.

dia. brs. N. 63 E. 42 lks., and an elm 1^c in. dia. brs. S. 41 E. 102 lks., and a white oak 20 in. dia. brs. S. 37 W. 168 lks.; there is no tree in sec. 26 within a reasonable distance.

(Here describe land)

CHAINS East on a random line between sections 25 and 36, Township 1 north, Range 12 west.

40.00 Set a post for temporary $\frac{1}{4}$ section corner.

80.33 Intersected the range line 42 lks. S. of the corner to sections 25 and 36. West corrected the line between sections 25 and 36.

15.69 A white oak 20 in. dia.

17.00 Entered bottom land which brs. NE. and SW.

25.50 A creek 100 lks. wide runs NE.

30.00 Entered low, wet land.

40.16 $\frac{1}{2}$ Set a post for $\frac{1}{4}$ section corner, from which a red oak 15 in. dia. bears S. 18 E. 25 lks., and a post oak 12 in. dia. brs. N. 61 W. 19 lks.

50.30 A bluff of rocks insurmountable.
 Offset south 10.00 chains.
 West 15.00 chains.
 North 10.00 chains regained,

65.30 The line at the west side of bluff.

66.14 A blackjack 8 in. dia.

68.00 Entered bottom land.

80.33 The corner to sections 25, 26, 35 and 36.
 Land except a few chains at the west end, broken and poor, not fit for cultivation. Timber, oak and hickory. Undergrowth oak and blackjack bushes.

4th-----18-----

CHAINS North between sections 25 and 26, Township 1 north of the baseline, Range 12 west of the 5th principal meridian.

25.00 Left the hurricane, bears NE. and SW.

26.89 An elm 15 in. dia.

27.00 A house about 100 lks. west of the line.

28.93 To the south end of a navigable lake, bears NE. and NW. where set a post for corner to fractional sections 25 and 26, from which a box elder 12 in. dia. brs. S. 32 E. 31 lks., and a black gum 16 in. dia. brs. S. 75 W. 15 lks.
 From the above corner to fr. secs. 25 and 26 I proceed to meander along the SW. bank of lake, through sec. 26.
 Thence N. 15 W. 11.00 chains.
 N. 21 W. 7.00 chains.
 North 10.00 chains.
 N. 9 E. 8.00 chains.
 N. 29 E. 5.00 chains.
 N. 40 E. 2.63 chains.

70.38 Here regained the line having made 41.45 chains northing where set a post for corner to fr. sections 25 and 26, from which a sweet gum, etc.

76.32 A sassafras 12 in. dia.

- 80.00 Set a post for corner to secs. 23, 24, 25, and 26, from which a hickory, etc.
(Here describe land, etc.)
East on a true line between secs. 24 and 25, T. 1 N., R. 12 W.
- 5.06 A honey locust 10 in. dia.
- 14.67 To the NW. side of a lake; navigable; where set a post for corner to fr. sec. 24 and 25, from which a black walnut, etc.
From this corner I measure east 50 links to the water's edge where set an object pole.
(Here describe land, etc.)

- West on a true line between secs. 24 and 25, T. 1 N., R. 12 W. from the corner on range line.
- 40.00 Set a post for $\frac{1}{4}$ sec. corner from which a black gum, etc.
- 47.56 A black walnut 18 in. dia.
- 50.15 To the SE. bank of the lake, where set a post for corner to fr. secs. 24 and 25, from which a pecan, etc.
The object pole on the opposite bank of the lake bears from this corner S. 88 $\frac{1}{4}$ W.; thence due south 46 links and it brs. due west.

Commenced at the corner to fr. secs. 24 and 25 on the east side of lake and meander along the east side of said lake through sec. 25, T. 1 N., R. 12 W.

Thence S. 50 $\frac{1}{2}$ W. 4.00 chains.

S. 28 W. 7.00 chains.

S. 55 W. 12.00 chains.

S. 9 W. 10.00 chains.

S. 9 E. 20.00 chains.

At 19.00 chains on this course the outlet of the lake 50 lks wide runs NE.

S. 23 W. 5.50 chains.

S. 70 W. 5.50 chains.

N. 87 W. 7.68 chains to the corner of fractional sections 25 and 26.

(Here describe land, etc.)

Proceed in this manner until you arrive at the corner to secs. 1, 2, 11, and 12; thence between sections 1 and 2 as follows:

- CHAINS North between secs. 1 and 2, T. 1 N., R. 12 W.
- 40.00 Set $\frac{1}{4}$ sec. corner post, from which a hickory, etc.
- 51.10 A hackberry 8 in. dia.; and left bottom land and entered upland, which bears NE. and SW.
- 80.45 Intersected the south boundary of T. 2 N., R. 12 W. 25 links east of the corner to secs. 35 and 36; where set a post for corner to secs. 1 and 2, T. 1 N., R. 12 W., from which a burr oak, etc.
(Here describe land, etc.)

(Resurveyed—see page--)

- CHAINS West on a true line between secs. 30 and 31, T. 1 N. of the baseline, R. 12 W. of the 5th principal meridian.
- 15.50 A path bears N. and S.
 23.50 A white oak, 30 in. dia.
 29.00 Entered a prairie, bears NE. and SW.
 40.00 Raised a mound for $\frac{1}{4}$ sec. corner, in which deposited two rocks, weighing together about 20 lbs.
 65.00 Left the prairie, bears NW. and SE.
 85.50 Intersected the east boundary of T. 1 N., R. 13 W., 25 lks., south of the corner to secs. 25 and 36.
 On examining my sketch I find that the line between sections 30 and 31 should be about 80.00 chains long. I therefore proceed to resurvey said line.
 West on the line previously surveyed (See page --), between sections 30 and 31, T. 1 N., R. 12 W., on a resurvey.
- 15.48 A path bears N. and S.
 23.49 A white oak 30 in. dia.
 29.00 Entered prairie, bears NE. and SW.
 35.96 The former $\frac{1}{4}$ section corner mound, which I destroy.
 40.00 Raised a mound for $\frac{1}{4}$ section corner, in which deposited two rocks, weighing together about 20 lbs.
 60.00 Left the prairie, bears NW. and SE.
 80.50 Intersected the east boundary of T. 1 N., R. 13 W., 25 lks. south of the corner to sections 25 and 36; where set a post for corner to sections 30 and 31, T. 1 N., R. 12 W., from which a white oak, etc.

Each of your field books must be signed by yourself, and close with a certificate in the following form, to-wit:

I certify that the foregoing notes on pages 1 to -- inclusive are the original field notes of the surveys herein specified; that the surveys were executed, and the field notes taken by myself in person, (or by-----, under my immediate and personal inspection) at the dates herein written.

A. B., *Deputy Surveyor.*

The foregoing instructions have been drafted with a view to insure the correct execution of surveys, and uniformity of returns, and with a special reference to the laws of the United States, and in relation to the surveys of the public land. They must be strictly adhered to in form and substance.

GENERAL INSTRUCTIONS OF 1846

OFFICE OF THE SURVEYOR GENERAL OF WISCONSIN AND IOWA

Dubuque, May 28, 1846

To-----

Deputy Surveyor,

SIR:—You are to survey in person, or by the assistance of some duly authorized Deputy Surveyor acting under your immediate direction and supervision, the district assigned you under contract of-----, 18----, conformably to such parts of the following instructions as apply to the character of the work for which you have contracted, except so much thereof as is modified or countermanded by manuscript special instructions, hereinafter written.

SYSTEM OF SURVEY

1. The United States lands are surveyed into rectangular tracts, bounded by north and south, east and west lines. They are first surveyed into townships or tracts of six miles square, which are subdivided into thirty-six equal parts, called sections.

2. Townships and ranges number from base and meridian lines—the former bearing due east and west and the latter intersecting them at right angles, and bearing due north and south.

3. The base line of the surveys in Wisconsin is the south boundary of so much thereof as borders the State of Illinois; that of Iowa, is located near the geographical centre of the State of Arkansas.

4. The fourth principal meridian, to which the surveys in Wisconsin relate, starts from the mouth of the Illinois River. The fifth principal meridian, to which the surveys in Iowa relate, starts from the mouth of the Arkansas River.

5. The townships, both in Wisconsin and Iowa, number from their respective base lines, northward; the ranges, in each, number from their respective meridians, both east and west.

6. Sections are numbered from east to west and from west to east progressively, commencing with the northeast corner section.

7. Correction lines provide for the error that would otherwise arise from the convergency of meridians, and arrest that arising from the inaccuracies of measurement. They are run due east and west, at stated distances, forming a base to the townships north of them. This base, for each township, is extended sufficiently to meet the convergency for a given distance.

INSTRUMENTS

Base, meridian, correction and township lines are to be run with an instrument that operates independently of the magnetic needle, which is to be employed only to show the true magnetic variation. Section, meander and all other lines interior of a township, may be run either with the same instrument, or with the

Plain Compass, provided it is of approved construction and furnished with a vernier or nonius.

ASSISTANTS—THEIR OATHS

You are to employ no other assistants than men of reputable character, each of whom, must, before performing any duty as such, take and subscribe an oath (or affirmation) of the following form, which must be forwarded to or deposited in this office prior to or upon the return of your field notes:

For Chainmen

I, A. B., do solemnly swear (or affirm,) that I will impartially and faithfully execute the duties of Chain carrier, that I will level the chain upon uneven ground, and plumb the tally-pins whether sticking or dropping the same; that I will report the true distance to all notable objects, and the true length of all lines that I assist in measuring, to the best of my skill and ability.

Sworn and subscribed before
me at-----this
-----18-----.

Justice of the Peace

(or other officer authorized to administer oaths)

of-----, County
of-----, State or Territory of-----

For Flagmen or Axemen

I, C. D., do solemnly swear (or affirm) that I will well and truly perform the duties of axeman or flagman, according to instructions given me, and to the best of my skill and ability.

MARKING LINES, ESTABLISHING AND MARKING CORNERS

1. All lines which you actually establish are to be marked as follows: Those trees which intercept your line are to have two notches upon the side where your line intersects and leaves them, without any other mark whatever.

2. A sufficient number of those trees which approach nearest your line, to render the same conspicuous, are to be blazed upon two sides, diagonally or quartering towards the line; the blazes to approach nearer each other the farther the line passes from the blazed trees, and to be as nearly opposite—coinciding with the line—as possible, in cases where they are barely passed.

3. Corner posts are to be made only of the most durable wood found in the vicinity of your lines. Township corner posts must not be less than five, section and meander corner posts four, and quarter section post three inches in diameter. These posts must be set or driven firmly into the ground, above which they are to appear, at township corners three feet, at section and meander corners two and a half feet, and at quarter section corners two feet.

4. All township and section corner posts are to be squared upon their upper ends and the angles of the square set with the cardinal points of the compass. Township corner posts must have six notches upon each of the said angles; section

corner posts, upon township lines, as many notches upon one of the said angles as they are miles distant from the township corner where the line commenced, and interior section corner posts as many notches both upon their south and east angles as they are miles distant from the south and east boundaries of the township respectively.

5. Quarter section and meander corner posts are to be blazed upon two opposite sides, and set with those blazes facing the sections between which they occur.

6. A tree supplying the place of a corner post is to be squared and marked as directed for posts.

7. All posts established at corner of sections are to be marked upon each side of their squared part with the number of the four sections which those sides respectively face; at meander corners with the number of the sections between which such posts are set and at quarter section corners with $\frac{1}{4}$ S. upon the two blazed sides.

8. Bearing trees are those of which you take the course and distance from a corner. They are distinguished by a large smooth blaze or chop, fronting the corner, upon which is marked, with an iron made for that purpose, the number of the range, township and section, except at quarter section corners where $\frac{1}{4}$ S. will supplant the number of the section, thus:

R-----E. or W.

T-----N.

S-----or $\frac{1}{4}$ S.

The letters B.T. are also to be marked upon a smaller chop, directly under the large one and as near the ground as is practicable.

9. Witness trees are signalized and marked as above, but the course and distance to them, as well as the small chop, are omitted.

10. Trees, employed either for the purpose of bearing or witness trees, are to be alive and healthy and not less than five inches diameter.

11. From all posts established for township corners, or for section corners upon township lines, four bearing trees, if within a reasonable distance, must be taken; one to stand within each of the four sections.

12. At interior section corners four trees, one to stand within each of the four sections, are to be marked; two of them as bearing and two as witness trees.

13. From quarter section and meander corners two bearing trees are marked, one within each of the adjoining sections.

14. Wherever bearing trees cannot be had, quadrangular mounds of earth or stone are to be raised around the corner posts, the four angles of which must coincide with the cardinal points of the compass.

15. Mounds, at township corners are to have a base of five feet, a top of two feet, and a height of three feet; at section, meander and quarter section corners, they are to have a base of four feet, a top of one and a half feet, a height of two and a half feet.

16. Where mounds are made of earth the place from which it is taken is styled the *Pit*, which is to be a uniform and stated distance from the mound in all instances where the same is practicable, viz.: at township corners there are to be two pits, one ten links due north, and the other ten links due south; at section corners one pit, eight links due south; at quarter sections corners one pit eight links due east, and at meander corners one pit eight links either due north, south, east or west. The distance of the mound and pit to be obtained by measur-

ing from centre to centre. The mounds are to be neatly covered with sod in all cases where the same can be had.

17. Posts established in mounds for township corners are to be marked upon each side of the square, with the appropriate number of the range and township; at section corners upon township lines with the appropriate number of the range and township upon two sides thereof, and at interior section corners with the range and township within which such post stands.

18. Whenever the true place of establishing a corner is inaccessible, except it occurs in a body of water that is to be meandered, you are to establish a witness corner as near thereto as is practicable and either due north, south, east or west of it. Such corner is to be constructed in all respects like the one for which it stands as a witness, with the addition of the letters W.C., immediately over the numbering, both upon the post and trees.

19. When a section or quarter section corner happens at the point for establishing a meander corner, the posts and trees are to be marked with the appropriate numbers for such sections or quarter section corners.

MEASUREMENTS AND WHERE TO ESTABLISH MEANDER CORNERS

1. Your distances are all to be noted and returned in chains and links and to be taken with a half or two-pole chain of fifty parts, each measuring seven inches and ninety-two hundredths. The length of your chain should be adjusted by means of a screw attached to the handle of the hind end; every tenth link should compose a swivel, and all the rings and loops should be welded or brazed. The accuracy of your chain is to be preserved by comparing it with a standard adjusted at this office.

2. Your tally pins, eleven in number, must not exceed fourteen inches in length, must be of sufficient weight to drop plumb, and are to be made of iron or seasoned wood pointed with steel.

3. The length of every line you run is to be ascertained by horizontal measurement.

4. Whenever your line is obstructed by an object over which you cannot measure with the chain, you are to pass the same by offsets, traverse or trigonometry; observing that the distance thus obtained, extends no farther than is necessary to actually pass the interposing object.

5. Whenever your course is so obstructed by navigable streams, or other bodies of water which are to be meandered, you are to establish a meander corner at the intersection of your lines with both margins thereof, and of all islands therein.

TOWNSHIP LINES

1. North and south lines are termed range lines; east and west, township lines. The former are styled, in the field notes, the line between certain ranges; the latter, the line between certain townships. Each mile both of a range and township line, is particularized by the number of the sections between which it is run, thus: north between sections 31 and 36, west between sections 1 and 36.

2. Upon the base or township line forming the southern boundary of your district, township corners are established at intervals of six miles. From each of these corners you are to run range lines due north, six miles; establishing a quarter section corner at the end of the first forty, and a section corner at the end of

the first eighty chains, and observing the same order and intervals of establishing quarter section and section corners to the end of the sixth mile, where you will temporarily set a township corner post.

3. You will then commence at a township corner upon the first range line east of your district, and immediately east of the township corner posts temporarily set by you, and from thence run due west across your whole district, intersecting your range lines at or within three chains and fifty links, due north or south, of your said six mile posts. At the point of intersection, if within the above limits, you will establish a township corner. Upon this township or last mentioned line, quarter section and section corners are to be established at the same distances and intervals as directed for range lines; observing that the length of each and every township line which you are to establish, is in no case to exceed or fall short of the length of the corresponding township boundary upon the south, more than three chains and fifty links. If, however, in closing your first tier of township, and all others closing to or upon old work, you find it impossible to preserve the true course of your lines and close within the above limits, you are to resurvey and examine until you detect the real cause of discrepancy, which if not in your own work, you will report to this office, and for which you will provide in the field, in all instances where the same is practicable, by adding to, or deducting from the length of your first range line or lines. And where, in order to close a township to or upon old work, you are compelled to employ a variation greater or less than the true magnetic variation, both must be stated.

4. After closing your first tier of townships, you are to run up and close successive tiers, to the completion of your district, by the same method of survey as directed for the first tier.

5. You are to observe and note the true magnetic variation, at least once upon every mile or section line, and as much oftener as there is a change therein.

6. The bearing trees, standing upon the west side of range, and upon the north side of township lines, are to be entered first in your field notes.

7. After a township corner is established as before directed, you are to complete the notes of the corresponding range line, by inserting the said corner, with the true distance thereto, and adding or erasing the notes of any topography or other minutes, that may be included or excluded by thus adding to or deducting from the length of the range line as temporarily established.

8. With your field notes you must return a diagram, drawn upon a scale of one and a half inches to six miles, on which you are to represent each boundary you have run with the length and variation thereof, and with all the topography thereupon that can be properly expressed upon that scale.

SUBDIVISION

Length of North and South and East and West Lines, and Where to Establish Quarter Section Posts

1. Every north and south section line, except those terminating in the north boundary, are to be one mile in length. The east and west section lines, except those terminating in the west boundary, are to be within one hundred links of eighty chains in length; and the north and south boundaries of any section, except in the extreme western tier, are to be within one hundred links of equal length.

2. The length of the section lines closing to the north and west boundaries,

are to be governed by the length of the sixth or closing miles, both of the range and township lines, and must be as nearly of the same length, or of an average thereof, as is practicable.

3. Quarter section corners both upon north and south and upon east and west lines, are to be set equidistantly from the corresponding section corners; except upon those closing to the north and west boundaries, where the quarter section corners will be established precisely forty chains north or west of the respective section corners from which those lines start.

Method of Subdividing; Random, Corrected and True Line, and Diagram

1. The first mile, both of the south and east boundaries of each township you are to subdivide, is to be carefully traced and measured, before you enter upon the subdivision thereof. This will enable you to observe any change that may have taken place in the magnetic variation, as it existed at the running of the township lines, and will also enable you to compare your chaining with that upon the township lines.

2. Any discrepancy, arising either from a change in the magnetic variation or a difference in measurement, is to be stated as directed under the head of field notes.

3. After adjusting your compass to a variation which you have thus found will retrace the eastern boundary of the township, you will commence at the corner to sections 35 and 36, on the south boundary, and run a line due north, forty chains, to the quarter section corner which you are to establish between sections 35 and 36; continuing due north forty chains farther, you will establish the corner to sections 25, 26, 35 and 36.

4. From the section corner last named, run a random line, without blazing, due east for corner of sections 25 and 36, in east boundary. If you intersect exactly at the corner, you will blaze your random line back and establish it as the true line. But if your random line intersects the said range line, either north or south of the said corner, you will measure the distance of such intersection, from which you will calculate a course that will run a true line back to the corner from which your random started.

5. From the corner of sections 25, 26, 35, 36, run due north between sections 25 and 26, setting the quarter section post, as before at forty chains, and at eighty chains establishing the corner of sections, 23, 24, 25, 36. Then run a random line due east for the corner of sections 24 and 25 in east boundary; correcting back in the manner directed for running the line between sections 25 and 36.

6. In this manner proceed with the survey of each successive section in the first tier, until you arrive at the north boundary of the township, which you will reach in running up a random line between sections 1 and 2. If this line should not intersect at the post established for corner to sections 1, 2, 35 and 36 upon the township line, you will note the distance that you fall east or west of the same, from which distance you will calculate a course that will run a true line south to the corner from which your random started.

7. The first tier of sections being thus laid out and surveyed, you will return to the south boundary of the township, and from the corner of sections 34 and 35, commence and survey the second tier of sections, in the same manner that you pursued in the survey of the first; closing at the section corners on the first tier.

8. In like manner proceed with the survey of each successive tier of sections, until you arrive at the fifth or last tier. From each section corner which you establish upon this tier, you are to run random lines for the corresponding corners established upon the range line forming the western boundary of your township, and in returning, establish the true line as before directed.

9. All section lines are to be right lines, regardless of the number or nature of intervening obstacles; except in the event of their intersecting a lake or pond of such diameter, at the points of intersection, as forbids their continuance by means of a trigonometrical calculation, in which case, and in cases also where a river, lake, correction line, or reservation, form a portion of the boundary of a township, when the closing lines thereupon, will be *true lines*, the courses of which will have a strict reference to the variation and closing of the adjacent lines; the quarter section posts upon which are to be set forty chains from the section corner at which such true lines commenced.

10. In closing upon a correction line, you are to establish a section corner at the point of your intersection therewith, stating the true distance of such intersection from the nearest corner thereon.

11. Field notes of random lines are to embrace nothing but the variation, length and closing thereof.

12. Topography of every description, line trees and corners, are to be taken upon the corrected lines and included in the notes thereof, following which, is to be written the description of the land and timber.

13. With these instructions you are furnished a diagram, drawn upon a scale of one mile to an inch, upon which is represented the magnetic variation or variations and length of each township boundary of the district you are to subdivide, also the topography and corners upon the same, as returned by the township line surveyor. On this diagram you are to represent, as you progress with your survey, the crossing and courses of all streams of water and of the bottom land through which they meander; the intersection, situation and boundaries of all lakes, ponds, prairies, marshes, swamps, windfalls and all other objects, *mentioned in your field notes*, that can be shown upon said diagram. All the topography thus noted upon your diagrams must be joined or connected, so as to form a complete map of the townships of your district. These diagrams form an essential part of, and must be returned with your field notes.

14. Should you find a manifest error in the measurement of any of the township lines of your district, you are to correct the same, by resurveying and re-establishing such line or lines, from the point where the error was detected, to the north or west end thereof; noting your intersection with each one of the erroneous corners as you progress, which you are to demolish and deface with all evidences thereof. Of such remeasurement and corrections you are to take full and complete field notes, in a separate book, to be returned to the Surveyor General's Office, with the field notes of your subdivision. For such corrections, however, the Surveyor General is not authorized to make any compensation.

HOW AND WHAT TO MEANDER

1. In subdividing any one township, you are to meander as hereinafter directed, any lake or lakes, pond or ponds, lying entirely within the boundaries thereof, of the area of forty acres and upwards, and which cannot be drained and are not likely to fill up, or from any cause to become dry.

2. Whenever required by special instructions, to meander any stream or body of water, passing through or lying within your district, you are also to meander all islands situated therein, which are valuable for their soil or timber.
3. Standing with your face towards the mouth of a stream, the bank on your left hand, is termed the *left bank*, and that upon your right hand, the *right bank*. These terms are to be universally used to distinguish the two banks of a river, both in running lines and in meandering.
4. In meandering rivers, you are to commence at a meander corner in the township boundary, and take the course and distance of the bank upon which you commence, to a meander corner upon the same or another boundary of the same township, carefully noting your intersection with all intermediate meander corners. By the same method you are to meander the opposite bank of the same river.
5. In meandering lakes, ponds or bayous, you are to commence at a meander corner upon the township line and proceed as above directed for the banks of a navigable stream; except where a lake, pond or bayou lies entirely within the township boundaries, when you will commence at a meander corner established in subdividing, and from thence take the course and distance of the entire margin thereof.
6. To meander a pond, lying entirely within the boundaries of a section, you will run a random line thereto from the nearest section or quarter section corner. At the point where this random line intersects the margin of such pond, you will establish a witness point, by fixing a post in the ground and raising a mound or taking bearings, as at a meander corner; except that the post and the large face upon the bearing trees, will be marked with the letter W., only.
7. In meandering islands, you are to proceed as directed in sections, 5 and 6 of this chapter, except that where there are no meander corners established upon an island, you are to take the course and distance of your starting point from the nearest meander corner, instead of section or quarter section corner.
8. The meanders of each fractional section, or between any two meander posts, or of a pond or island interior of a section, must close within one chain and fifty links.
9. Your field notes of meanders in any one township, are to follow immediately after the notes of the subdivision thereof. They are to state and describe, particularly, the meander corner from which they commenced, each one with which they close, and are to exhibit the meanders of each fractional section separately; following and composing a part of which, will be given a description of the land, timber, depth of inundation to which the bottom is subject, and the banks, current and bottom of the stream or body of water you are meandering.
10. To furnish data that will enable this office to fix the exact location of all islands, whether to be meandered or not, you will take the bearing of the upper and lower points thereof, from both ends of one or more of your meander courses which form a base line of sufficient length for that purpose. You will repeat the same process in meandering the opposite bank or margin of the same stream, lake, pond or bayou. You will also note, in the proper place in the meanders of each fractional section, the exact position and extent of all falls and rapids; fords, portages and mill sites existing in, or connected with the river or other body of water which you are meandering.
11. No blazes or marks of any description are to be made upon your meander lines, though the utmost care must be taken to pass no object of topog-

raphy, or *change therein*, without giving a particular description thereof in its proper place in your meander notes.

FIELD NOTES

1. Your field notes are to form a full and perfect history of your operations in the field.

2. The field notes of the subdivision of every township, whether fractional or not, are to be written in a separate book.

3. No one page, either of the notes of township lines or subdivision, is to embrace the field notes of more than one section line.

4. Description of the timber, undergrowth, surface, soil and minerals, upon each section line, is to follow the notes thereof, and not to be mixed with them.

5. The language of your field notes must be so concise and clear, the hand in which they are written so plain and legible, that no doubt can exist as to your figures, letters, words or meaning.

6. No abbreviations are to be made in your field notes, except such as relate to course, to express which, the proper combinations of the capital letters N., S., E. and W. are to be used; except when a course is exactly to a cardinal point, in which case it is to be written full.

7. The description of each mile must be independent, and *not refer to a preceding description*.

8. The date of each day's work must follow immediately after the notes thereof.

9. The variation is invariably to occupy a separate line.

10. The first page of a field book of subdivision—a sample of which will be shown or furnished you by this office,—is to embrace only the township and range, state or territory, name of the deputy, with the dates at which the survey was commenced and finished. The head of each subsequent page will express the township, range and meridian.

11. The second page will contain the notes of your resurvey of the first mile, both of the south and east boundaries of your township; stating the corner at which you commence, the variation you assume, and each corner with which you close.

12. All rivers, creeks and other streams, lakes, ponds, prairies, swamps, marshes, groves, hills, bluffs, windfalls, roads and trails, are to be distinguished in your field notes by their original and received names, only; and where such names cannot be ascertained or do not exist, your imagination is not to supply them.

13. Immediately following your field notes, you will give a general description of the township.

Objects and Data to be Embraced by Your Field Notes

You are to enter in their proper places in the field notes of your survey, a particular description and the exact location of the following objects:

1. The length and variation or variations of every line you run.
2. The name and diameter of all bearing trees, with the course and distance of the same from their respective corners.

3. The name of the material of which you construct mounds, with the course and distance to the pits.
4. The name, diameter and exact distance to all those trees which your lines intersect.
5. At what distance you enter, and at what distance you leave every river, creek or other "bottom," prairie, swamp, marsh, grove or windfall, with the course of the same at both points of intersection.
6. The surface, whether level, rolling, broken or hilly.
7. The soil, whether first, second or third rate.
8. The several kinds of timber and undergrowth; naming the timber in the order of its prevalency.
9. All rivers, creeks and smaller streams of water, with their actual or right angled widths, course, banks, current and bed, at the points where your lines cross.
10. A description of all bottom lands—whether wet or dry; and if subject to inundation, state to what depth.
11. All springs of water, and whether fresh, saline or mineral, with the course and width of the stream flowing from them.
12. All lakes and ponds, describing their banks and the depth and quality of their water.
13. All coal banks, precipices, caves, sinkholes, quarries and ledges with the character and quality of the same.
14. All waterfalls and mill sites.
15. All towns and villages, houses, cabins, fields and sugar camps, factories, furnaces and other improvements.
16. All metalliferous minerals or ores, and all diggings therefor, with particular descriptions of both, that may come to your knowledge, whether intersected by your lines or not.
17. All roads and trails with the courses they bear.
18. All offsets or calculations by which you obtain the length of such parts of your lines as cannot be measured with the chain.
19. The precise course and distance of all witness corners from the true corners which they represent.

AFFIDAVIT

1. Following the field notes and general description, in each of your field books, an affidavit of the following form is to be written, and to be signed by yourself and each of your assistants in the field:

I, A. B., Deputy Surveyor, do solemnly swear (or affirm) that, in pursuance of a contract with C. D., Surveyor General of the United States for Wisconsin and Iowa, bearing date the _____ day of _____, 18____, and in strict conformity to the laws of the United States, and the instructions of the said Surveyor General, I have regularly surveyed _____

principal meridian (State or Territory) of_____ and I do further solemnly swear (or affirm) that the foregoing are the true and original field notes of the said survey, executed as aforesaid.

A. B., *Deputy Surveyor*

G. H.) *Chainmen*

J. K.)

L. M., *Marker*

N. O., *Flagman*

Subscribed by said A. B., Deputy Surveyor, and sworn before me at_____ this_____ day of_____, 18____, P. Q., *Justice of the Peace* (or other officer authorized to administer oaths) of_____ in the county of_____ State (or Territory) of_____

2. Your attention is 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:"

3. "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 shall suffer all the pains and penalties attached to that "offence; and the district attorney of the United States for the time being, in whose "district any such false, erroneous, or fraudulent surveys shall have been executed, "shall, upon the application of the proper Surveyor General, immediately insti- "tute 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."

The above section of the said law, applies to the foregoing affidavit, and will be in all particulars and in every instance, rigidly enforced.

FIELD NOTES OF TOWNSHIP LINES, SUBDIVISION AND MEANDERS, WITH A DIAGRAM

The following illustration of the manner of arranging and style of entering field notes; is to be regarded by you as a part of your instructions. A single page has been made to embrace the notes of more than one mile, in order to preserve a convenient size for this book; in this particular, therefore, you will be governed by section 3 under head of field notes. The diagram attached to forepart of this book was platted from the following field notes, and shows the importance of carefully noting all the topography your lines intersect; otherwise your diagram, upon which nothing is to appear that is not mentioned in your field notes, will be but a partial and disconnected representation of the topography of the township.

Surveyor General.

GENERAL INSTRUCTIONS
To His
DEPUTIES ;
By The
SURVEYOR GENERAL OF THE UNITED STATES,
for the
STATES OF OHIO, INDIANA AND MICHIGAN.

DETROIT:
PRINTED BY W. W. HART, BOOK & JOB PRINTER.

1850.

OFFICE OF THE SURVEYOR GENERAL OF
OHIO, INDIANA AND MICHIGAN,
Detroit, 18

TO

Deputy Surveyor:

SIR,—You are to survey in person, or by the assistance of some duly authorized Deputy Surveyor, employed by you under the sanction of this Office, and acting under your immediate supervision and direction, while you are yourself with him, so as to inspect his work, the District described in your contract dated 18 conformably to the following printed instructions, so far as they are applicable to the character of the work which you have contracted to perform, excepting so much thereof as is modified or countermanded by manuscript special instructions, hereinafter written.

SYSTEM OF SURVEY

1. The public lands of the United States are surveyed in a uniform mode, established by law, by lines run by the cardinal points of the compass; the north and south lines coinciding with the true meridian, and the east and west lines intersecting them at right angles, giving to the tracts thus surveyed the rectangular form.

2. The public lands are laid off and surveyed, primarily, into tracts of six miles square, called *Townships*, containing, each 23,040 acres. The townships are subdivided into thirty-six tracts, called *Sections*, each of which is one mile square, and contains 640 acres. Any number, or series, of contiguous townships situated north or south of each other, constitute a *Range*.

3. To obtain and preserve a convenient and uniform mode of numbering the ranges and townships, it is usual, in commencing the survey of an insulated body of public lands, to run, or assume, two *Standard Lines*, as the basis of the surveys to be made therein. One of these standard lines is run due north and south, and is called the *Principal Meridian*, to which the ranges are parallel, and from which they are numbered eastward and westward. The other standard line is run due

east and west, and is called the *Base Line*, and from which the townships are numbered northward and southward.

4. To distinguish from each other, the systems or series of surveys thus formed, the several Principal Meridians are designated by progressive numbers. Thus, the Meridian running north from the mouth of the Great Miami river, is called the *First* Principal Meridian; the Meridian running north through the centre of the State of Indiana, is called the *Second* Principal Meridian; that running north from the mouth of the Ohio river through the State of Illinois, is called the *Third* Principal Meridian; that running north from the mouth of the Illinois river, through the States of Illinois and Wisconsin, is called the *Fourth* Principal Meridian; and that running North from the mouth of the Arkansas river, thro' the States of Missouri and Iowa, is called the *Fifth* Principal Meridian.

5. The surveys in Ohio and Indiana were begun before the present system of surveying the public lands was fully adopted. The only regular base line in Ohio is run due east from the point in the first principal meridian, about one hundred and thirty-three miles north of the beginning of that meridian at the mouth of the Great Miami river. The base line for the surveys in Indiana, crosses the second principal meridian about thirty miles north of the commencement of that meridian, on the Ohio river, and extends west to the Mississippi river forming, also, a base for the surveys in the State of Illinois. The base line for the surveys in Wisconsin, is the south boundary of that State, established in latitude 42 30 North.

6. The State of Michigan has a base line and principal meridian of its own, separate from those of the adjoining States. The base line begins at a point on Lake St. Clair, 173 links south of the northeast corner of private claim No. 222, and extends thence west to Lake Michigan. The principal meridian was run due north from the Maumee river, at Fort Defiance, opposite the mouth of the Auglaize river, in the State of Ohio, but is not adopted as a principal meridian for any other surveys than those of Michigan.

7. Correction lines correct the error that would otherwise arise from the convergency of meridians, and arrest that proceeding from the inaccuracies of measurement. They are run due east and west at stated distances, generally at the end of every tenth township, and each forms a base for the townships north of it.

8. Each range of townships should be made as much over six miles in width, on each base and correction line, as it will fall short of the same width where it closes on to the next correction line north, the excess or deficiency of width being always thrown into the last half mile, on all the lines closing out to the west boundary of each township.

9. This mode of executing the public surveys, conduces more, perhaps than any other which could be devised, to the simplicity, regularity, and symmetry of the work; and to the ease and certainty with which any tract may be identified.

10. The public lands are surveyed under the direction of the Surveyor General, by Deputies appointed by himself. He selects for his deputies none other than skilful and experienced practical surveyors, men of good moral character, in whose integrity and fidelity the fullest confidence can be reposed. Their duties are prescribed in the following code of General Instructions, a copy of which is furnished to every deputy, for his government.

11. Each deputy surveyor is required, before he enters upon the duties of

his appointment, to take and subscribe an oath or affirmation for the faithful performance thereof; which oath or affirmation is to be filed in the office of the Surveyor General. The following form of this oath or affirmation, or the substance thereof) will be used:

"I, A----- B----- do solemnly swear (or affirm) that I will well and faithfully perform the duties of a deputy surveyor of the United States Lands, to the best of my skill and ability, and according to the Laws of the United States, and the Instructions of the Surveyor General, as I shall answer to God at the Great Day.

A----- B-----

Justice of Peace

Sworn and subscribed before me, at-----county of-----state of
-----this----day of-----18-----

J----- K-----

12. Each deputy surveyor appoints his own chain carriers, markers, and flag bearers, who must severally take and subscribe an oath, or affirmation, for the faithful performance of the trust reposed in them; which oath, or affirmation, may be administered by the deputy surveyor himself, or by a Justice of the Peace, and must be written and subscribed to on some of the pages, immediately after the title page, of the first field book that may be used in describing the surveys which they may assist in making. The following is the oath to be taken by the chainmen:

"I, C----- D----- do solemnly swear (or affirm) that I will well and faithfully perform the duties of chain carrier, in all surveys of United States Lands in which I shall be employed as such; and that I will level the chain, in measuring over uneven ground, and plumb the tally-pins, whether sticking or dropping the same; and that I will report the true distance to all notable objects, and the true length of all lines that I may assist in measuring, and mark correctly the letters and numbers at all corners that I may be required to mark, to the best of my skill and ability

C----- D-----

Sworn and subscribed before me, this-----day of-----18

A----- B-----

Deputy Surveyor.

13. The oaths of the markers and flag-bearers may be varied to apply to their duties respectively.

OF CONTRACTS

1. Before entering upon the execution of any surveys which may be allotted to a deputy surveyor, he enters into a written contract with the Surveyor General, in which the surveys to be performed are described, and the period for their completion, and the compensation per mile, fixed; and wherein the deputy binds himself to a faithful performance of the work, according to the terms of the contract, and pursuant to the laws of the United States, and the instructions of the Surveyor General. To the contract is annexed a bond, executed by the deputy with approved security, conditioned for the faithful performance of the work, in the penalty of double the estimated amount or value of the contract. The place of residence of the deputy, and of each of his sureties, must be given in the body of the bond, which must be signed by them in presence of at least two subscribing witnesses,

whose places of residence must be given opposite their respective signatures. At the end of the contract, there is also the oath before mentioned, which must be taken and subscribed by the deputy, before some person authorized to administer oaths, previous to commencing his work. Three copies of each contract and bond are required to be executed; one for the Deputy, one for the Surveyor General's office, and the other to be sent; by the Surveyor General, to the Commissioner of the General Land Office.

2. The surveys must be executed, in all cases, by the deputy contracting for the same, in his own person, or under his immediate personal superintendence and direction, excepting random lines, which may be run by an assistant surveyor, as hereinafter provided. All sub-contracts are illegal.

3. In case of failure to comply with the terms of a contract, unless such failure arise from causes satisfactorily proven to be beyond the control of the contractor, immediate measures are to be taken to recover the penalty of the bond, agreeably to law. And no deputy surveyor who shall improperly fail to fulfil his engagements, will afterwards be employed in the public surveys; and of every such failure the Surveyor General is required to give immediate notice to the Commissioner of the General Land Office.

4. And where any portion of a survey is found or suspected to be erroneous, payment therefor will be suspended until the error is corrected, or the cause of suspicion done away to the full satisfaction of the Surveyor General.

OF SURVEYING INSTRUMENTS

1. You will provide yourself with *Burt's Improved Solar Compass*, or some other equally good instrument, by which, when the sun shines, any survey may be accurately and expeditiously made without the use of the magnetic needle, which compass, unless it contains within itself the means of correctly adjusting all its parts, must be compared with, and adjusted by, the standard compass in this office.

2. You will likewise procure a *Surveying Chain*, two poles, of thirty-three feet, in length, and containing fifty links; which is to be compared with and adjusted by the *Standard Chain* in the Surveyor General's Office. It should be made of good iron wire, of such size as to prevent the chain from stretching by use, and yet light enough to be readily straightened in measuring. The handles should be made of iron or brass, at least a fourth of an inch in diameter.

3. You must be provided likewise with the *measure* of the standard chain, which may be made similar to your surveying chain, of smaller wire. And by this your surveying chain must be compared and adjusted, at least every other day, or oftener.

4. You will use eleven tally pins, made of steel, not more than fourteen inches in length, large enough near the point to make them drop perpendicularly, and having a ring at the top in which is fixed a piece of red cloth, or something else of conspicuous color, that they may be more readily seen when stuck in the ground. They should always be counted, by both of the chainmen, at the end of every tally, to see that none have been lost.

5. Good marking tools, made especially for that purpose, must be provided and used for marking, neatly and distinctly, all the letters and figures required to be made at corners.

6. You will likewise provide yourself with a good telescope, from 16 to 18

inches in length, with parallel lines correctly set in its principal focus, forming an angle in the field view of not less than 50 minutes, or 5-6 of a degree, to be attached, in a suitable manner, to the sights of your compass, when necessary. Also, two common targets, and a good tape measure, at least two poles long, correctly divided into links on one side, and into feet, inches and tenths on the other. The telescope will often be useful in identifying lines and corners across bays and lakes, and in connection with the tape line and targets, as hereinafter mentioned may, in some cases, be advantageously used in measuring inaccessible distances, and in meandering the shores of lakes and rivers which cannot be so easily or correctly meandered in any other way.

7. Your compass and chain must be frequently examined in the field, in order to discover and rectify any error or irregularity which may arise in the use of them.

8. The aberrations of the needle, are a fruitful source of error in surveying. These may arise from a variety of causes. "Local attraction," owing to the presence of iron mineral, is generally assigned by surveyors as the principal cause of the disturbance of the needle. But it is believed that in many instances, the true source of the errors complained of, is to be found in the carelessness or inattention of the surveyor, in the use and management of his compass, or the erroneous measurement of his lines. All these must be constantly and vigilantly guarded against, by every means in your power.

OF THE VARIATION OF THE COMPASS

There is a certain irregular curve line which passes around the earth towards the north and south poles, called the "*line of no variation.*" On every part of this line the magnetic needle coincides with the true meridian. But on each side of it, the needle declines from the true meridian towards it. This declination is usually called the "*variation of the compass;*" and increases gradually, but irregularly, in receding either eastward or westward from the line of no variation, until it reaches its maximum, beyond which it gradually decreases again to the line of no variation. This line is not stationary; but moves to the eastward for a series of years, and then to the westward through another series of years, but without any regular period, or any known proportion between the *time* of this movement and the *amount* thereof. Hence the variation of the compass, at any place, is continually changing, to an extent corresponding to the change of place in the line of no variation.

The line of no variation at this time, passes through Lake Huron, and across the eastern end of the Northern Peninsula of Michigan, coinciding very nearly, in some places, with the true meridian; in other places, varying very much from it. East of this irregular line, the needle points to the west of the true meridian, and west of it, to the east of that meridian. Its variation increases in going westward, until, at the mouth of the Montreal River, on the northwestern boundary of the State, a distance of about three hundred miles, it amounts to more than seven degrees. It changes, however, almost continually during the day, and, on some days as much as half a degree in the course of seven or eight hours. This change is called the *diurnal variation of the needle*, and is much greater in the summer than in the winter months. The north end of the needle reaches its greatest daily eastern declination, between one and two hours after sunrise, and its greatest western declination between one and two hours after noon, and points out the magnetic meri-

dian about sunset. Its daily movements may be better understood by an examination of the following table:

OBSERVATIONS MADE BY WM. A. BURT, D. S., IN LATITUDE 42 DEGREES 42 MINUTES NORTH, NEAR DETROIT, IN JULY, 1839.

1839	Thermometer			Weather		Wind	Magnetic Variations		
July	5½ A.M.	1 P.M.	6½ P.M.	A.M.	P.M.		5½ A.M.	1 P.M.	6½ P.M.
13	60	79	62	clear	light showers	W. S. W.	1° 42'	1° 28'	1° 42'
14	59	72	67	cloudy	flying clouds	N. W.	1 42'	1 26	1 33
15	56	73	64	cloudy	light showers	N. W.	1 32	1 28	1 28
16	55	71	66	cloudy	some cloudy	West	1 38	1 23	1 30
17	52	80	69	clear	clear	W. N. W.	1 30	1 28	1 30
18	55	35½	88	clear	clear	West	1 41	1 28	1 35
19	56	89	82	clear	flying clouds	S. W.	1 40	1 28	1 35
20	83	80	74	clear	cloudy	S. S. W.	1 40	1 25	1 35
21	70	82	77	clear	cloudy	South	1 42	1 28	1 30
22	72	86	75	cloudy	some cloudy	West	1 40	1 28	1 35
23	65	88	77	clear	clear	East	1 41	1 23	1 36
24	72	86	77	rain	clear	W. S. W.	1 43	1 25	1 35
25	89	88	80	clear	clear	N. W.	1 41	1 15	1 32
26	86	88	79	clear	cloudy	West	1 40	1 23	1 35
27	89	80	76	clear	showers	West	1 41	1 30	1 37
28	64	86	80	clear	clear	West	1 42	1 24	1 30
29	66	87	78	cloudy	clear	West	1 41	1 21	1 30
30	69	90	79	clear	showers	West	1 41	1 25	1 33

OF RUNNING AND MARKING LINES.

1. All surveys of every description, where the magnetic variation is not uniform, must be made with Burt's improved solar compass, or some other equally good instrument, operating independently of the needle. All range, township, and section lines, must be run and marked on the true meridian, or at right angles to it, as nearly as practicable, and the courses of these, and of all other lines, must be entered in your field notes, with reference to that meridian. In all cases, where a line or part of a line is run by the needle, the fact that it is so run must be distinctly stated in your notes.

2. All lines which you actually establish, are to be marked as follows: Those trees which your line cuts must have two notches made on each side of them, where the line intersects and leaves them, without any other mark. These are called "sight trees," "line trees," or "station trees." A sufficient number of other trees, standing nearest on either side of your line, to render the same conspicuous, are to be blazed on two sides, diagonally or quartering towards the line; the blazes to approach nearer each other the farther the line passes from the blazed trees, and to be as nearly opposite each other as possible, coinciding with the line, where the trees stand very near it. Great care must be taken to have your lines well marked, so that they may be easily seen and followed. Random lines are not to be blazed, but may have the bushes lopped, and stakes set at every ten chains, and, occasionally, a tree blazed on one side, to enable the surveyor to follow and correct them.

3. Whenever, in running lines, your course may be obstructed by insuperable obstacles, as swamps, marshes, lakes, rivers, precipices, or other objects over which you cannot pass, you will take the necessary offsets, or work by traverse, or by trigonometry, in order to pass the obstacle, and to ascertain the exact distance on so much of the line as, by reason of such obstructions, may not be actually run. By

whatever method you pass such inaccessible parts of the lines, the utmost accuracy is necessary, to obtain the true measure thereof.

4. No lines, of whatever description, embraced in your contract, excepting the random lines that may be run by your assistant (should you employ one under the provisions for that purpose,) hereinafter contained, are permitted, in any case, to be run or surveyed by any person but yourself, or some regularly accredited Deputy Surveyor, duly authorized by the Surveyor General. Nor are letters, numbers, or marks of any kind, to be made by any other person than yourself, or such Deputy, except it be in your presence, and under your immediate and personal direction; in which case you are to inspect such letters, numbers, or marks, to see that they are neatly and correctly made.

OF EXTERIOR TOWNSHIP LINES

1. The Act of Congress of the 18th of May, 1796, requires that the public lands "shall be divided by north and south lines, run by the true meridian, and by others crossing them at right angles, so as to form townships of six miles square." In laying out and surveying the exterior boundaries of townships, in conformity to this provision of the Act, the greatest possible accuracy must be observed, both in the course and measurement of the lines.

2. Celestial observations to find the variation of the needle, must be made whenever there may be reason to suppose there is any material change therein, and at least as often as once in each mile, whether there be any change or not, which observations must be entered in your field notes.

3. The following is the order and method to be pursued in running exterior township lines: a base line, or a township line assumed as a base, is run due east and west, across the southern boundary of the tract of country to be surveyed. On this line the quarter-section, section, and township corners are established at the full measure. The western portion of the south boundary of section 31, in each township should, however, be made as much over 40 chains in length, as the western portion of section 6, will fall short of 40 chains in length on the next correction line north, so that each range shall average six miles in width" From each of the township corners on this line, range lines are run due north, the section and quarter-section corners established thereon, and at the end of the sixth mile on each of those lines, temporary township corner posts are set. But, at the end of the sixth mile on the most easterly line, a township corner is established. From this corner, a township line is run due west across the whole district, intersecting the range lines previously run; which, if the work be well done, will be at or near the temporary township corner posts placed at the end of them. Exactly at the points of intersection, whether at the temporary posts or north or south of them, the township corners are to be established. The distances from the points of intersection, to the temporary posts, must be accurately measured and noted, showing whether they are north or south of those posts. On this west line, the intermediate section and quartersection corners will be established, as the survey of the line advances. The same process will be repeated, in running up due north, from the township corners on this last west line, another series or tier of range lines to temporary six miles posts; establishing as before the most easterly one, and from thence extending another due west township line across the whole district, in the manner before directed. The same method is pursued in each successive tier of townships, until the survey

of the township lines is completed. On account of the convergency of meridians, however, correction lines should be established at the end of every sixty miles north, on which lines, corners should be established on the same principle as on the base line.

5. Variations from this order and mode of running township lines, will sometimes be necessary, to accommodate them to the situation and boundaries of the tract of country to be surveyed, or to connect with prior surveys. Such cases, as they occur, will be provided for in Special Instructions.

6. Whatever excess or deficiency may occur in the measurement of the exterior township lines, is to be carried to the north and west end of those lines. But by a vigilant and faithful attention to duty on the part of the skilful and experienced surveyor, those excesses or deficiencies, except to a trifling extent, will be of rare occurrence. As the interior section lines must necessarily conform, both in their course and measure, to the township lines; any error committed in the latter will unavoidably be carried out into the former, and may mar the beauty and order of the entire sub-divisions of the township.

7. It will be seen, then, how very important it is, that the townships be, as nearly as possible, six miles square; that the exterior boundaries be run exactly by the true meridian; and that the measures thereof be truly and accurately made.

8. North and south lines are termed range lines, and east and west lines township lines. The bearing trees standing on the west side of range, and on the north side of township lines, are to be entered first in your field notes.

9. With the Field Notes of exterior township lines, the surveyor must return a map or diagram of the lines run, drawn on a scale of three miles to an inch; on which will be represented the length of each line, in miles, chains and links; the variation of the compass by which it is run; and also the water courses, lakes, prairies, swamps, roads, and such other objects as may be shown on a map.

OF MEASURING LINES

1. In all measurements, the level or horizontal length is to be taken, and not that which arises from measuring along the surface of the ground, where it happens to be uneven, rolling, or hilly. For this purpose, in ascending or descending hills, the chainmen must let down one end of the chain to the ground, and raise the other end to a level therewith, as nearly as may be; from the end of which a tally pin should be plumbed and let fall, to ascertain the spot for setting it. And where the surface of the ground is very steep, it may be found necessary to shorten the chain to one-half its length, or even less, so as to obtain the true horizontal measure.

2. Though your lines be measured by a chain of two poles or perches in length, you are notwithstanding, to keep your reckoning in chains of four perches of one hundred links; and all your entries in your Field Book, and all your calculations, plans, etc., must be made accordingly in four-pole chains, and decimal parts (or hundredths) thereof.

3. In measuring lines, every five chains are called a "tally," because at that distance the last of the ten tally pins with which the forward chainman set out, has been set. He then cries "tally," which cry is repeated by the other chainman, and each registers the distance, by slipping a thimble, on a belt worn for that purpose, or by some other convenient method. The back chainman then comes up,

and having counted, in the presence of his fellow, the tally pins which he has taken up, so that both may be assured that none of the pins have been lost, takes the forward end of the chain, and proceeds to set them. Thus the chainmen alternately change places, each setting the pins that he has taken up, so that one is forward in all the odd and the other in all the even tallies, which contributes to the accuracy of the measurement, facilitates the recollection of the distances to notable objects on the line, and renders a mis-tally almost impossible.

4. You are to pay the strictest attention to the frequent examination and correction of your surveying chain by the standard measure taken with you. The greatest attention must likewise be observed in obtaining, and entering in your Field Book, the exact measure on the lines, to every object which is noted therein. These measurements are very frequently found to be important, after many years, both in tracing the lines and in identifying the corners.

5. The principal source of error in surveying is in the measurement by the chain. And as the interest of the public service, the rights of public purchasers of the public lands, as well as your own standing as a surveyor, are at stake, it is enjoined on you, in selecting your chaincarriers, to have strict regard to their character and fitness for the trust: and to employ those only, in whose moral integrity, capacity, and faithfulness, you can repose the most implicit confidence. You are required to attend vigilantly to the manner in which your chainmen perform their duty, and to cause it be faithfully and correctly executed; to see, especially, that they carry the chain horizontally on hilly ground; and that all the lines which you may run, be not only correctly measured by them, but the length thereof truly reported to you, for *immediate entry in the Field Book*.

6. In measuring across streams of water, you are to give the width directly across the channels thereof. The distances to the posts which you shall establish on the banks of rivers, lakes, or bayous which are to be meandered, are to be taken with great accuracy.

OF ESTABLISHING AND MARKING CORNERS

1. The corners of townships, sections quarter sections, and fractions are to be established and marked in the following manner:

2. On the exterior township lines, corner posts must be erected at the distance of every mile and half mile from the township corner. The mile posts are for the corners of sections, and the half mile posts for the corners of quarter sections. These posts are always to be made of the most durable wood that can be had, and should be very securely set or driven into the ground and the sides of the posts are to be neatly squared off at the top—the angles of the square to be set in the direction of the cardinal points of the compass. All mileposts, on the township lines, must have as many notches cut on them, on one of the angles thereof, as they are miles distant from the township corner where the line commenced. But the township corner posts shall be notched with six notches on each of the four angles of the squared part. The mile posts on the section lines shall be notched, on the south and east angles of the square, respectively, with as many notches as those posts are miles distant from the south and east boundaries of the township. Whenever a tree may be so situated as to supply the place of a corner post, it is to be blazed on the four sides facing the sections to which it is the corner, and

will be notched as the corner posts are, and at least one bearing tree must be taken, in addition thereto, and marked in the usual manner.

3. At all posts thus established for meander section or township corners, there shall be cut with a marking iron, on a bearing tree or some other tree, within each section, and as near as may be to the corner thereof, the number of such section; and over it the letter T, with the number of the township, and annexed thereto, the letter N or S as the township may be north or south of the base line; and above this, the letter R, with the number of the range, and annexed thereto, the letter E or W, as the range may lay east or west of the principal meridian; thus:

R 15 W

T 53 N

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4. The letters and numbers thus marked must be neatly and very distinctly cut into the wood of such tree with a good marking tool, the bark thereof having been first hewn or peeled off from a spot on the side facing the corner, large enough for that purpose, unless the tree be a beach, in which case its bark, if smooth, may remain on.

5. But at the quarter-section corners there are no numbers to be made; the post is to be flattened on two opposite sides, and thus marked: "1-4 S," to indicate that it is a quarter section post; and the nearest adjoining tree on each side of the sectional line, must be similarly marked.

6. The place of all corner posts, of whatever description, which may be established, are to be perpetuated in the following manner, viz.: from each post the courses shall be taken, and the distances measured, to two or more adjacent trees, in opposite directions as nearly as may be; which trees are called "Bearing trees," and shall be blazed near the ground, with a large blaze facing towards the post, and have one notch neatly and plainly made with an ax, square across, and a little below the middle of the blaze. On each bearing tree the letters BT to denote the fact of its being a bearing tree, or, in case of re-surveys, the letters N B T to denote the fact of its being a new bearing tree, must be distinctly cut into the wood, in the blaze, a little above the notch. At all township corners, and at all section corners on range, or township lines, four bearing trees are to be marked in this manner, one within each of the adjoining sections.

7. Wherever the section or township lines intersect lakes, streams of water, or islands, which are to be meandered, posts are likewise to be established on the margin or banks thereof, at the points where the lines intersect or leave them. These posts are to be flattened on the two sides, coinciding with the lines on which they are set; and on each of these sides is to be marked, the number of the section which it faces.

8. Wherever bearing trees cannot be had, quadrangular mounds of earth or stone are to be raised around the corner posts, the four angles of which must coincide with the cardinal points of the compass.

9. Mounds at township corners are to have a base of five feet, and a top of two feet in diameter, and a height of three feet. At section, quarter section, and meander corners, they are to have a base of four feet, a top of one and a half feet, and a height of two and a half feet.

10. When mounds are made of earth, the place from which it is taken is

called the "*Pit*," the centre of which must in all cases, where practicable, be made at a uniform distance, and in a uniform direction from the centre of the mound, viz.: At township corners there are to be two pits, one ten links due north, and the other ten links due south; at section corners, one pit, eight links due south; at quarter section corners, one pit eight links due east; and at meander corners, one pit directly on the line, eight links further from the water than the mound. Whenever the pits are not made as here directed, the course and distance to each must be given in your field book. The mounds are to be neatly covered with sod, placed grass side up, so that the grass may be kept alive, in all cases where sod can be found.

11. The posts established in mounds must be squared, and show above the top of the mound about ten or twelve inches, and, on each side of the square, must be marked the number of the section towards which it faces, and above this, on two opposite sides, at all section corners on township and range lines, there must be marked the appropriate letters and numbers to indicate the township and range.

12. When a section or quarter section happens at a point for establishing a meander corner, the posts and trees are to be marked with the appropriate letters and numbers for such section or quarter section corner.

13. Whenever the proper place for establishing a corner is inaccessible, unless it be in a river or a body of water which is to be meandered, you are to establish a witness corner, as near thereto as practicable, and either due north, south, east, or west of it. Such corner is to be constructed in all respects like the one for which it stands as a witness, with the addition of the letters W C and the number of links from the true corner, immediately over the usual marks.

OF SUBDIVIDING TOWNSHIPS

1. Each Township is laid off and surveyed into thirty-six sections of one mile square, by lines running due north and south, crossed by others running due east and west. The sections are known and designated by progressive numbers, beginning at the north-east corner of the township, and numbering westward and eastward, alternately, as shown in the following diagram:

2. Each side of a section must be made one mile	6	5	4	3	2	1
in measure by the chain. Quarter section corners are	7	8	9	10	11	12
to be established at every half mile, except in closing a	18	17	16	15	14	13
section, when the closing line varies from eighty chains	19	20	21	22	23	24
or one mile; in which case you are to place the quarter	30	29	28	27	26	25
section corner equidistant, or at the average distance	31	32	33	34	35	36

from the corners of the section. But in running out the last section lines, to the north and west boundaries of the township, the quarter section corners are to be established at the distance of forty chains from the last section corner, and the excess or deficiency of measure (if any) carried out into the last half mile, and cast upon the north and west sides of the township, as required by law.

3. You will begin on the east boundary of the township, at the corner of Sections 13 and 24, and run and measure a random line west, or parallel to the South boundary, to the West boundary of the township, and note your intersection, whether at, or north, or south of the corner of sections 18 and 19, and if not at that corner, how far from it. On this random line you will set temporary section and

quarter section posts; and also set stakes, or make some other marks, at all the even tallies, or outs, between those posts. From the corner of sections 18 and 19, on the west boundary, you will then return on the true line, straight towards the corner where you commenced the random, blazing and marking that line, and verifying its course by means of off-sets from the posts and stakes set, or other marks made, on the random line, and mark and establish the proper section and quarter section corners thereon.

4. From the corner of sections 13, 14, 23 and 24, run and measure a random line south, or parallel to the east boundary, to the south boundary of the township, and note the intersections thereof, whether at, east or west of the corner of sections 35 and 36, and if not at that corner, how far from it. On this random line, as it is run, you will set temporary section and quarter section posts, and make other marks for the even tallies, or outs, as directed on the random line through the middle of the township. From the corner of sections 35 and 36, on the south boundary, you will return on the true or direct line, blazing and marking that line, and establishing the quarter section and section corners thereon, at their average distances, or proportionate parts of the whole distance, to the corner of sections 13, 14, 23 and 24 on the middle line.

You will also run and measure a random line east from the corner of sections 25, 26, 35 and 36, to the east boundary of the township, and note its intersection, whether at, or north, or south of the section corner, and how far from it, and correct, mark and establish this line back to the corner from which you set out, in the manner before directed for the correction of random lines, establishing the quarter section corner thereon equidistant between the section corners. Proceed in like manner with each east and west section line, as you progress north, until you close at the corner of sections 13, 14, 23 and 24.

5. From this corner, run and measure a random line north, or parallel to the east boundary, to the north boundary of the township, and note its intersection, whether at, or east, or west of the corner of sections 35 and 36 in the township north, excepting where you close on a correction line, in which case you will note the distance east or west to the nearest section or quarter section corner, and establish a corner thereon, for sections 1 and 2, one mile west of the north-east corner of the township, according to the measure of the correction line. In running this random line, posts must be set for temporary section and quarter section corners, and stakes or some other marks must be left to indicate the places of all the even tallies, or outs, as before directed in similar cases. From the corner of sections 1 and 2, return on the true line, in the direction of the place of beginning the random, to the corner of sections 1, 2, 11 and 12, blazing and marking the same as before directed for true lines, and establishing the quarter section corner so as to leave the excess or deficiency of the whole measure in the half mile next to the north boundary of the township. From the corner of sections 1, 2, 11 and 12, run and measure a random line east for its corresponding corner on the east boundary. Note its intersection, and correct back, and establish the quarter section corner on the true line at equal distances between the section corners, blazing and marking the corrected line as before directed. In like manner proceed to run, measure, mark and establish all the subdivision lines on this part of the eastern tier of sections, until you close at the corner of sections 13, 14, 23 and 24.

6. Proceed in the same manner with each successive tier of sections, to the last, changing the order only so far as necessary, when interrupted by lakes or

other interferences. From the section corners on the east side of the last tier, run random lines west for their corresponding corners on the west boundary of the township, note your intersections, correct back from those corners, as directed in other cases, before mentioned, and establish the quarter section corners on the corrected lines at the distance of forty chains from the section corners east of them, so that the excess or deficiency of measure may be thrown into the half mile next to the west boundary, as required by law.

7. Bearing trees are to be taken, and the proper marks and numbers made, for and within the sections between which the lines are run out to the north and west boundaries of the township, in all cases where such bearing trees have not been taken, and such marks made, for the section corners on those boundaries at which those lines close.

8. The plan here laid down is intended to illustrate the principles on which the townships must be subdivided, so that section lines may all run parallel either to the east or south boundaries thereof, and that each section may contain 640 acres, as nearly as practicable. To effect these objects, it is indispensably necessary that for *every section line*, unless it be irregular or fractional, there should first be run a random or trial line, which must afterward be corrected, where necessary, and run, marked, and established, in its proper place, as the corrected or true line. This must always be done according to some regular order, which, when once begun, must, as far as practicable, be continued throughout the township.

As a general rule, the order above prescribed is believed to be the best and most convenient that can be adopted; but if you find any other more convenient, and by which the surveys can be made with equal or greater accuracy, you are at liberty to adopt it, provided you give a clear and distinct statement, at the end of your field notes in each book, showing what that order is. A departure from the *principles* above laid down, will not, however, *under any circumstances, be permitted.*

9. To enable you to have all your random lines correctly run by the sun, as far as practicable, independently of the use of the magnetic needle, you are allowed to employ, by the month, an assistant surveyor, who is well skilled in the use of the solar compass, to run and measure such lines, and take the field notes thereof, under your direction, in accordance with the above instructions. The field notes of such assistant must, in all cases, be taken in separate books, and be sworn to and subscribed by him, before some person authorized to administer oaths, and returned by you to this office.

10. The true lengths of all north and south, as well as of all east and west section lines, must be given *according to your measure*, whether they agree with the lengths of the same lines as ascertained by the compass and the measure of the township lines, or not.

11. You are referred, here, to the accompanying specimen of the Field Notes of a Township, in which the whole process of the subdivision is illustrated at large by example.

12. The foregoing mode of subdividing townships into sections, it will be perceived, is intended for, and can be fully applied only, to *entire* townships. In the subdivision of *fractional* townships, however, the order of the survey will be varied no farther than may be necessary to adapt it to the situation and boundaries of such fractional township. As a general rule, from which there will be few exceptions, it will be found best to make entire sections on the township, *like bound-*

ing a fractional township, and making the work to close on the *irregular* boundaries thereof.

13. An act of Congress of the 24th of May, 1824, authorizes a departure from the ordinary mode of surveying the public land on any river, lake, or bayou, whenever, in the opinion of the President of the United States, the public interest would be promoted thereby; so as to survey such lands in tracts of two acres in width, fronting on such river, lake, or bayou, and running back to the depth of forty acres. But as no general rules could be framed to govern all such surveys, this branch of the service is left to be provided for in *Special* Instructions, as cases thereof may occur.

14. Should you find a manifest error in the measurement of any township line within, or bounding your district, (which will be readily detected by the closing lines thereon,) you are to correct such error, by re-measuring such township line, from where the error is found, to the north or west end thereof. The section and quarter section corners thereon are to be removed to the proper distances, and there established; and the marks and numbers at the cancelled corners are to be cut out or effaced, and the distances at which you pass those corners must be noted by you. Of such re-measurement and corrections you are to take full and complete Field Notes, in a separate book, to be returned to the Surveyor General's Office, with the Field Notes of your subdivisions. For such corrections, however, the Surveyor General is not authorized to make any compensation, unless the amount thereof can be obtained from the Deputy by whom the erroneous survey was made, or shall be allowed by the Commissioner of the General Land Office.

ON MEANDERING RIVERS, &C.

1. You will accurately meander, by course and distance, all navigable Rivers which may bound or pass through your district; all navigable bayous flowing from or into such rivers; all lakes and deep ponds, of the area of forty acres and upwards; and all islands suitable for cultivation. At all those points where the township or sections lines intersect the banks of such rivers, bayous, lakes or islands, posts are to be established, as before directed. In meandering, you are to intersect all these posts, closing at each post the course and distance on which it is intersected. You will likewise notice all streams of water falling into the river, lake, or bayou, which you are surveying, with their width at their mouth; all springs, noting the size thereof, and whether pure or mineral water; the head and mouth of all bayous, all rapids, falls, or cascades; all islands and bars, with intersections to their upper and lower points, to establish their exact situation. This must be done with the greatest accuracy, in relation to all islands which you shall meander, so as to determine and show their precise location and bearing on the maps of the surveys, and particular care must be taken to pass no object in any degree worthy of note, nor any change in the topography along the waters that you meander, without giving a particular description thereof in its proper place in your meander notes.

2. Should any lake or pond which you shall meander, be situated within any one section, so as not to be intersected by any of the lines thereof, you will run and measure a line very exactly, but without marking, from one of the corners, or one of the half mile posts, or other given point on one of the lines of said section, to the point on the margin of the lake at which you shall commence the meanders

thereof. The true location of such lakes is necessary, in order to calculate the contents of the subdivisions of such sections.

3. The width of streams of water or bayous binding on, or forming a boundary of your surveys, must be ascertained at every intersection of your lines therewith, by trigonometrical process, or otherwise; which can generally be most conveniently done in taking the meanders. This is necessary for the correct exhibition, of such streams on the township plats.

4. Except in cases where navigable streams constitute the boundary line between two series or systems of surveys commencing from different standard lines, such streams are not to interrupt the regular survey of the townships through which they pass, the lines of which shall be continued across those streams to the complete measure. And where the surveys have been closed on a stream, as a boundary of a cession, or from other cause, and are afterward to be continued across such stream, the surveyor continuing the surveys on the opposite side, must extend the lines across the stream, so as to make the sections thereon complete.

5. To establish a uniform and simple mode of designating and distinguishing the two sides of navigable streams, the terms "Right bank," or "Left bank," will be used, in all cases, thus:—suppose yourself standing at the head of the river, looking down stream; then that bank of the stream on your right hand is to be called and referred to in your field notes as the "right bank," and that on your left hand as the "left bank" And these terms, thus applied to navigable rivers, are to be used in all cases, whether in running lines or taking meanders.

6. Great care must be taken to describe clearly the post at which any meanders of a river, bayou, lake or island commence; and also all the posts, on township or section lines, which may be intersected in the progress of the meanders.

7. The Field Notes of meanders are to be written at the end of the subdivisions. The courses are to be inserted in a column on the left of the page; the distances, in chains and links, in a column next to this, and the notes or remarks on the right, opposite the proper course and distance. The column of distances must be added up at the foot thereof, on each page.

8. Errors in meandering are of very frequent occurrence, arising principally, it is believed, from bad chaining. Your special attention is called to the manner in which this part of the work is executed; and all possible accuracy is enjoined, both in the courses and measurement, and the entry thereof in your field book.

9. Where the meanders of small lakes cannot be accurately run and measured by course and distance, in the usual manner, by reason of obstacles along their shores or banks, a well constructed series of triangles may be made across the lake, so connected that all the angles of the lake coast can be accurately platted. A map of these triangulations must be made on a scale of 8 inches to the mile, and their reduction into the meanders of the lake coast must be carefully entered in your field book.

10. Streams to be meandered, having shores of like character, may have their courses taken with a solar compass, and measured by the angles made between two parallel lines so placed in the principal focus of a suitable telescope, attached to the sights of the compass, as to form an angle in the field view of at least 50 minutes, or 5-6 of a degree. For this purpose, the telescope is made to bear upon a rod, divided into feet, inches and tenths, and furnished with two targets, the upper one stationary, and the other moveable on the rod, to suit the angle seen through the

telescope at various distances. The distance between the two targets on the rod being then the measure of the angle formed by the two lines in the focus of the telescope, represents the distance between the compass and the rod, which may be taken out, in chains and links, from a table previously prepared for that purpose.

11. By observing, accurately, the number of feet, inches, and tenths, which the targets are apart, when they measure the angle formed by the parallel lines in the telescope, at a given distance, of from three to five chains from the compass, you will have the data from which such a table may be readily constructed for all other distances at which the telescope will enable you to observe a difference in the distance between the targets of one-tenth of an inch.

12. Wherever meanders are made by this method, the fact that they are so made should be distinctly shown in the heading of your field notes, and the precise angle between the parallel lines in the focus of your telescope, must also be stated. The stations at which observations are made must be designated by progressive numbers, and all the observations made at each station must be set down with great care and accuracy. Where a distance is noted, as measured by the telescope, the number of tenths of an inch on the rod, which corresponds to that distance, must also be carefully given, in order to facilitate the detection of errors, wherever they may occur.

13. Having taken the width of the river so frequently, and made such observations, on both sides of it, as to enable you to protract, accurately, its shores, you will make a plat thereof on a scale of eight inches to a mile, and from it enter the meanders of each shore in your field book in the usual manner, immediately after the field notes of your telescopic observations for each township. All such plats, whether of rivers or lakes, must be returned with your field notes to this office.

OF PRIVATE CLAIMS, INDIAN RESERVATIONS, &C.

1. In surveying Private Claims, Indian Reservations, or other tracts not conforming to section lines, the location thereof must be particularly described, and the place of beginning clearly stated in your Field Notes; also the name of the claimant in whose right the survey is made, with the number by which it is known; and if a reservation, the quantity contained in it, and the name of the reservee. The Field Notes of all the lines of each tract must be complete, and are to be entered in the Field Book separately from the notes of other tracts. The Field Notes of Private Claims and Indian Reservations, must be entered in separate books.

2. Wherever a section or township line intersects a line of a private claim or Indian reservation, there a corner must be established. The particular line intersected, with its course, and the name of the claimant or reservee with the number or other designation by which it is known, must be noted. And from such intersection, the private claim or reserve line must be carefully measured, each way along said line, to the end thereof, unless it should be intersected by another section or township line before the end be reached.

3. The course of every line of the survey of a private claim or Indian reservation, with the length thereof, and the variation of the compass, and date of the survey, are to be inserted in the Field Notes, which are to be certified and signed by you.

OF FIELD NOTES

1. The field books are all to be made of one uniform size, viz: foolscap octavo; or a sheet of common sized cap paper, folded into sixteen pages. The paper must be of good quality, and the books covered with morocco or other leather, and neatly stitched and trimmed, and contain space enough for all the field notes of a township. The pages are to be ruled with red ink and feint lined.
2. The field notes of the subdivision of every township, whether fractional or not, are to be written in a separate book.
3. No one page, either of the notes of township lines, or of subdivisions, is to embrace the field notes of more than one section line.
4. The description of the surface, soil, minerals, timber and undergrowth on each section line, is to follow the notes of the survey of such line, and not to be mixed up with them.
5. The language of your field notes must be so concise and clear, and the hand in which they are written so plain and legible, that no doubt can exist as to your figures, letters, words or meaning. If otherwise, they must be accompanied with true and fair copies.
6. The only abbreviations allowable in your field notes, are—"in. diam." for "inches, diameter," and the capital letters N., S., E. and W., for North, South, East and West. These latter words, however, must always be written in full, except when combined to express some course varying from the cardinal points.
7. The description of each mile must be independent, and not refer to a preceding description.
8. The field notes must be taken, in all cases, precisely in the order in which the work is done on the ground, and must show truly the direction in which each line is run and measured.
9. The date of each day's work must follow immediately after the notes thereof.
10. All your writing, of every description, whether of field notes, memorandums, or arithmetical or trigonometrical calculations, relating to surveys that you may execute, must be taken, either in your regular field notes, or in memorandum or miscellaneous books, of the same size and shape, which, when called for, must be returned to this office. It is not, therefore, allowable to make any notes, memorandums, or calculations, on loose pieces of paper.
11. On the first page of your field book of each township, insert in a plain and neat manner, by way of title, the number of the township and range, with the date of the commencement, and the date of completing the subdivision of the same.
12. Between the second and third pages, insert, without fastening there, a diagram neatly folded, drawn on tough bank note paper, on a scale of half a mile to an inch. On this diagram you will accurately delineate, as near as may be practicable by ocular observation on the spot, as you progress with the work, the crossing and courses of all streams of water, the intersection, situation, and boundaries of all prairies, marshes, swamps, lakes, hills, and all other things mentioned in your field notes, the situation of which can be conveniently shown on the diagram. You will also insert thereon, in small figures, the length of all the section lines of the township.
13. On the fourth page, make an index diagram, representing all the sections

in the township, on a scale of two miles to an inch, on each line of which, after the survey thereof is completed, you will write or print, in a neat and distinct manner, the number of the page of the book where the notes of that line may be found, and, where the notes of the random line and of the corrected line are on different pages, the former must be referred to in red, and the latter in black ink."

14. Leaving, after this, sufficient room for the oaths of your chainmen and markers, if necessary, at the head of each subsequent page, on which the field notes are written, you will insert a running title, designating the number of the township and range, which is to be separated from the field notes by a double red line.

15. The *Field Notes* of the surveys furnish primarily the materials from which the plats and calculations of the public lands are made; and are the source from whence the description and evidence of the location and boundaries of those surveys are drawn and perpetuated. It is evidently, then, of the utmost importance that the Field Notes should be, at once, an accurate, clear, and minute record of every thing that is done by the Surveyor and his assistants, (in accordance with these Instructions,) in relation to running, measuring and marking lines, establishing corners, etc., as well as full and complete topographical description of the country surveyed, as it regards every thing which may afford useful information, or gratify public curiosity.

16. For this purpose, you are to enter in your Field Book, in a neat and distinct manner, notes or minutes of the following objects, viz.:

17. The description, course and length of every line which you may run, beginning with the variation of the needle, if known to you, at the corner where you start.

18. The name, and estimated diameters of all corner and bearing trees, and the courses and distances of the bearing trees from their respective corners.

19. The name of the material of which you construct mounds, with the course and distance to the pits.

20. The names and estimated diameters of at least one or two of those trees which fall in your lines, called *station or line trees*, with their exact distances on the line, between every two corners. They should be so taken as to divide the line as nearly into equal parts as practicable.

21. The face of the country, whether level, rolling, broken, hilly, or mountainous.

22. The quality and character of the soil, and whether first, second or third rate.

23. The several kinds of timber and undergrowth with which the land may be covered, naming each kind of timber in the order in which it is most prevalent; and in prairie, the kind of grass or other herbage which it produces.

24. All rivers, creeks and smaller streams of water, with their right-angled width, and the course they run where the lines of your survey intersect or cross them, and whether the current be rapid, sluggish, or otherwise.

25. All rapids, cataracts, cascades, or falls of water, and the estimated amount of their fall, in feet.

26. All springs of water, and whether fresh and pure, or mineral; showing also on which side of the line situated, and the distance therefrom, and the course of the stream flowing from them.

27. All lakes and ponds, with the description of banks surrounding them, and whether the water be deep or shallow, pure or stagnant.

28. The meanders of all lakes, navigable rivers, bayous, islands, and streams forming boundaries.
29. All prairies, swamps, and marshes.
30. All coal banks or beds, and peat or turf grounds.
31. All precipices, caves, stone quarries, and ledges of rock, with the kind of stone found in them.
32. All towns and villages, Indian towns and wigwams, houses or cabins, fields or other improvements, sugar-tree groves, and sugar camps.
33. All minerals and ores, with particular descriptions of the same, as to their quality and extent.
34. All diggings for minerals, smelting or other furnaces, forges and factories.
35. The exact situation, and description of all mines, salt springs, salt licks and mill-seats, which you may discover, or that may come to your knowledge.
36. All fossils, petrifications, and other natural curiosities, with descriptions thereof.
37. All travelled roads, and "trails," with their courses, and denoting the places from, or to which they lead.
38. The tracks of tornadoes or hurricanes, commonly called "windfall," or "fallen timber," showing the direction of the wind, as indicated by the fallen trees.
39. All ancient works of art, as mounds, fortifications, embankments, ditches, or other similar objects.
40. All offsets, or methods of whatever kind, by which you shall obtain the measurement or distance on any line which cannot be actually measured.
41. At what distance you enter and at what distance you leave every lake, bay, pond, creek, bottom, windfall, grove, prairie, ravine, marsh and swamp, with the course of the same at both points of intersection; also the distances at which you begin to ascend, arrive at the top, begin to descend, and reach the foot of all hills and ridges, with their course, and estimated heights in feet above the level land of the surrounding country, or above the bottom lands, ravines, or waters on which they are situated.
42. The variation of the needle must be noted at, and on each side of all places on the lines where there is any material change of variation, and the distances to the points where the observations are made must be given.
43. The precise course and distance of all witness corners from the true corners which they represent, must be stated in the descriptions of those corners.
44. In addition to the foregoing items, you will insert notes of any others as the occasions therefor may occur. The field notes are to be written out in your book, on the spot, as you proceed with the work. Nothing in your notes must be left to be supplied by memory.
45. Rivers, creeks, and smaller streams, lakes, swamps, prairies, hills, mountains, or other natural objects, are to be distinguished in your field notes by their received names only, where names have heretofore been given. In any case you are not to give original names.
46. Besides the ordinary Field Notes taken on the lines, you will add at the end of your field book, such further description or information as you may be able to give, concerning any thing in the township, worthy of particular notice, or which you may judge necessary or useful to be known. And you will add also, a general notice or description of the township in the aggregate, as it regards the face of the country, soil timber, etc.

47. In your field book, the courses and distances must be placed in a column on the left hand side of the page, and your notes and remarks on the right. The *original* field notes must in all cases, be returned into the office of the Surveyor General.

48. Following the general description of each township, at the end of the field notes in each book, you will give a list of the names and residences of all the persons who may have assisted either in running, measuring or marking, the lines and corners therein described, stating the capacity in which each acted; and below such list, a certificate must be written affirming its correctness, and that the township has been in every respect well and faithfully surveyed, according to the instructions of the Surveyor General, which certificate must be subscribed and sworn to by the persons named in the list, either before yourself, as a Deputy Surveyor, or before some other person duly authorized to administer oaths. The following forms, as far as applicable, may be used for this purpose:

List of names and residences of persons who assisted in running, measuring, or marking the lines and corners described in the foregoing field notes of township -----N. of Range-----, in the State of-----, viz.:

A-----B-----, a resident of-----in the county of-----and State of-----performed the duty of chainmen and marked the corners; E-----F-----of-----in the county of-----and State of-----and G-----H-----of-----in the county of-----and State of-----performed the duty of axe-men; and I-----K-----of-----in the county of-----and State of-----performed the duty of compass-man, under the personal supervision and direction of L-----M-----Deputy Surveyor, in running most of the lines, above referred to.

We hereby certify that we assisted L. M., Deputy Surveyor, in subdividing township-----of Range-----in the State of-----that our names and residences, and the duties that we respectively performed, are correctly set forth in the above statement, and that said township has been in every respect well and faithfully surveyed, according to the instructions of the Surveyor General.

A-----B-----Chainman,

C-----D-----Chainman,

E-----F-----Axe-man,

G-----H-----Axe-man,

I-----K-----Compass-man.

Subscribed and sworn to by the above named persons, before me at-----this -----day of-----18--.

O-----P-----Justice of the Peace

(or other officer authorized to administer oaths) of the County of-----and State of-----.

49. In every field book, after the certificate above mentioned, an affidavit of the following form is to be written, and sworn to and subscribed by you before some person duly authorized to administer, oaths, viz.:

I, L-----M-----of-----in the county of-----and State of-----, a Deputy Surveyor, do solemnly swear (or affirm) that, in pursuance of a contract with C-----N-----Surveyor General of the United States, for Ohio, Indiana, and Michigan, bearing date-----day of-----18--, and in strict conformity to the laws of the United States, and the instructions of the said Surveyor General, I have faithfully and correctly surveyed township number-----of range number-----of

the principal meridian, in the State of_____and I do further solemnly swear (or affirm) that the foregoing are the true and original field notes of the said survey, executed as aforesaid.

L_____M_____, *Deputy Surveyor.*

Subscribed by said L_____M_____, Deputy Surveyor, and sworn to before me at_____this_____day of_____18__.

O_____P__Y___, *Justice of the Peace,*

(or other officer authorized to administer oaths) of_____in the county of _____and State of_____.

50. Should you employ an assistant to run random lines, an affidavit, of the following form, must be written, subscribed and sworn to by him after his field notes in each book, viz.:

I, R_____S_____, of_____in the county of_____and State of_____do solemnly swear, that the foregoing are the true and original field notes of the random lines therein described, in township_____of range_____in the State of_____and that the said lines were carefully and accurately run by me with a good solar compass, independently of the needle, except as mentioned in said notes, and that they were measured in my presence under the direction and at the expense of L_____M_____Deputy Surveyor, while I was employed by him and paid by the month.

R_____S__Y___, *Random Line Surveyor.*

Subscribed by said R_____S_____random line surveyor, and sworn to before me this_____day of_____18__.

O_____P_____, *Justice of the Peace,*

(or other officer authorized to administer oaths) of_____in the county of _____and State of_____.

51. A printed specimen of the Field Notes of the subdivision of a township into sections, accompanies these Instructions; which will serve to illustrate both the order and method of performing the surveys, and the most approved form of keeping the Field Notes; for which purpose, it is to be regarded as a part of these General Instructions. Where the notes of the true line follow immediately after those of the random, the provisions of section 3, under the head of field notes, must be carefully adhered to. When they do not so follow, a page may embrace the notes of more than one mile, provided they do not extend to the next page.

52. Any material departure from these Instructions, or negligence in the observance thereof, will be considered as a violation of the conditions of your contract, and a forfeiture of all claim for payment. And loose, inaccurate, precipitate, or defective work, either as it respects the surveys in the field, or the notes and returns thereof on paper,—*will not be admitted.*

53. That you may better understand the responsibility under which you are acting, your attention is particularly called to the provisions of the third section of an act of Congress, approved August 8th, 1846, entitled "an act to equalize the compensation of the Surveyor General of the public lands of the United States, and for other purposes," which is as follows, viz.:

"SEC. 3. That the Surveyor General of the public lands of the United States, in addition to the oaths 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 the 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 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 shall suffer all the pains and penalties attached to that offense; and the district attorney of the United States for the time being, in whose district any such false, erroneous, or fraudulent surveys shall 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."

The provisions of the above section will, in all cases, and in every particular, be rigidly enforced.

Surveyor General.

GENERAL INSTRUCTIONS OF 1851

OFFICE OF THE SURVEYOR GENERAL
OF WISCONSIN AND IOWA,

Dubuque, 1851

To

Deputy Surveyor;

SIR:

You are to survey in person, or by the assistance of some duly authorized Deputy Surveyor, acting under your immediate direction and supervision, the district assigned you under contract of-----18----, conformably to such parts of the following instructions as apply to the character of the work for which you have contracted, except so much thereof as is modified or countermanded by manuscript special instructions, hereinafter written.

SYSTEM OF SURVEY

1. The United States lands are surveyed into rectangular tracts, bounded by north and south, east and west lines. They are first surveyed into townships or tracts of six miles square, which are subdivided into thirty-six equal parts, called sections.

2. Townships and ranges number from base and meridian lines—the former bearing due east and west, and the latter intersecting them at right angles, and bearing due north and south.

3. The base line of the surveys in Wisconsin is the south boundary of so much thereof as borders the State of Illinois; that of Iowa, is located near the geographical centre of the State of Arkansas.

4. The fourth principal meridian, to which the surveys in Wisconsin relate, starts from the mouth of the Illinois River. The fifth principal meridian, to which the surveys in Iowa relate, starts from the mouth of the Arkansas River.

5. The townships, both in Wisconsin and Iowa, number from their respective base lines, northward; the ranges, in each, number from their respective meridians, both east and west.

6. Sections are numbered from east to west and from west to east progressively, commencing with the north-east corner section;

7. Correction lines provide for the error that would otherwise arise from the convergency of meridians, and arrest that arising from the inaccuracies of measurement. They are run due east and west, at stated distances, forming a base to the townships north of them. This base, for each township, is extended sufficiently to meet the convergency for a given distance.

INSTRUMENTS

Base, meridian, correction and township lines are to be run with an instrument that operates independently of the magnetic needle, which is to be employed only to show the true magnetic variation. Section, meander and all other lines interior of a township, may be run either with the same instrument, or with the

Plain Compass, provided it is of approved construction and furnished with a vernier or nonius.

ASSISTANTS—THEIR OATHS

You are to employ no other assistants than men of reputable character, each of whom must, before performing any duty as such, take and subscribe an oath (or affirmation) of the following form, which must be forwarded to or deposited in this office, prior to or upon the return of your field notes:

For Chainmen

I, A.B., do solemnly swear (or affirm), that I will impartially and faithfully execute the duties of chain carrier, that I will level the chain upon uneven ground, and plumb the tally-pins whether sticking or dropping the same; that I will report the true distance to all notable objects, and the true length of all lines that I assist in measuring, to the best of my skill and ability.

Sworn and subscribed before me at_____this_____18_____

Justice of the Peace.

(or other officer authorized to administer oaths) of_____, County of_____, State (or Territory of_____.

For Flagman or Axeman

I, C.D., do solemnly swear (or affirm) that I will well and truly perform the duties of axeman or flagman, according to instructions given me, and to the best of my skill and ability.

MARKING LINES, ESTABLISHING AND MARKING CORNERS

1. All lines which you actually establish are to be marked as follows: Those trees which intercept your line are to have two notches upon the side where your line intersects and leaves them, without any other mark whatever.

2. A sufficient number of those trees which approach nearest your line, to render the same conspicuous, are to be blazed upon two sides, diagonally or quartering towards the line; the blazes to approach nearer each other the farther the line passes from the blazed trees, and to be as nearly opposite—coinciding with the line—as possible, in cases where they are barely passed.

3. Corner posts are to be made only of the most durable wood found in the vicinity of your lines. Township corner posts must not be less than five, section and meander corner posts four, and quarter section posts three inches in diameter. These posts must be set firmly into the ground, by digging a hole to admit them two feet deep, and be very securely rammed with earth, also with stone when convenient. They are to appear above ground, at township corners, three feet, at section and meander corners, two and a half feet, and at quarter section corners, two feet.

4. All township and section corner posts are to be squared upon their upper ends and the angles of the square set with the cardinal points of the compass. Township corner posts must have six notches upon each of the said angles; section corner posts, upon township lines, as many notches upon one of the said angles

as they are miles distant from the township corner where the line commenced, and interior section corner posts as many notches, both upon their south and east angles, as they are miles distant from the south and east boundaries of the township, respectively.

5. Quarter section and meander corner posts are to be blazed upon two opposite sides, and set with those blazes facing the sections between which they occur.

6. A tree supplying the place of a corner post, is to be squared and marked as directed for posts.

7. All posts established at corner of sections, are to be marked upon each side of their squared part with the number of the four sections which those sides respectively face, at meander corners with the number of the sections between which such posts are set, and at quarter section corners with $\frac{1}{4}$ S. upon the two blazed sides.

8. Bearing trees are those of which you take the course and distance from a corner. They are distinguished by a large smooth blaze or chop, fronting the corner, upon which is marked, with an iron made for that purpose, the number of the range, township and section, except at quarter section corners where $\frac{1}{4}$ S. will supply the number of the section, thus:

R.-----E. or W.
T.-----N.
S.-----or $\frac{1}{4}$ S.

The letters B. T. are also to be marked upon a smaller chop, directly under the large one, and as near the ground as practicable.

9. Witness trees are signalized and marked as above, but the course and distance to them, as well as the small chop, are omitted.

10. Trees, employed either for the purpose of bearing or witness trees, are to be alive and healthy and not less than five inches diameter.

11. From all posts established for township corners, or for section corners upon township lines, four bearing trees, if within a reasonable distance, must be taken; one to stand within each of the four sections.

12. At interior section corners four trees, one to stand within each of the four sections, are to be marked with number of township and range, as well as section in which they stand.

13. From quarter section and meander corners two bearing trees are marked, one within each of the adjoining sections.

14. Wherever bearing trees cannot be had, quadrangular mounds of earth or stone are to be raised around the corner posts, the four angles of which must coincide with the cardinal points of the compass.

15. Mounds at township corners are to have a base of five feet, a top of two feet, and a height of three feet; at section, meander and quarter section corners, they are to have a base of four feet, a top of one and a half feet, a height of two and a half feet.

16. Where mounds are made of earth the place from which it is taken is styled the *Pit*, which is to be a uniform and stated distance from the mound in all instances where the same is practicable, viz.: at township corners there are to be two pits, one ten links due north, and the other ten links due south; at section corners one pit, eight links due south; at quarter section corners one pit eight links due east, and at meander corners one pit, eight links either due north, south,

east or west. The distance of the mound and pit to be obtained by measuring from centre to centre. The mounds are to be neatly covered with sod in all cases where the same can be had.

17. Posts established in mounds for township corners are to be marked upon each side of the square, with the appropriate number of the range and township; at section corners upon township lines with the appropriate number of the range and township upon two sides thereof, and at interior section corners with the range and township within which such post stands.

18. Whenever the true place of establishing a corner is inaccessible, or unadapted to the establishment of a proper corner, except it occurs in a body of water that is to be meandered, you are to establish a witness corner as near thereto as is practicable and either due north, south, east or west of it. Such corner is to be constructed in all respects like the one for which it stands as a witness, with the addition of the letters W. C., immediately over the numbering, both upon the post and trees.

19. When a section or quarter section corner happens at the point for establishing a meander corner, the posts and trees are to be marked with the appropriate numbers for such section or quarter section corner. Or, in lieu of posts, you may at *any* corner, insert endways into the ground, to the depth of seven or eight inches, a stone, the number of cubic inches in which shall not be less than the number contained in a stone fourteen inches long, twelve inches wide and three 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.

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 six notches will be cut on each edge or side toward 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, six notches on the south edge, and at the intersection with the west boundaries six 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 $\frac{1}{4}$ cut on the west side on north and south lines, and on the north side on east and west lines.

Where a corner is perpetuated by a stone of the dimensions, marked and set in the manner above described, no mound need be erected.

When the closing lines to the north or west boundaries of the townships, either in subdivision or exterior work, exceed one hundred chains of length, corners for the legal subdivisions of the sections will be established at every twenty chains north or west of the quarter section corner.

MEASUREMENTS AND WHERE TO ESTABLISH MEANDER CORNERS

1. Your distances are all to be noted and returned in chains and links, and to be taken with a half or two pole chain of fifty parts, each measuring seven inches and ninety-two-hundredths. The length of your chain should be adjusted

by means of a screw attached to the handle of the hind end; every tenth link should compose a swivel, and all the rings and loops should be welded or brazed. The accuracy of your chain is to be preserved by comparing it with a standard adjusted at this office.

2. Your tally-pins, eleven in number, must not exceed fourteen inches in length, must be of sufficient weight to drop plum, and are to be made of iron or seasoned wood pointed with steel.

3. The length of every line you run is to be ascertained by horizontal measurement.

4. Whenever your line is obstructed by an object over which you cannot measure with the chain, you are to pass the same by offsets, traverse or trigonometry, observing that the distance thus obtained extends no farther than is necessary to actually pass the interposing object.

5. Whenever your course is so obstructed by navigable streams, or other bodies of water which are to be meandered, you are to establish a meander corner at the intersection of your lines with both margins thereof, and also on each side of all islands which said lines may cross.

TOWNSHIP LINES

1. North and south lines are termed range lines; east and west, township lines. The former are styled, in the field notes, the line between certain ranges; the latter, the line between certain townships. Each mile, both of a range and township line, is particularized by the number of the sections between which it is run, thus; north between sections 31 and 36, west between sections 1 and 36.

2. Upon the base or township line forming the southern boundary of your district, township corners are established at intervals of six miles: From each of these corners you are to run range lines due north, six miles; establishing a quarter section corner at the end of the first forty, and a section corner at the end of the first eighty chains, and observing the same order and intervals of establishing quarter section and section corners to the end of the sixth mile, where you will temporarily set a township corner post.

3. You will then commence at a township corner upon the first range line east of your district, and immediately east of the township corner posts temporarily set by you, and from thence run due west across your whole district, intersecting your range lines at or within three chains and fifty links, due north or south, of your said six mile posts. At the point of intersection, if within the above limits, you will establish a township corner. Upon this township or last mentioned line, quarter section and section corners are to be established at the same distances and intervals as directed for range lines; observing that the length of each and every township line which you are to establish, is in no case to exceed or fall short of the length of the corresponding township boundary upon the south, more than three chains and fifty links. If, however, in closing your first tier of townships, and all others closing to or upon old work, you find it impossible to preserve the true course of your lines and close within the above limits, you are to resurvey and examine until you detect the real cause of discrepancy, which if not in your own work, you will report to this office, and for which you will provide in the field, in all instances where the same is practicable, by adding to, or deducting from the length of your first range line or lines. And where, in order to close a township to or upon old

work, you are compelled to employ a variation greater or less than the true magnetic variation, both must be stated.

4. After closing your first tier of townships, you are to run up and close successive tiers, to the completion of your district, by the same method of survey as directed for the first tier.

5. You are to observe and note the true magnetic variation, at least upon every mile or section line, and as much oftener as there is a change therein.

6. The bearing trees, standing upon the west side of range, and upon the north side of township lines, are to be entered first in your field notes.

7. After a township corner is established as before directed, you are to complete the notes of the corresponding range line, by inserting the said corner, with the true distance thereto, and adding or erasing the notes of any topography or other minutes, that may be included or excluded by thus adding to or deducting from the length of the range line as temporarily established.

8. With your field notes you must return a diagram, drawn upon a scale of three inches to six miles, on which you are to represent each boundary you have run with the length and variation thereof, and with all the topography thereupon that can be properly expressed upon that scale.

SUBDIVISION

Length of North and South and East and West Lines, and Where to Establish Quarter Section Posts

1. Every north and south section line, except those terminating in the north boundary, are to be one mile in length. The east and west section lines, except those terminating in the west boundary, are to be within one hundred links of eighty chains in length; and the north and south boundaries of any one section, except in the extreme western tier, are to be within one hundred links of equal length.

2. The length of the section lines closing to the north and west boundaries, are to be governed by the length of the sixth or closing miles, both of the range and township lines, and must be as nearly of the same length, or of an average thereof, as is practicable.

3. Quarter section corners, both upon north and south and upon east and west lines, are to be set equidistant from the corresponding section corners; except upon those closing to the north and west boundaries, where the quarter section corners will be established precisely forty chains north or west of the respective section corners from which those lines start.

Method of Subdividing; Random, Corrected and True Lines, and Diagram

1. The first mile, both of the south and east boundaries of each township you are to subdivide, is to be carefully traced and measured before you enter upon the subdivision thereof. This will enable you to observe any change that may have taken place in the magnetic variation, as it existed at the running of the township lines, and will also enable you to compare your chaining with that upon the township lines.

2. Any discrepancy, arising either from a change in the magnetic variation or a difference in measurement, is to be stated as directed under the head of field notes.

3. After adjusting your compass to a variation which you have thus found will retrace the eastern boundary of the township, you will commence at the corner to sections 35 and 36, on the south boundary, and run a line due north, forty chains, to the quarter section corner which you are to establish between sections 35 and 36; continuing due north forty chains further, you will establish the corner to sections 25, 26, 35 and 36.

4. From the section corner last named, run a random line, without blazing, due east for corner of sections 25 and 36, in east boundary. If you intersect exactly at the corner, you will blaze your random line back and establish it as the true line. But if your random line intersects the said range line, either north or south of the said corner, you will measure the distance of such intersection, from which you will calculate a course that will run a true line back to the corner from which your random started.

5. From the corner of sections 25, 26, 35, 36, run due north between sections 25 and 26, setting the quarter section post, as before at forty chains, and at eighty chains establishing the corner of sections 23, 24, 25, 26. Then run a random line due east for the corner of sections 24 and 25 in east boundary; correcting back in the manner directed for running the line between sections 25 and 36.

6. In this manner proceed with the survey of each successive section in the first tier, until you arrive at the north boundary of the township, which you will reach in running up a random line between sections 1 and 2. If this line should not intersect at the post established for corner to sections 1, 2, 35 and 36 upon the township line, you will note the distance that you fell east or west of the same, from which distance you will calculate a course that will run a true line south to the corner from which your random started.

7. The first tier of sections being thus laid out and surveyed, you will return to the south boundary of the township, and from the corner of sections 34 and 35 commence and survey the second tier of sections, in the same manner that you pursued in the survey of the first, closing at the section corners on the first tier.

8. In like manner proceed with the survey of each successive tier of sections, until you arrive at the fifth or last tier. From each section corner which you establish upon this tier, you are to run random lines for the corresponding corners established upon the range line forming the western boundary of your township, and in returning, establish the true line as before directed.

9. All section lines are to be right lines, regardless of the number or nature of intervening obstacles; except in the event of their intersecting a lake or pond of such diameter, at the points of intersection, as forbids their continuance by means of a trigonometrical calculation, in which case, and in cases also where a river, lake, correction line, or reservation, form a part of the boundary of a township, when the closing lines thereupon, will be *true lines*, the courses of which will have a strict reference to the variation and closing of the adjacent line; the quarter section posts upon which are to be set forty chains from the section corner at which such true lines commenced.

10. In closing upon a correction line, you are to establish a section corner at the point of your intersection therewith, stating the true distance of such intersection from the nearest corner thereon.

11. Field notes of random lines are to embrace nothing but the variation, length and closing thereof.

12. Topography of every description, line trees and corners, are to be taken

upon the corrected lines and included in the notes thereof, following which is to be written the description of the land and timber.

You will report in your general descriptions, and indicate upon your diagrams, the whole number of residences, or other edifices, and as nearly as practicable the character and extent of improvement within each township. Where you cannot determine these important facts accurately without leaving your lines, you must specify the smallest subdivision or subdivisions upon which such residence or other improvement exists.

You are to return the distance at which you strike, and that at which you leave every stream or other body of water that exceeds one hundred links of width at an ordinary stage of water; giving also the right-angled width of the same.

CHAIN CARRIERS

Your chain carriers must be reversed at every tally, so that one may be ahead upon the odd and the other upon all the even tallies. The discrepancies of measure likely to arise from unequal strength or care in chainmen, are thus rendered compensative; a check is instituted upon the accuracy of the tally, and the labor of recollecting and reporting objects is divided. As the chainmen pass each other, the pins must be, in every instance, counted by each of them.

MARKERS AND MARKING IRONS

You are to provide yourself with marking irons of the most approved description, and which are to be used only by experienced and skillful markers. In the marking of your lines in timber and the establishing and marking of your corners, whether in prairie or timber, particular care is to be taken, and such parts thereof as are not executed by yourself are to be personally inspected by you. The importance of this caution will be manifest, when you reflect that it is upon this evidence alone that the settler depends in locating or entering his land.

STANDARD-CHAIN

Your chain, adjusted to the standard in this office, must be carefully guarded against all injury, and by it you will compare and adjust your measuring chain every morning after the latter has been in service, and note the difference between them in your field book, and if none, then state that fact also.

CORRECTIONS AND RESURVEYS

Full notes of every line and part of a line which you retrace, of every one which you re-establish, of every random line which it is necessary for you to run, whether measured or not—of every corner which you re-establish, alter or perfect—of every offset—of the elements of every distance obtained by triangulation, are to be carefully entered at the time in the proper place in your field books.

FIELD NOTES AND BOOKS

The second page in each field book must contain the names and duties of assistants then engaged upon your lines. Whenever you employ a new assistant

or change the duty of one, the fact, with the cause thereof, must be given in an entry immediately preceding the notes taken under the new arrangements.

The notes which you take in the field are to be returned to this office. With this view you will enter your notes, taken as above directed, in books containing a number of pages, that will admit of their being entered in every particular in conformity to these instructions. The books must be of regular form, size and material. If after the notes of any one or more townships are thus taken, the book or books are too much worn, soiled or defaced to be returned in conformity to said instructions, you will make out and submit, *with the original*, a fair handed and neat copy of the same. You are to use no other than black ink of the best quality. No erasures are to be made. If mistakes occur, the pen may be drawn across the erroneous entry, but always in such a manner that the words can be read afterwards. No leaves are to be cut, torn or otherwise taken out of your field books, as reason is thus given for suspicion that there was something upon the missing leaves which it was not to the interest of the deputy to have known.

With these instructions you are furnished diagrams of each of the townships of your district upon a scale of two inches per mile, upon which are accurately laid down the respective boundaries of each township, the length of each of the closing lines, the magnetic variation of each mile, and at least two of the bearing trees, at all the section corners thereon, where bearings were taken. P. in M. signifies post in mound, the pits to which (unless it is otherwise stated) are in the direction and at the distance hereinbefore prescribed.

DIAGRAMS

With your field notes you are to return a map of each township of your district, upon the scale above named, upon which is to be expressed the length and variation of each of your lines with *all* the topography neatly laid down. With a view to the completeness of these maps, you should make sketches of the topography as you progress with your lines, that you may be able to present not only the points upon your lines at which the same occurs, but also its direction and position between the lines or within each section, as every object of topography is to be properly closed or connected. These maps form the basis of all the official plats, and are carefully preserved in this office.

SWAMP LANDS

By an act of Congress, approved September 28th, 1850, all of the swamp and overflowed lands that are unfit for cultivation, which were unsold at the date of the passage of the said act, were granted to the State or Territory in which said lands are located. In order that the field notes of surveys may hereafter clearly present the quantity and locality of the lands thus granted, you will, in addition to the objects of topography required by the foregoing instructions, note the point upon which you enter and leave all lands which are clearly the subject of the above grant, stating the character of the land thus noted, and whether it is a swamp or marsh, or subject from other cause to inundation, to an extent that would in the absence of artificial means render it uncultivable. The depth of inundation, if in timber, may be easily determined from the marks upon the trees, and its frequency

may be ascertained, either from your knowledge of the general character of the stream which overflows, or from the testimony of those residing upon or near the locality under examination. The usual phraseology for entering or leaving a swamp or marsh may be employed with the addition of "unfit for cultivation"; but if the margin of bottom, swamp or marsh in which uncultivable land exists is not identical with the margin of such uncultivable land, then a separate entry must be made for each opposite the marginal distance at which they respectively occur.

LANDS OVERFLOWED BY ARTIFICIAL MEANS

When lands are overflowed by artificial means (say by dams for milling, logging or other purposes) you will in no instance set meander posts, but continue your lines across said overflowed tract, in the manner directed in the foregoing instructions, stating particularly in your notes the depth of water and how the overflow is caused.

ERRORS IN TOWN LINES

Should you find a manifest error in the measurement or course of any of the township lines of your district, you are to correct the same by resurveying and re-establishing such line or lines, from the point where the error was detected, to the north or west thereof, noting your intersection with each one of the erroneous corners as you progress, which you are to demolish and deface with all evidences thereof. Of such remeasurement and corrections you are to take full and complete field notes, in a separate book, to be returned to the Surveyor General's office, with the field notes of your subdivision.

HOW AND WHAT TO MEANDER

1. In subdividing any one township, you are to meander as hereinafter directed, any lake or lakes, pond or ponds, lying entirely within the boundaries thereof, of the area of forty acres and upwards, and which cannot be drained and are not likely to fill up, or from any cause to become dry.

2. Whenever required by special instructions, to meander any stream or body of water, passing through or lying within your district, you are also to meander all islands situated therein.

3. Standing with your face towards the mouth of the stream, the bank on your left hand, is termed the *left bank*, and that upon your right hand, the *right bank*. These terms are to be universally used to distinguish the two banks of a river, both in running lines and meandering.

4. In meandering rivers, you are to commence at a meander corner in the township boundary, and take the course and distance of the bank upon which you commence, to a meander corner upon the same or another boundary of the same township, carefully noting your intersection with all intermediate meander corners. By the same method you are to meander the opposite bank of the same river.

5. In meandering lakes, ponds or bayous, you are to commence at a meander corner upon the township line and proceed as above directed for the banks of a

navigable stream, except where a lake, pond or bayou lies entirely within the township boundaries, when you will commence at a meander corner established in subdividing, and from thence take the course and distance of the entire margin thereof.

6. To meander a pond, lying entirely within the boundaries of a section, you will run a random line thereto from the nearest section or quarter section corner. At the point where this random line intersects the margin of such pond, you will establish a witness point, by fixing a post in the ground and raising a mound or taking bearings, as at a meander corner, except that the post and the large face upon the bearing trees will be marked with the letter W. only.

7. In meandering islands, you are to proceed as directed in sections 5 and 6 of this chapter, except that where there are no meander corners established upon an island, you are to take the course and distance of your starting point from the nearest meander corner, instead of section or quarter section corner.

8. The meanders of each fractional section, or between any two meander posts, or of a pond or island interior of a section, must close within one chain and fifty links.

9. Your field notes of meanders in any one township, are to follow immediately after the notes of the subdivision thereof. They are to state and describe, particularly, the meander corner from which they commenced, each one with which they close, and are to exhibit the meanders of each fractional section separately; following and composing a part of which, will be given a description of the land, timber, depth of inundation to which the bottom is subject, and the banks, current and bottom of the stream or body of water you are meandering.

10. To furnish data that will enable this office to fix their exact location, you will note in the proper place in the meanders of each fractional section the exact position and extent of all falls and rapids, fords portages and mill sites existing in, or connected with the river or other body of water which you are meandering.

11. No blazes or marks of any description are to be made upon your meander lines, though the utmost care must be taken to pass no object of topography, *or change, therein*, without giving a particular description thereof in its proper place in your meander notes.

FIELD NOTES

1. Your field notes are to form a full and perfect history of your operations in the field.

2. The field notes of the subdivision of every township, whether fractional or not, are to be written in a separate book.

3. Description of the timber, undergrowth, surface, soil and minerals, upon each section line, is to follow the notes thereof, and not to be mixed with them.

4. The language of your field notes must be so concise and clear, the hand in which they are written so plain and legible, that no doubt can exist as to your figures, letters, words and meaning.

5. No *abbreviations* are to be made in your field notes, except such as relate to course, to express which, the proper combinations of the capital letters, N. S. E. and W. are to be used; except when a course is exactly to a cardinal point, in which case it is to be written in full.

6. The description of each mile must be independent, and *not refer to a preceding description*.

7. The date of each day's work must follow immediately after the notes thereof.

8. All rivers, creeks, and other streams, lakes, ponds, prairies, swamps, marshes, groves, hills, bluffs, windfalls, roads and trails, are to be distinguished in your field notes by their original and received names only, and where such names cannot be ascertained or do not exist your imagination is not to supply them.

9. Your field notes must be kept in the exact form of the specimen herewith furnished you.

Objects and Data to Be Embraced in Your Field Notes

You are to enter in their proper places in the field notes of your survey, a particular description and the exact location of the following objects:

1. The length and variation or variations of every line you run.
2. The name and diameter of all bearing trees, with the course and distance of the same from their respective corners.
3. The name of the material of which you construct mounds, with the course and distance to the pits.
4. The name, diameter and exact distance to all those trees which your lines intersect.
5. At what distance you enter, and at what distance you leave every river, creek or other "bottom," prairie, swamp, marsh, grove or windfall, with the course of the same at both points of intersection.
6. The surface, whether level, rolling, broken or hilly.
7. The soil, whether first, second, or third rate.
8. The several kinds of timber and undergrowth, naming the timber in the order of its prevalency.
9. All rivers, creeks and smaller streams of water, with their actual or right angled widths, course, banks, current and bed, at the points where your lines cross.
10. A description of all bottom lands—whether wet or dry, and if subject to inundation, state to what depth.
11. All springs of water, and whether fresh, saline or mineral, with the course and width of the stream flowing from them.
12. All lakes and ponds, describing their banks and the depth and quality of their water.
13. All coal banks, precipices, caves, sink-holes, quarries and ledges with the character and quality of the same.
14. All water-falls and mill sites.
15. All towns and villages, houses, cabins, fields and sugar camps, factories, furnaces and other improvements.
16. All metalliferous minerals or ores, and all diggings therefor, with particular descriptions of both, that may come to your knowledge, whether intersected by your lines or not.
17. All roads and trails, with the course they bear.
18. All offsets or calculations by which you obtain the length of such parts of your lines as cannot be measured with the chain.
19. The precise course and distance of all witness corners from the true corners which they represent.

AFFIDAVIT

1. Following the field notes and general descriptions, in each of your field books, an affidavit of the following form is to be written, and to be signed by yourself and each of your assistants in the field:

I, A. B., Deputy Surveyor, do solemnly swear (or affirm) that, in pursuance of a contract with C. D., Surveyor General of the United States for Wisconsin and Iowa, bearing date the _____ day of _____, 18____, and in strict conformity to the laws of the United States, and the instructions of the said Surveyor General, I have regularly surveyed _____ principal meridian (State or Territory) of _____ and I do further solemnly swear (or affirm) that the foregoing are the true and original field notes of the said survey, executed as aforesaid.

A. B., *Deputy Surveyor*

G. H. }
 J. K. } *Chainmen*
 L. M., *Marker*
 N. O., *Flagman*

Subscribed by said A. B., Deputy Surveyor, and sworn before me _____ at _____ this _____ day of _____, 18____.

P. Q., *Justice of the Peace*

(or other officer authorized to administer oaths) of _____ in the county of _____ State (or Territory) of _____.

2. Your attention is directed to the following section of an act of Congress, approved, August 8th, 1846, entitled "an act to equalize the compensation of Surveyors General of the public lands of the United States, and for other purposes."

3. "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 shall suffer all the pains and penalties attached to that offense; and the district attorney of the United States for the time being, in whose district any such false, erroneous, or fraudulent surveys shall 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."

The above section of the said law applies to the foregoing affidavit, and will be in all particular and in every instance, rigidly enforced.

GENERAL REMARKS

Your attention is particularly directed to the following specimen of field notes, which will illustrate the order and method of performing the work, and the manner

in which your field notes are to be returned, and is to be regarded, therefore, as a part of these general instructions, any departure from which, without special authority, will be considered a violation of your contract and oath, and a forfeiture to all claim of payment. As your work will be rigidly examined in the field, by a deputy appointed by this office for the special purpose, any neglect on your part cannot fail to be reported, and the penalty, however disagreeable, will certainly be enforced.

It will be seen from the variations in the instructions up to this point that those responsible for the United States land surveys were gradually perfecting a system which could be followed without great change in future surveys. The instructions of 1855 which follow were the guide book for practically all surveys from that time until the end of the contract system in 1910. From time to time as equipment improved modernization changes were authorized. It can be assumed, however, that no great changes were made in the rules under which the surveys were conducted during the next half century. Familiarity, then, with the instructions of 1855 is probably more important to the surveyor in the public land states where the surveys were conducted after 1855 than any knowledge he may acquire of the more recent and more refined methods used since 1910.

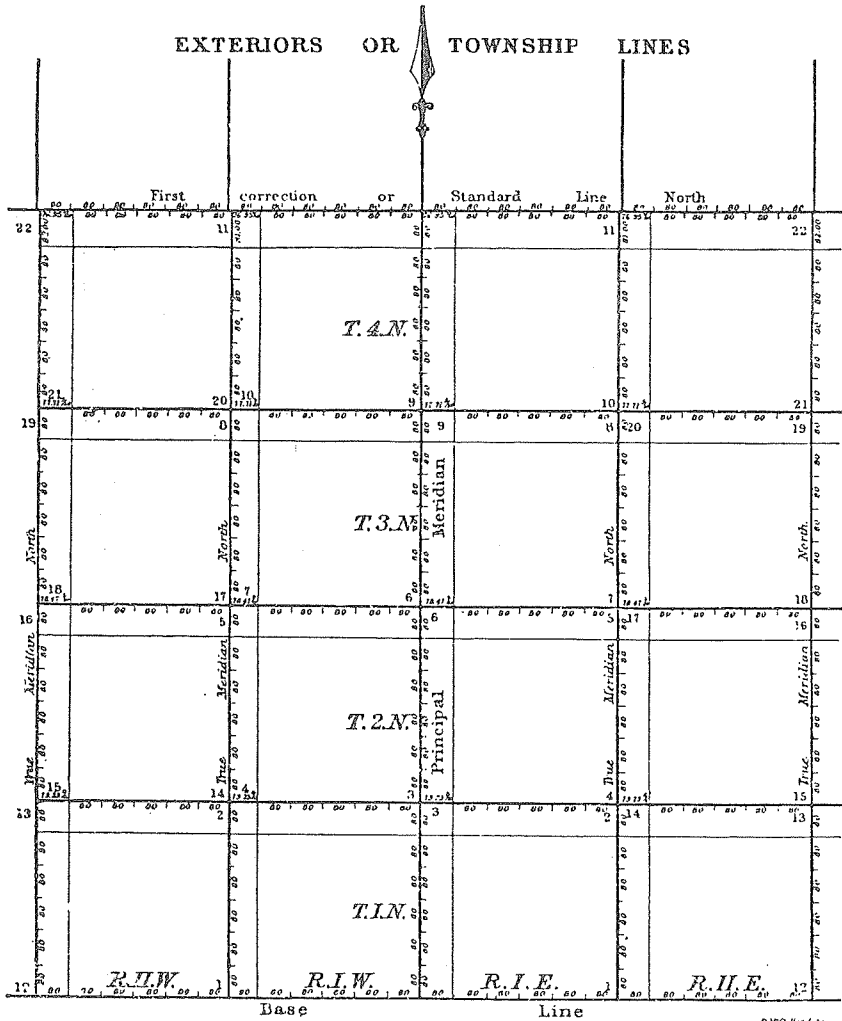
For those surveys completed before 1855 it is very important to compare the survey record as preserved in the original plats and field notes with the current original instructions of the same date as the survey.

No amount of reading of the present day instructions can account for the multiple corners on all sides of the townships in eastern Iowa and in important areas of those other states where surveys were made when true lines were required to be run to closing corners on north end and west boundaries of all townships. See instructions of 1843, page 57 of this book.

The remarks of W. D. Jones which follow the 1855 instructions are intended to call attention to the principal variations in the instructions as they were developed.

The excess length given to the south boundary of section 31 on the standard parallel was included in William Burt's special instructions of 1836. Of course, when the final scheme of subdivision into 24-mile checks was developed this excess length was no longer necessary to keep convergence shortages within reasonable bounds.

Diagram A¹



The upright figures (made thus 1.2.3) commencing near the Principal Meridian and Base line with No. 1, indicate the perambulations of the Surveyor in running the Townships and Correction lines.

The Correction or Standard lines North of the Base are every 4 townships, and South of the Base every 5 townships.

The excess or deficiency of measurement on northern and southern boundaries is thrown on the westernmost half mile.

The measurements between Meridian lines will, of course, always vary according to the latitude of the survey, besides being liable to be rendered inexact where the country is very hilly or broken. The convergency of the range lines as shown by the measurements on this diagram, is according to calculation, as it exists between the parallels of 46° and 47° N. L.

¹ This reproduction of the beautifully lithographed original, folded and tipped at the back of the 1855 Instructions, is referred to on pp. 120 and 136, q.v.

INSTRUCTIONS
TO THE
SURVEYORS GENERAL OF PUBLIC LANDS
of
THE UNITED STATES
FOR THOSE
SURVEYING DISTRICTS ESTABLISHED IN AND SINCE THE YEAR 1850;
CONTAINING ALSO,
A MANUAL OF INSTRUCTIONS
To
REGULATE FIELD OPERATIONS OF DEPUTY SURVEYORS,
ILLUSTRATED BY DIAGRAMS

Prescribed, according to law, by the principal clerk of surveys, pursuant to
order of the commissioner of the General Land Office.

WASHINGTON:

A. O. P. NICHOLSON, Public Printer.
1855

By the direction of the COMMISSIONER OF THE GENERAL LAND OFFICE, the accompanying instructions are prescribed for your official government, including a MANUAL OF INSTRUCTIONS to regulate the field operations of your deputy surveyors. The latter is a revision of the Manual of Surveying Instructions prepared for OREGON in 1851, (the edition of which is now exhausted,) and presents, in some respects, more copious illustrations, both in the specimen field notes and in the diagrams, than could be furnished amidst the pressure of the exigency under which the former had to be prepared. It will be observed that, in the former edition, the township and section lines south of the base are made to start therefrom, and close on the first standard parallel south; whereas, under the present instructions, such lines are made to start from the first standard parallel south, and to close to the north on the base: and thus there will be closing corners and starting corners, both on the base and standard lines. Such modification is introduced for the sake of entire uniformity of method in new fields of survey, and will not, of course, affect any past operations under the original instructions.

The starting corners on the base line and on the standards will, of course, be common to two townships or to two sections lying on the north of such lines; and the closing corners on such lines, from the south, should be carefully connected with the former by measurements to be noted in the field book.

Where STONE can be had to perpetuate corner boundaries, such, for obvious reasons, should always be preferred for that purpose, and the dimensions of the stone, as herein prescribed, (on page 9), are to be regarded as the *minimum size*; but in localities where it is found practicable to obtain a stone of *increased dimensions*, it is always desirable to do so, particularly for TOWNSHIP CORNERS, and

especially for those on base, meridian, and standard lines; and to such purport the deputy surveyor is to be specially instructed.

Prior to entering upon duty, the deputy surveyor is to make himself thoroughly acquainted with the official requirements in regard to field operations in all the details herein set forth, and to be apprized of the weighty moral and legal responsibilities under which he will act.

Unfaithfulness in the execution of the public surveys will be detected by special examinations of the work to be made for that purpose, and, when detected, will immediately subject the delinquent deputy and his bondsmen to be sued by the district attorney of the United States, at the instance of the proper surveyor general—the institution of which suit will act at once as a lien upon any property owned by him or them at that time; and such delinquency, moreover, is an offence punishable by the statute, with all the pains and penalties of perjury, (see act of 1846, quoted on pages 19 and 20 hereof,) and will of necessity debar the offending deputy from future employment in like capacity. Hence, in the execution of contracts for surveying public lands, there is every incentive to fidelity that can address itself either to the moral sense, or to motives of private interest.

By order of the Commissioner.

JOHN M. MOORE,
Principal Clerk of Surveys.

GENERAL LAND OFFICE,
February 22, 1855.

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SYSTEM
of
RECTANGULAR SURVEYING.

1. The public lands of the United States are ordinarily surveyed into rectangular tracts, bounded by lines conforming to the cardinal points.
2. The public lands are laid off, in the first place, into bodies of land of six miles square, called *Townships*, containing as near as may be 23,040 acres. The

townships are subdivided into thirty-six tracts called *Sections*, of a mile square, each containing as near as may be 640 acres. Any number or series of contiguous townships, situated north or south of each other, constitute a *Range*.

The law requires that the lines of the public surveys shall be governed by the true meridian, and that the townships shall be *six miles square*,—two things involving in connexion a mathematical impossibility—for, strictly to conform to the meridian, necessarily throws the township out of square, by reason of the convergency of meridians, and hence by adhering to the true meridian, results the necessity of departing from the strict requirements of law, as respects the precise area of townships and the subdivisional parts, thereof, the township assuming something of a trapezoidal form, which inequality develops itself more and more as such the higher the latitude of the surveys. It is doubtless in view of these circumstances that the law provides (see sec. 2 of the act of May 18, 1796) that the sections of a mile square shall contain the quantity of 640 acres, *as nearly as may be*; and moreover, provides (see sec. 3 of the act of 10th May, 1800) in the following words: "And in all cases where the exterior lines of the townships thus to be subdivided into sections or half sections, shall exceed, or shall not extend six miles, the excess or deficiency shall be specially noted, and added to or deducted from the western or northern ranges of sections or half sections in such township, according as the error may be in running the lines from east to west, or from south to north; the sections and half sections bounded on the northern and western lines of such townships shall be sold as containing only the quantity expressed in the returns and plats, respectively, and all others as containing the complete legal quantity."

The accompanying diagram, marked A, [p. 116] will serve to illustrate the method of running out the exterior lines of townships, as well on the *north* as on the *south* side of the base line: and the order and mode of subdividing townships will be found illustrated in the accompanying specimen field notes, conforming with the township diagram B. The method here presented is designed to insure as full a compliance with all the requirements, meaning, and intent of the surveying laws as, it is believed, is practicable.

The section lines are surveyed from *south* to north on true meridians, and from *east* to west, in order to throw the excess or deficiencies in measurements on the north and west sides of the township, as required by law.

3. The townships are to bear numbers in respect to the base line either north or south of it; and the tiers of townships called "Ranges," will bear numbers in respect to the meridian line according to their relative position to it, either on the east or west.

4. The thirty-six sections into which a township is subdivided are numbered, commencing with number *one* at the *northeast* angle of the township, and proceeding west to number six, and thence proceeding east to number twelve, and so on, alternately, until the number thirty-six in the southeast angle.

5. STANDARD PARALLELS (usually called correction lines) are established at stated intervals to provide for or counteract the error that otherwise would result from the convergency of meridians, and also to arrest error arising from inaccuracies in measurements on meridian lines, which, however, must ever be studiously avoided. On the *north* of the principal base line it is proposed to have these standards run at distances of every *four* townships, or twenty-four miles, and on the *south* of the principal base, at distances of every *five* townships, or thirty miles.

OF MEASUREMENTS, CHAINING, AND MARKING.

1. Where uniformity in the variation of the needle is not found, the public surveys must be made with an instrument operating independently of the magnetic needle. Burt's *improved solar compass*, or other instrument of equal utility, must be used of necessity in such case; and it is deemed best that such instrument should be used under all circumstances. Where the needle can be relied on, however, the ordinary compass may be used in subdividing and meandering.

2. The township lines, and the subdivision lines, will usually be measured by a two-pole chain of thirty-three feet in length, consisting of fifty links, and each link being seven inches and ninety-two hundredths of an inch long. On uniform and level ground, however, the four-pole chain may be used. Your measurements will, however, always be represented according to the four-pole chain of one hundred links. The deputy surveyor must also have with him a measure of the standard chain, wherewith to compare and adjust the chain in use, from day to day, with punctuality and carefulness; and must return such standard chain to the Surveyor General's office for examination when his work is completed.

OF TALLY PINS.

3. You will use eleven tally pins made of steel, not exceeding fourteen inches in length, weighty enough towards the point to make them drop perpendicularly, and having a ring at the top, in which is to be fixed a piece of red cloth, or something else of conspicuous color, to make them readily seen when stuck in the ground.

PROCESS OF CHAINING.

4. In measuring lines with a two-pole chain, every *five* chains are called "*a tally*," because at that distance the last of the ten tally pins with which the forward chainman set out will have been stuck. He then cries "tally", which cry is repeated by the other chainman, and each registers the distance by slipping a thimble, button, or ring of leather, or something of the kind, on a belt worn for that purpose or by some other convenient method. The hind chainman then comes up, and having counted in the presence of his fellow the tally pins which he has taken up, so that both may be assured that none of the pins have been lost, he then takes the forward end of the chain, and proceeds to set the pins. Thus the chainmen alternately change places, each setting the pins that he has taken up, so that one is forward in all the odd, and the other in all the even tallies. Such procedure, it is believed, tends to insure accuracy in measurement, facilitates the recollection of the distances to objects on the line, and renders a mis-tally almost impossible.

LEVELLING THE CHAIN AND PLUMBING THE PINS.

5. The length of every line you run is to be ascertained by precise horizontal measurement, as nearly approximating to an air line as is possible in practice on the earth's surface. This all important object can only be attained by a rigid adherence to the three following observances:

1. Ever keeping the chain *stretched* to the utmost degree of tension on even ground.
2. On uneven ground, keeping the chain not only stretched as aforesaid, but

horizontally *levelled*. And when ascending and descending steep ground, hills, or mountains, the chain will have to be *shortened* to one-half its length, (and sometimes more,) in order accurately to obtain the true horizontal measure.

3. The careful plumbing of the tally pins, so as to attain precisely the *spot* where they should be stuck. The more uneven the surface, the greater the caution needed to set the pins.

MARKING LINES.

6. All lines on which are to be established the legal corner boundaries are to be marked after this method, viz.: Those trees which may intercept your line must have two chops or notches cut on each side of them without any other marks whatever. These are called "*sight trees*," "*line trees*," or "*station trees*."

A sufficient number of other trees standing nearest to your line, on either side, of it, are to be *blazed* on two sides diagonally, or quartering towards the line, in order to render the line conspicuous, and readily to be traced, the blazes to be opposite each other, coinciding in direction with the line where the trees stand very near it, and to approach nearer each other the further the line passes from the blazed trees. Due care must ever be taken to have the lines so well marked as to be readily followed.

ON TRIAL, OR RANDOM LINES,

the trees are not to be blazed, unless occasionally from indispensable necessity, and then it must be done so guardedly as to prevent the possibility of confounding the marks of the trial line with the *true*. But bushes and limbs of trees may be lopped, and *stakes set* on the trial, or random line, at every *ten* chains, to enable the surveyor on his return to follow and correct the trial line, and establish therefrom the *true line*. To prevent confusion, the temporary stakes set on the trial, or random lines, must be *pulled up* when the surveyor returns to establish the true line.

INSUPERABLE OBJECTS ON LINE—WITNESS POINTS.

7. Under circumstances where your course is obstructed by impassable obstacles, such as ponds, swamps, marshes, lakes, rivers, creeks, &c., you will prolong the line across such obstacles by taking the necessary right angle offsets; or, if such be 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 such 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 book. 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 book 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; but on the margins of navigable water courses, or navigable lakes, you will mark the trees with the proper number of the fractional section, township, and range.

The best marking tools adapted to the purpose must be provided for marking neatly and *distinctly* all the letters and figures required to be made at corners; and the deputy is to have always at hand the necessary implements for keeping his

marking irons in order; for which purpose a rat-tail file and a small whetstone will be found indispensable.

ESTABLISHING CORNER BOUNDARIES.

To procure the faithful execution of this portion of a surveyor's duty is a matter of the utmost importance. After a true coursing, and most exact measurements, the corner boundary is the consummation of the work, for which all the previous pains and expenditures have been incurred. If, therefore, the corner boundary be not perpetuated in a permanent and workmanlike manner, the *great aim* of the surveying service will not have been attained. A boundary corner, in a timbered country, is to be a *tree*, if one be found at the precise spot; and if not, a *post* is to be planted thereat; and the position of the corner post is to be indicated by trees adjacent, the angular bearings and distances of which from the corner are facts to be ascertained and registered in your field book. (See article, "Bearing trees.") [p. 125]

In a region where stone abounds the corner boundary will be a small *monument of stones* along side of a single marked stone for a township corner, and a single stone for all other corners.

In a region where timber is not near, and stone not found, the corner will be a *mound of earth*, of prescribed size, varying to suit the case.

The following are the different points for perpetuating corners, viz.:

1. For township boundaries, at intervals of every six miles.
2. For section boundaries, at intervals of every mile, or 80 chains.
3. For quarter section boundaries, at intervals of every half mile, or 40 chains. Exceptions, however, occur on east and west lines, as explained hereafter.

(The half quarter section boundary is not marked in the field, but is regarded by the law as a point intermediate between the half mile or quarter section corners. See act of 24th April, 1820, entitled "An act making further provision for the sale of the public lands," which act refers to the act of Congress passed on the 11th of February, 1805, entitled "An act concerning the mode of surveying the public lands of the United States," for the manner of ascertaining the corners and contents of half quarter sections.)*

4. MEANDER CORNER POSTS are planted at all those points where the township or section lines intersect the banks of such rivers, bayous, lakes, or islands, as are by law directed to be meandered.

The course and distances on meandered navigable streams govern the calculations wherefrom are ascertained the true areas of the tracts of land (sections, quarter sections, &c.) known to the law as *fractional* and binding on such streams.

MANNER OF ESTABLISHING CORNERS BY MEANS OF POSTS.

Township, sectional, or mile corners, and quarter sectional or half mile corners, will be perpetuated by planting a post at the place of the corner, to be formed of the most durable wood of the forest at hand.

The posts must be set in the earth by digging a hole to admit them *two feet deep*, and must be very securely rammed in with earth, and also with stone, if any

* The subdivision of the half-quarter section into quarter-quarter sections is authorized by "An act supplementary to the several laws for the sale of the public lands," approved April 5, 1832.

be found at hand. The portion of the post which protrudes above the earth must be *squared* off sufficiently smooth to admit of receiving the marks thereon, to be made with appropriate marking irons, indicating what it stands for. Thus the sides of *township corner posts* should square at least *four inches*, (the post itself being *five inches* in diameter,) and must protrude *two feet* at least above the ground; the sides of *section corner posts* must square at least *three inches*, (the post itself being *four inches* in diameter,) and protrude *two feet* from the ground; and the *quarter section corner posts* and *meander corner posts* must be *three inches wide*, presenting *flattened* surfaces, and protruding *two feet* from the ground.

Where a township post is a corner common to *four townships*, it is to be set in the earth *diagonally*, thus:



On each surface of the post is to be marked the number of the particular township, and its range, which it *faces*. Thus, if the post be a common boundary to four township—say *one* and *two*, south of the base line, of range *one*, west of the meridian; also to townships *one* and *two*, south of the base line, of range *two*, west of the meridian, it is to be marked thus.

	(R. 1 W.)	(1 W.)
From N. to E.	(T. 1 S.)	from E. to S. (2 S.)
	(S. 31)	(6)
	(2 W.)	(2 W.)
From N. to W.	(1 S.)	from W. to S. (2 S.)
	(36)	(1)

These marks are not only to be distinctly but *neatly* cut into the wood, at least the eighth of an inch deep; and to make them yet more *conspicuous* to the eye of the anxious explorer, the deputy must apply to all of them a *streak of red chalk*.

Section or *mile posts*, being corners of sections, and where such are common to *four sections*, are to be set *diagonally* in the earth, (in the manner provided for township corner posts;) and on each side of the squared surfaces (made smooth, as aforesaid, to receive the marks) is to be marked the appropriate *number* of the particular one of the *four sections*, respectively, which such side *faces*; also on one side thereof are to be *marked* the numbers of its *township* and *range*; and to make such marks yet more *conspicuous*, in manner aforesaid, a streak of *red chalk* is to be applied.

In every township, subdivided into thirty-six sections, there are twenty-five interior section corners, each of which will be *common* to *four sections*.

A quarter section, or half mile post, is to have no other mark on it than $\frac{1}{4}$ S., to indicate what it stands for.

NOTCHING CORNER POSTS.

Township corner posts, common to four townships, are to be notched with *six* notches on each of the four angles of the squared part set to the cardinal points.

All mile posts on *township lines* must have as many notches on them, on two opposite *angles* thereof, as they are miles distant from the township corners, respectively. Each of the posts at the corners of sections in the *interior* of a township must indicate, by a number of notches on each of its four corners directed to the cardinal points, the corresponding number of miles that it stands from the

outlines of the township. The four sides of the post will indicate the number of the section they respectively *face*. Should a tree be found at the place of any corner, it will be marked and notched as aforesaid, and answer for the corner in lieu of a post, the kind of tree and its diameter being given in the field notes.

BEARING TREES.

The position of all corner posts, or corner trees, of whatever description, that may be established, is to be evidenced in the following manner, viz. From such post or tree the courses must be taken and the distances measured to two or more adjacent trees in opposite directions, as nearly as may be, and these called "bearing trees." Such are to be distinguished by a large *smooth blaze*, with a *notch* at its lower end, facing the corner, and in the blaze is to be marked the number of the *range, township, and section*; but at quarter section corners nothing but $\frac{1}{4}$ S. need be marked. The letters B.T. (bearing tree) are also to be marked upon a smaller blaze directly under the large one, and as near the ground as practicable.

At all township corners, and at all section corners, on range or township lines, *four* bearing trees are to be marked in this manner, one in each of the adjoining sections.

At interior section corners *four* trees, one to stand within each of the four sections to which such corner is common, are to be marked in manner aforesaid, if such be found.

A tree supplying the place of a corner post is to be marked in the manner directed for posts; but if such tree should be a beech, or other *smooth bark* tree, the marks may be made on the bark, and the tree notched.

From quarter section and meander corners two bearing trees are to be marked, one within each of the adjoining sections.

Where the requisite number of "bearing trees" is not to be found at convenient and suitable distances, such as are found are to be marked as herein directed; but in all such cases of deficiency in the number of bearing trees, (unless, indeed, the boundary itself be a *tree*,) a *quadrangular trench*, with side of *five* feet, and with the angles to the cardinal points must be spaded up outside the corner, as a centre, and the earth carefully thrown on the inside, so as to form a range of earth, which will become covered with grass, and present a small square elevation, which in aftertime will serve to mark, unmistakably, the spot of the corner.

CORNER STONES.

Where it is deemed best to use STONES for boundaries, in lieu of posts, you may at *any* corner, insert endwise into the ground, to the depth of 7 or 8 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—equal to 504 cubic inches—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. The kind of stone should also be stated.

MARKING CORNER STONES.

Stones at township corners, common to four townships, must have *six* notches, cut with a pick or chisel on each edge or side towards the cardinal points: and

where used as section corners on the range and township lines, or as section corners in the interior of a township, they will also be notched, to correspond with the directions given for notching posts similarly situated.

Posts or stones at township corners on the base and standard lines, and which are common to two townships on the north side thereof, will have *six* notches on each of the *west, north* and *east* sides or edges; and where such stones or posts are set for corners to two townships *south* of the base or standard, *six* notches will be cut on each of the *west, south,* and *east* sides or edges.

Stones, when used for quarter section corners, will have $\frac{1}{4}$ cut on them—on the west side on north and south lines, and on the north side on east and west lines.

MOUNDS.

Whenever bearing trees are not found, mounds of earth, or stone, are to be raised *around posts* on which corners are to be marked in the manner aforesaid. Wherever a mound of earth is adopted, the same will present a conical shape; but at its base, on the earth's surface a *quadrangular trench* will be dug; by the "trench" (heremeant) is to be understood a *spade deep* of earth thrown up from the four sides of the line, *outside* the trench, so as to form a *continuous elevation along its outer edge*. In mounds of earth, common to *four* townships or *to four* sections, they will present the *angles* of the quadrangular trench (*diagonally*) towards the cardinal points. In mounds, common only to *two* townships or *two* sections, the *sides* of the quadrangular trench will *face* the cardinal points. The sides of the quadrangular trench at the base of a township mound are to be *six* feet, the height of mound *three* feet.

At section, quarter section, and meander corners, the sides of the quadrangular trench at base of mounds are to be *five* feet, and the conical height *two and a half* feet.

Prior to piling up the earth to construct a mound, there is to be dug a spade-ful or two of earth from the corner boundary point, and in the cavity so formed is to be deposited a *marked stone*, or a portion of *charcoal*, (the quantity whereof is to be noted in the field book;) or in lieu of charcoal or marked stone, a *charred stake* is to be driven twelve inches down into such centre point: either of those will be a *witness* for the future, and whichever is adopted, the fact is to be noted in the field book.

When mounds are formed of *earth*, the spot from which the earth is taken is called the "*pit*", the centre of which ought to be, wherever practicable, at a uniform distance and in a uniform direction from the centre of the mound. There is to be a "*pit*" on *each* side of every mound, distant eighteen inches outside of the trench. The trench may be expected hereafter to be covered by tufts of grass, and thus to indicate the place of the mound, when the mound itself may have become obliterated by time or accident.

At meander corners the "*pit*" is to be directly on the line, *eight links* further from the water than the mound. Wherever necessity is found for deviating from these rules in respect to the "*pits*," the course and distance to each is to be stated in the field books.

Perpetuity in the mound is a great desideratum. In forming it with light alluvial soil, the surveyor may find it necessary to make due allowance for the future settling of the earth, and thus making the mound more elevated than would be necessary in a more compact and tenacious soil, and increasing the base

of it. In so doing, the relative proportions between the township mound and other mounds is to be preserved as nearly as may be.

The earth is to be pressed down with the shovel during the process of piling it up. Mounds are to be *covered* with sod, grass side up, where sod is to be had: but, in forming a mound, *sod* is NEVER to be *wrought up* with the earth, because sod decays, and in the process of decomposing it will cause the mound to become porous, and therefore liable to premature destruction.

POSTS IN MOUNDS

must show above the top of the mound ten or twelve inches, and be notched and marked precisely as they would be for the same corner without the mound.

MOUND MEMORIALS.

Besides the *charcoal*, marked *stone* or *charred stake*, one or the other of which must be lodged in the earth at the point of the corner, the deputy surveyor is recommended to plant *midway* between each pit and the trench seeds of some tree, (those of fruit trees adapted to the climate being always to be preferred,) so that, in course of time, should such take root, a small clump of trees may possibly hereafter note the place of the corner. The facts of planting such seed, and the kind thereof, are matters to be truthfully noted in the field book.

WITNESS MOUNDS TO TOWNSHIP OR SECTION CORNERS.

If a township or section corner, in a situation where bearing or witness trees are not 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, 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*, *stone*, or *charred stake* deposited beneath, as before directed; and measure and state in your field book the distance and course from the position of the true corner of the bearing or witness mound so placed and erected.

DOUBLE CORNERS.

Such corners are to be nowhere except on the base and standard lines, whereon are to appear both the corners which mark the intersections of the lines which close thereon, and those from which the surveys start on the north. On these lines, and at the time of running the same, the township, section, and quarter section corners are to be planted, and each of these is a corner common to *two*, (whether township or section corners,) on the north side of the line, and must be so marked.

The corners which are established on the standard parallel, at the time of running it, are to be known as "*standard corners*," and, in addition to all the *ordinary* marks, (as herein prescribed,) they will be marked with the letters S. C. Closing corners will be marked with the letters C. C. in addition to other marks.

The standard parallels are designed to be run in *advance* of the contiguous

surveys on the south of them, but circumstances may exist which will *impede* or temporarily delay the *due* extension of the standard; and when, from uncontrollable causes, the *contiguous townships* must be surveyed, in advance of the time of extending the standard, in any such event it will become the duty of the deputy who shall afterwards survey any such standard to plant thereon the *double set* of corners, to wit; the standard corners, to be marked S. C., and the closing ones which are to be marked C. C.; and to make such measurements as may be necessary to connect the closing corners and complete the unfinished meridional lines of such contiguous and prior surveys, on the principles herein set forth, under the different heads of "exterior or township lines," and of "diagram B."

You will recollect that the corners, (whether township or section corners,) which are *common to two*, (two townships or two sections,) are not to be planted *diagonally* like those which are common to *four*, but with the flat sides facing the cardinal points, and on which the marks and notches are made as usual. This, it will be perceived, will serve yet more fully to distinguish the standard parallels from all other lines.

THE MEANDERING OF NAVIGABLE STREAMS.

1. Standing with the face looking *down* stream, the bank on the *left* hand is termed the "left bank," and that on the *right* hand the "right bank." These terms are to be universally used to distinguish the two banks of a river or stream.

2. Both banks of *navigable* rivers are to be meandered by taking the courses and distances of their sinuosities, and the same are to be entered in the field book.

At those points where either the township or section lines intersect the banks of a navigable stream, POSTS, or, where necessary, MOUNDS of *earth* or *stone*, are to be established at the time of running these lines. They are called "meander corners;" and in meandering you are to commence at one of those corners on the township line, coursing the banks, and measuring the distance of each course from your commencing corner to the next "meander corner," upon the same or another boundary of the same township, carefully noting your intersection with all intermediate meander corners. By the same method you are to meander the opposite bank of the same river.

The crossing distance *between* the *MEANDER CORNERS* on same line is to be ascertained by triangulation, in order that the river may be protracted with entire accuracy. The particulars to be given in the field notes.

3. You are also to meander, in manner aforesaid, all *lakes* and deep ponds of area of twenty-five acres and upwards; also navigable bayous; *shallow* ponds, readily to be drained, or likely to dry up, are not to be meandered.

You will notice all streams of water falling into the river, lake, or bayou you are surveying, stating the width of the same at their mouth; also all springs, noting the size thereof and depth, and whether the water be pure or mineral; also the head and mouth of all bayous; and all islands, rapids, and bars are to be noticed, with intersections to their upper and lower points to establish their exact situation. You will also note the elevation of the banks of rivers and streams, the heights of falls and cascades, and the length of rapids.

4. The precise relative position of islands, in a township made fractional by the river in which the same are situated, is to be determined trigonometrically --sighting to a flag or other fixed object on the island, from a special and carefully

measured base line, connected with the surveyed line, on or near the river bank, you are to form connexion between the meander corners on the river to points corresponding thereto, in direct line, on the bank of the island, and there establish the proper meander corners, and calculate the distance across.

5. In meandering lakes, ponds, or bayous, you are to commence at a meander corner upon the township line, and proceed as above directed for the banks of a navigable stream. But where a lake, pond, or bayou lies entirely within the township boundaries, you will commence at a meander corner established in subdividing, and from thence take the courses and distances of the entire margin of the same, noting the intersection with all the meander corners previously established thereon.

6. To meander a pond lying entirely within the boundaries of a section, you will run and measure *two* lines thereunto from the nearest section or quarter section corner on *opposite* sides of such pond, giving the courses of such lines. At *each* of the points where such lines shall intersect the margin of such pond, you will establish a *witness point*, by fixing a post in the ground, and taking bearings to any adjacent trees, or, if necessary, raising a mound.

The relative position of these points being thus definitely fixed in the section, the meandering will commence at one of them, and be continued to the other, noting the intersection, and thence to the beginning. The proceedings are to be fully entered in the field book.

7. In taking the connexion of an island with the main land, when there is no meander corner in line, opposite thereto, to sight from you will measure a special base from the meander corner nearest to such island, and from such base you will triangulate to some fixed point on the shore of the island, ascertain the distance across, and there establish a *special* meander corner, wherefrom you will commence to meander the island.

The field notes of meanders will be set forth in the body of the field book according to the dates when the work is performed, as illustrated in the specimen notes annexed. They are to state and describe particularly the meander corner from which they commenced, each one with which they close, and are to exhibit the meanders of each fractional section separately; following, and composing a part of such notes, will be given a description of the land, timber, depth of inundation to which the bottom is subject, and the banks, current, and bottom of the stream or body of water you are meandering.

9. No blazes or marks of any description are to be made on the lines meandered between the established corners, but the utmost care must be taken to pass no object of topography, or *change therein*, without giving a particular description thereof in its proper place in your meander notes.

OF FIELD BOOKS.

The FIELD NOTES afford the elements from which the plats and calculations in relation to the public surveys are made. They are the sources wherefrom the description and evidence of locations and boundaries are officially delineated and set forth. They therefore must be a faithful, distinct and minute record of everything officially done and observed by the surveyor and his assistants, pursuant to instructions, in relation to running, measuring, and marking lines, establishing boundary corners, &c; and present, so far as possible, a full and com-

plete *topographical description* of the country surveyed, as to every matter of useful information, or likely to gratify public curiosity.

There will be sundry separate and distinct field books of surveys, as follows:

Field notes of the MERIDIAN AND BASE lines, showing the establishment of the *township, section, or mile, and quarter section or half mile, boundary corners* thereon; with the crossings of streams, ravines, hills, and mountains, character of soil, timber, minerals, &c.

Field notes of the "STANDARD PARALLELS, or correction lines," will show the establishment of the township, section, and quarter section corners, besides exhibiting the topography of the country on line, as required on the base and meridian lines.

Field notes of the EXTERIOR lines of TOWNSHIPS, showing the establishment of corners on lines, and the topography, as aforesaid.

Field notes of the SUBDIVISIONS of TOWNSHIPS into sections and quarter sections.

The field notes must in all cases be taken precisely in the order in which the work is done on the ground, and the *date* of each day's work must follow immediately after the notes thereof. The *variation of the needle* must always occupy a *separate line* preceding the notes of measurements on line.

The exhibition of every mile of surveying, whether on township or subdivisional lines, must be *complete in itself*, and be separated by a black line drawn across the paper.

The description of the surface, soil, minerals, timber, undergrowth, &c., on *each mile* of line, is to follow the notes of survey of such line, and not be mixed up with them.

No abbreviations of words are allowable, except of such words as are *constantly* occurring, such as "*sec.*" for "*section.*" "*in. diam.*" for "*inches diameter.*;" "*chs.*" for "*chains.*;" "*lks.*" for "*links.*;" "*dist.*" for "*distant.*;" etc. Proper names must never be abbreviated, however often their recurrence.

The nature of the subject-matter of the field-book is to form its title page, showing the State or Territory where such survey lies, by whom surveyed, and the dates of commencement and completion of the work. The second page is to contain the names and duties of assistants. Whenever a new assistant is employed, or the duties of any one of them are changed, such facts with the reasons therefor, are to be stated in an appropriate entry immediately preceding the notes taken under such changed arrangements. With the notes of the *exterior* lines of townships, the deputy is to submit a plat of the lines run, on a scale of two inches to the mile, on which are to be noted all the objects of topography on line necessary to illustrate the notes, viz: the distances on line at the crossings of streams, so far as such can be noted on the paper, and the direction of each by an arrow-head pointing downstream; also the intersection of line by prairies, marshes, swamps, ravines, ponds, lakes, hills, mountains, and all other matters indicated by the notes, to the fullest extent practicable.

With the instructions for making subdivisional surveys of townships into sections, the deputy will be furnished by the Surveyor-General with a diagram of the *exterior* lines of the townships to be subdivided, on the above scale, upon which are carefully to be laid down the measurements of each of the section lines on such boundaries whereon he is to close, the magnetic variation of each mile, and the particular description of each corner. "P. in M." signifies post in mound. And

on such diagram the deputy who subdivides will make appropriate sketches of the various objects of topography as they occur on his lines, so as to exhibit not only the points on line at which the same occur, but also the direction and position of each between the lines, or within each section, so that every object of topography may be properly completed or connected in the showing.

These notes must be distinctly written out, in language precise and clear, and their figures, letters, words, and meaning are always to be unmistakable. No leaf is to be cut or mutilated, and none to be taken out, whereby suspicion might be created that the missing leaf contained matter which the deputy believed it to be his interest to conceal.

Summary of Objects and Data Required to be Noted

1. The precise length of every line run, noting all necessary offsets therefrom, with the reason and mode thereof.
2. The kind and diameter of all "*bearing trees*," with the course and distance of the same from their respective corners; and the precise relative position of *witness corners* to the *true corners*.
3. The kind of materials, (earth or stone) of which *mounds* are constructed—the fact of their being conditioned according to instructions—with the course and distance of the "*pits*," from the center of the mound, where necessity exists for deviating from the *general* rule.
4. *Trees on line*. The name, diameter, and distance on line to all trees which it intersects.
5. Intersections by line of *land objects*. The distance at which the line first intersects and then leaves every *settlers claim and improvement*; prairie, river, creek or other "*bottom*"; or swamp, marsh, grove, and windfall, with the course of the same at both points of intersection; also the distances at which you begin to ascend, arrive at the top, begin to descend and reach the foot of all remarkable hills and ridges, with their courses, and estimated height, in feet, above the level land of the surrounding country, or above the bottom lands, ravines, or waters near which they are situated.
6. Intersections by line of *water objects*: All rivers, creeks, and smaller streams of water which the line crosses; the distance on line at the points of intersection, and their widths on line. In cases of navigable streams, their width will be ascertained between the meander corners, as set forth under the proper head.
7. *The land's Surface*—Whether level, rolling, broken, or hilly.
8. *The soil*.—Whether first, second, or third rate.
9. *Timber*.—The several kinds of timber and undergrowth, in the order in which they predominate.
10. *Bottom lands*.—To be described as wet or dry, and if the subject to inundation, state to what depth.
11. *Springs of water*.—Whether fresh, saline, or mineral, with the course of the stream flowing from them.
12. *Lakes and Ponds*.—Describing their banks and giving their height, and also the depth of water, and whether it be pure or stagnant.
13. *Improvements*.—Towns and villages; Indian towns and wigwams; houses or cabins; fields or other improvements; sugar tree groves, sugar camps; mill seats; forges, and factories.

14. *Coal banks or beds; peat or turf grounds; minerals and ores*, with particular description of the same as to quality and extent, and all *diggings* therefor; also, *salt springs and licks*. All reliable information you can obtain respecting these objects whether they be on your immediate line or not, is to appear in the general description to be given at the end of the notes.

15. *Roads and trails*, with their directions, whence and whither.

16. *Rapids, cataracts, cascades, or falls of water*, with the height of their fall in feet.

17. *Precipices, caves, sink-holes, ravines, stone quarries, ledges of rock*, with the kind of stone they afford.

18. *Natural curiosities*, interesting fossils, petrifications, organic remains, etc.; also, all ancient works of art, such as mounds, fortifications, embankments, ditches, or objects of like nature.

19. The *variation of the needle* must be noted at all points or places on the lines where there is found any material *change of variation*, and the position of such points must be perfectly identified in the notes.

20. Besides the ordinary notes taken on line, (and which must always be written down on the spot, leaving nothing to be supplied by memory,) the deputy will subjoin, at the conclusion of his book, such further description or information touching any matter or thing connected with the township, (or other survey), which he may be able to afford, and may deem useful or necessary to be known—with a *general description* of the township in the *aggregate*, as respects the face of the country, its soil and geological features, timber minerals, water, etc.

Swamp Lands.

By the act of Congress, approved, September 28, 1850, swamp and overflowed lands, "unfit for cultivation," are granted to the State in which they are situated. In order clearly to define the quantity and locality of such lands, the field notes of surveys, in addition to the other objects of topography required to be noted, are to indicate the points at which you enter all lands which are evidently subject to such grant, and to show the distinctive character of the land so noted; whether it is a swamp or marsh, or otherwise subject to inundation to an extent that, without artificial means, would render it "unfit for cultivation." The depth of inundation is to be stated, as determined from indications on the trees where timber exists; and its frequency is to be set forth as accurately as may be, either from your own knowledge of the general character of the stream which overflows, or from reliable information to be obtained from others. The words "unfit for cultivation," are to be employed in addition to the usual phraseology in regard to entering or leaving such swamps, marshy or overflowed lands. It may be that sometimes the margin of bottom, swamp, or marsh, in which such uncultivable land exists, is not identical with the margin of the body of land "unfit for cultivation;" and in such cases a separate entry must be made for each, opposite the marginal distance at which they respectively occur.

But in case where lands are overflowed by *artificial* means (say by dams for milling, logging, or other purposes,) you are not officially to regard such overflow, but will continue your lines across the same without setting meander posts, stating particularly in the notes the depth of the water, and how the overflow was caused.

SPECIAL INSTRUCTION RESPECTING THE NOTING OF SETTLERS' CLAIMS
IN OREGON, WASHINGTON, AND NEW MEXICO

The law requires that such claims should be laid down temporarily on the township plats, in order to do which, it is indispensably necessary to obtain, to some extent, connexions of these claims with the lines of survey. Under the head of "intersection by line of land objects," the deputy is required to note the *points* in line *whereat* it may be intersected by such claims; but, in addition thereto, there must be obtained at least *one angle* of each claim, with its course and distance either from the point of intersection, or from an established corner boundary, so that its connexion with the regular survey will be legally determined. If the settler's *dwelling* or barn is visible from line, the bearings thereof should be carefully taken from *two* points noted on line, and set forth in the field notes.

AFFIDAVITS TO FIELD NOTES.

At the close of the notes and the *general description* is to follow an affidavit, a form for which is given; and to enable the deputy surveyor fully to understand and appreciate the responsibility under which he is acting, his attention is invited to the provisions of the second section of the 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," and which is as follows:

"Sec. 2. 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 shall suffer all the pains and penalties attached to that offence; and the district attorney of the United States for the time being, in whose district any such false erroneous, or fraudulent surveys shall 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."

Following the "general description" of the township is to be "A list of the names of the individuals employed to assist in running, measuring and marking the lines and corners described in the foregoing field notes of township No. _____ of the BASE LINE of range No. _____ of the _____ MERIDIAN, showing the respective capacities in which they acted."

FORM OF OFFICIAL OATHS TO BE TAKEN PRIOR TO ENTERING
UPON DUTY.

For a deputy surveyor.

I, A. B., having been appointed a deputy surveyor of the lands of the United

States in _____, do solemnly swear (or affirm) that I will well and faithfully, and to the best of my skill and ability, execute the duties confided to me pursuant to a contract with C. D., surveyor general of public lands in _____, bearing date the _____ day of _____, 185-, according to the laws of the United States and the instructions received from the said surveyor general.

(To be sworn and subscribed before a justice of the peace, or other officer authorized to administer oaths.)

For chairman.

I, E. F., do solemnly swear (or affirm) that I will faithfully execute the duties of chain carrier; that I will level the chain upon uneven ground, and plumb the tally pins, whether by sticking or dropping the same; that I will report the true distance to all notable objects, and the true length of all lines that I assist in measuring, to the best of my skill and ability.

(To be sworn and subscribed as above.)

For flagman or axeman.

I, G. H., do solemnly swear (or affirm) that I will well and truly perform the duties of _____, according to instructions given me, and to the best of my skill and ability.

(To be sworn and subscribed as above.)

Exteriors or Township Lines.

The principal meridian, the base line and the standard parallels having been first run, measured, and marked, and the corner boundaries thereon established, according to instructions, the process of running, measuring, and marking the exterior lines of townships will be as follows:

Townships situated north of the base line, and west of the principal Meridian.

Commencing at No. 1, (see figures on diagram A), being the southwest corner of township 1, north, range 1, west, as established on the base line, thence north, on a true meridian line, four hundred and eighty chains, establishing the section and quarter-section corners thereon, as per instructions, to No. 2, whereat establish the corner of townships 1 and 2, north, ranges 1 and 2, west; thence east, on a random or trial line, setting *temporary* section and quarter section stakes, to No. 3, where measure and note the distance at which the line intersects the eastern boundary, north or south of the true or established corner. Run and measure westward, on the true line, (taking care to note all the land and water crossings, etc., as per instructions,) to No. 4, which is identical with No. 2, establishing the section and quarter-section *permanent corners* on said line. Should it happen, however, that such random line falls short, or overruns in length, or intersects the eastern boundary of the township at more than three chains and fifty links distance from the *true corner* thereon, as compared with the corresponding boundary on the south, (either of which would indicate an important error in the surveying,) the lines must be *retraced*, even if found necessary to remeasure the meridional boundaries of the township, (especially the western boundary,) so as to discover and correct the error; in doing which, the *true corners* must be established and marked, and the *false ones* destroyed and obliterated to prevent confusion in future; and *all the*

facts must be distinctly set forth in the notes. Thence proceed in a similar manner from No. 4 to No. 5, No. 5 to No. 6, No. 6 to No. 7, and so on to No. 10, the southwest corner of T. 4 N.—R. 1 W. Thence north, still on a true meridian line, establishing the mile and half-mile corners until reaching the STANDARD PARALLEL of correction line; throwing the *excess* over, or *deficiency* under *four hundred and eighty chains*, on the *last* half-mile, according to law, and at the intersection establishing the "CLOSING CORNER," the distance of which *from* the standard corner must be measured and noted as required by the instructions. But should it ever so happen that some impassable barrier will have prevented or delayed the extension of the standard parallel along and above the field of present survey, then the deputy will plant, in place, the corner of the township, subject to correction thereafter, should such parallel be extended.

NORTH of the base line, and *EAST* of the principal meridian.

Commence at No. 1, being the *southeast* corner of T. 1 N.—R. 1 E., and proceed as with townships situated "north and west," except that the *random* or trial lines will be run and measured *west*, and the *true* lines east, throwing the excess over or deficiency under four hundred and eighty chains on the *west end* of the line, as required by law; wherefore the surveyor will commence his measurement with the length of the deficient or excessive half section boundary on the west of the township, and thus the remaining measurements will all be *even* miles and half-miles.

METHOD OF SUBDIVIDING

1. The first mile, both of the south and east boundaries of each township you are required to subdivide, is to be carefully traced and measured before you enter upon the subdivision thereof. This will enable you to observe any change that may have taken place in the magnetic variation, as it existed at the time of running the township lines, and will also enable you to compare your chaining with that upon the township lines.

2. Any discrepancy, arising either from a change in the magnetic variation or a difference in measurement, is to be carefully noted in the field notes.

3. After adjusting your compass to a variation which you have thus found will retrace the eastern boundary of the township, you will commence at the corner to sections 35 and 36, on the south boundary, and run a line due north, forty chains, to the quarter section corner which you are to establish between sections 35 and 36; continuing due north forty chains further, you will establish the corner to sections 25, 26, 35 and 36.

4. From the section corner last named, run a *random* line, without blazing, *due east*, for corner of sections 25 and 36, in east boundary, and at forty chains from the starting point set a post for *temporary* quarter section corner. If you intersect exactly at the corner, you will blaze your random line back, and establish it as the *true* line; but if your random line intersects the said east boundary, either north or south of said corner, you will measure the distance of such intersection, from which you will calculate a course that will run a *true* line back to the corner from which your random started. You will establish the *permanent* quarter section corner at a point equidistant from the two terminations of the *true* line.

5. From the corner of sections 25, 26, 35, 36, run due north between section 25 and 26, setting the quarter section post, as before, at forty chains, and at eighty chains establishing the corner of sections 23, 24, 25, 26. Then run a random *due east* from the corner of sections 24 and 25 in east boundary; setting temporary quarter section post at forty chains; correcting back, and establishing *permanent* quarter section corner at the equidistant point on the *true* line, in the manner directed on the line between section 25 and 36.

6. In this manner you will proceed with the survey of each successive section in the first tier, until you arrive at the north boundary of the township, which you will reach in running up a random line between sections 1 and 2. If this random line should not intersect at the corner established for section 1, 2, 35 and 36, upon the township line, you will note the distance that you fall east or west of the same, from which distance you will calculate a course that will run a true line south to the corner from which your random started. Where the closing corner is on the base or standard line, a deviation from the general rule is explained under the head of "Diagram B."

7. The first tier of sections being thus laid out and surveyed, you will return to the south boundary of the township, and from the corner of sections 34 and 35 commence and survey the second tier of sections in the same manner that you pursued in the survey of the first, closing at the section corners on the first tier.

8. In like manner proceed with the survey of each successive tier of sections, until you arrive at the fifth tier; and from each section corner which you establish upon this tier, you are to run random lines to the corresponding corners established upon the range line forming the western boundary of the township; setting, as you proceed, each *temporary* quarter section post at forty chains from the interior section corner, so as to throw the excess or deficiency of measurement on the extreme tier of quarter sections contiguous to the township boundary; and on returning, establish the *true* line, and establish thereon the *permanent* quarter section corner.

QUARTER SECTION CORNERS, both upon north and south and upon east and west lines, are to be established at a point *equidistant* from the corresponding section corners, *except* upon the lines closing on the north and west boundaries of the township, and in those situations the quarter section corners will always be established at precisely *forty* chains to the north or west (as the case may be) of the respective section corners from which those lines respectively *start*, by which procedure the excess or deficiency in the measurements will be thrown, according to law, on the extreme tier of quarter sections.

Every north and south section line, except those terminating in the north boundary of the township, is to be eighty chains in length. The east and west section lines, except those terminating on the west boundary of the township, are to be within one hundred links of eighty chains in length; and the north and south boundaries of any one section, except in the extreme western tier, are to be within one hundred links of equal length. The meanders within each fractional section, or between any two meander posts, or of a pond or island in the interior of a section, must close within one chain and fifty links.

DIAGRAM A [p. 116] illustrates the mode of laying off "township exteriors *north* of the BASE line, and EAST and WEST of the principal MERIDIAN, whether

between the base and first standard, or between any two standards; and the same general principles will equally apply to townships south of the base line and east and west of the meridian and between any two standards *south*, where the distances between the base and first standard, and between the standards themselves, are five townships or thirty miles.

DIAGRAM B indicates the mode of laying off a TOWNSHIP into sections and quarter sections, and the accompanying set of the field notes (marked B) critically illustrates the mode and order of conducting the survey under every variety of circumstance shown by the topography on the diagram. In townships lying *south* of and contiguous to the base or to any standard parallel, the lines between the northern tier of sections will be run *north*, and to be made to close as *true* lines; quarter section corners will be set at forty chains, and section corners established at the intersection of such lines with the base or standard, (as the case may be,) and the distance is to be measured and entered in the field book to the nearest corner on such standard or base.

DIAGRAM C illustrates the mode of making mound, stake; or stone corner boundaries for townships, sections, and quarter sections. [See Frontispiece]

The mode and order of surveying the *exterior* boundaries of a township are illustrated by the specimen field notes marked A; and the mode and order of *subdividing* a township into sections and quarter sections are illustrated by the specimen field notes marked B. The attention of the deputy is particularly directed to these specimens, as indicating not only the method in which his work is to be conducted, but also the order, manner, language, &c., in which his field notes are required to be returned to the Surveyor General's office; and such specimens are to be deemed part of these instructions, and any *departure* from their details, without special authority, in cases where the circumstances are analogous in practice, *will be regarded as a violation of his contract and oath.*

The subdivisions of fractional sections into forty acre lots, (as near as may be,) are to be so laid down on the official township plat in *red* lines, as to admit of giving to each a specific designation, if possible, according to its relative position in the fractional section, as per examples afforded by diagram B, as well as by a number, in all cases where the lot cannot properly be designated as a quarter-quarter. Those fractional subdivision lots which are not susceptible of being described according to relative local position, are to be numbered in regular series No. 1 being (wherever practicable, and as a general rule) either the northeastern or the most easterly fractional lot, and proceeding from east to west and from west to east, alternately, to the end of the series; but such general rule is departed from under circumstances given as examples in fractional sections: 4, 7, 19 and 30, where No. 1 is the interior lot of the northern and western tiers of the quarter sections to which there is a corresponding No. 2 given to the exterior lot, and the series of numbers is in continuation of the latter. The lots in the extreme northern and western tiers of quarter sections, containing either more or less than the regular quantity, are always to be numbered as per example. Interior lots in such extreme tiers are to be *twenty* chains wide, and the excess or deficiency of measurement is always to be thrown on the exterior lots: elsewhere, the assumed subdivisional corner will always be a point equidistant from the established corners.

The official township plat to be returned to the General Land Office is to

show on its face, on the right hand margin, the meanders of navigable streams, islands, and lakes. Such details are wanted in the adjustment of the surveying accounts, but may be omitted in the copy of the township plat to be furnished to the district land office by the surveyor general. A suitable margin for *binding* is to be preserved on the left hand side of each plat. Each plat is to be certified with table annexed, according to the forms subjoined to "diagram B," and is to show the areas of public land, of private surveys, and of water, with the aggregate area as shown on the diagram.

Each township plat is to be prepared in *triplicate*: one for the General Land Office, one for the district office, and the third to be retained as the record in the office of the Surveyor General.

The original field books, each bearing the *written approval* of the Surveyor General, are to be substantially bound into volumes of suitable size, and retained in the surveyor general's office, and certified *transcripts* of such field books (to be of foolscap size) are to be prepared and forwarded, from time to time, to the General Land Office.

With the copy of each township plat furnished to a district land office, the surveyor general is required by law to furnish *descriptive notes* as to the character and quality of the soil and timber found on and in the vicinity of each surveyed line, and giving a description of each corner boundary.

Printed blank forms for such notes will be furnished by the General Land Office. The forms provide eighteen spaces for *meander corners*, which, in most cases, will be sufficient; but when the number shall exceed eighteen, the residue will have to be inserted on the face of the township plat, to be furnished to the register of the district land office. There is shown a series of meander corners on diagram B, viz: from No. 1 to No. 22, on the river and islands; 23 to 28 being on Island lake; 29 and 30 on Clear lake; and 31 and 32 on lake in section 26.

There is also a distinct series of numbers, 1 to 7, to designate corners of D. Reed's private survey, and to fractional sections, made such thereby; and the same series is continued from 8 to 14 inclusive, to designate corners to S. William's private survey, and to fractional sections made such thereby. These are numberings on the plat merely for the purpose of ready reference to the descriptions of such corners to be furnished to the registers.

The *letters* on "diagram B," at the "corners" on the township boundaries, are referred to in the descriptive notes to be furnished to the district land office, but are not required to be inserted on the official plat to be returned to the General Land Office.

The following chapter, on the subject of the variation of the magnetic needle, is extracted from the revised edition of the work on surveying by CHARLES DAVIES, L. L. D., a graduate of the Military Academy at West Point. The work itself will be a valuable acquisition to the deputy surveyor; and his attention is particularly invited to the following chapter, which sets forth the modes by which the variation may be ascertained.

VARIATION OF THE NEEDLE

1. The angle which the magnetic meridian makes the true meridian, at any

place on the surface of the earth, is called the *variation of the needle* at that place, and is east or west, according as the north end of the needle lies on the east or west side of the true meridian.

2. The variation is difference at different places, and even at the same place it does not remain constant for any length of time. The variation is ascertained by comparing the magnetic with the true meridian.

3. If we suppose a line to be traced through those points on the surface of the earth, where the needle points directly north, such a line is called the *line of no variation*. At all places lying on the east of this line, the variation of the needle is west; at all places lying on the west of it, the variation is east.

4. The public is much indebted to Professor Loomis for the valuable results of many observations and much scientific research on the dip and variation of the needle, contained in the 39th and 42d volumes of Silliman's Journal.

The variation at each place was ascertained for the year 1840; and by a comparison of previous observations and the application of known formulas, the annual motion, or change in variation, at each place, was also ascertained, and both are contained in the table which follows.

5. If the annual motion was correctly found, and continues uniform, the variation at any subsequent period can be ascertained by simply multiplying the annual motion of the number of years, and adding the product, in the algebraic sense, to the variation in 1840. It will be observed, that all variations west are designated by the plus sign; and all variations east, by the minus sign. The annual motions being all west, have all the plus sign.

6. Our first object will be to mark the line, as it was in 1840, of *no variation*. For this purpose we shall make a table of places lying near this line.

PLACES NEAR THE LINE OF NO VARIATION

Places	Latitude	Longitude	Variation	Annual Motion
A point.....	40° 53'	80° 13'	0° 00'	+4.4'
Cleveland, Ohio.....	41. 31	81 45	-0 19	4.4
Detroit, Mich.....	42 24	82 58	-1 56	4
Mackinaw.....	45 51	84 41	-2 08	3.9
Marietta, Ohio.....	39 30	81 28	-1 24	4.3
Charlottesville, Va.....	39 02	78 30	+0 19	3.7
Charleston, S. C.....	32 42	80 04	-2 44	1.3

At the point whose latitude is 40° 53' longitude 80° 13', the variation of the needle was nothing in the year 1840, and the direction of the line of no variation, traced north, was N. 24° 35' west. The line of no variation, prolonged, passed a little to the east at Cleveland, in Ohio—the variation there being 19 minutes east. Detroit lay still further to the west of this line, the variation there being 1° 56' east; and Mackinaw still further to the west, as the variation at that place was 2° 08' east.

The course of the line of no variation, prolonged southerly, was S. 24° 35' E. Marietta, Ohio, was west of this line—the variation there being 1° 24' east. Charlottesville, in Virginia, was a little to the east of it—the variation there being 19' west; whilst Charleston, in South Carolina, was on the west—the variation there being 2° 44' east.

From these results, it will be easy to see about where the line of no variation is traced in our own country.

7. We shall give two additional tables:

PLACES WHERE THE VARIATION WAS WEST

Places	Latitude	Longitude	Variation	Annual Motion
Angle of Maine.....	48° 00'	67° 37'	+19° 30'	+8.8'
Waterville, Me.....	44 27	69 32	12 36	5.7
Montreal.....	45 31	73 35	10 18	5.7
Keesville, N. Y.....	44 28	73 32	8 51	5.3
Burlington, Vt.....	44 27	73 10	9 27	5.3
Hanover, N. H.....	43 42	72 14	9 20	5.2
Cambridge, Mass.....	42 22	71 08	9 12	5
Hartford, Ct.....	41 46	72 41	6 58	5
Newport, R. I.....	41 28	71 21	7 45	5
Geneva, N. Y.....	42 52	77 03	4 18	4.1
West Point.....	41 25	74 00	6 52	4
New York City.....	40 43	71 01	5 34	3.6
Philadelphia.....	39 57	75 11	4 08	3.2
Buffalo, N. Y.....	42 53	79 06	1 37	4.1

PLACES WHERE THE VARIATION WAS EAST

Places	Latitude	Longitude	Variation	Annual Motion
Mouth of Columbia River.....	46° 12'	123° 30'	-21° 40'	Unknown
Jacksonville, Ill.....	39 43	90 20	8 28	+2.5'
St. Louis, Mo.....	38 37	90 17	8 37	2.3
Nashville, Tenn.....	36 10	86 52	6 42	2
Louisiana, at.....	29 40	94 00	8 41	1.4
Mobile, Ala.....	30 42	86 16	7 05	1.4
Tuscaloosa, Ala.....	33 12	87 43	7 26	1.6
Columbus, Geo.....	32 28	85 11	5 28	2
Milledgeville, Geo.....	33 07	83 24	5 07	2.4
Savannah, Geo.....	32 05	81 12	4 13	2.7
Tallahassee, Fla.....	30 26	84 27	5 03	1.8
Pensacola, Fla.....	30 24	87 23	5 53	1.4
Logansport, Ind.....	40 45	86 22	5 24	2.7
Cincinnati, Ohio.....	39 06	84 27	4 46	3.1

METHODS OF ASCERTAINING THE VARIATION

8. The best practical method of determining the true meridian of a place is by observing the north star. If this star were precisely at the point in which the axis of the earth, prolonged, pierces the heavens, then the intersection of the vertical plane passing through it and the place, with the surface of the earth, would be the true meridian. But the star being at a distance from the pole equal to 1° 30' nearly, it performs a revolution about the pole in a circle, the polar distance of which is 1° 30': the time of revolution is 23 h. and 56 min.

To the eye of an observer this star is continually in motion, and is due north but twice in 23 h. 56 min.; and is then said to be on the meridian. Now, when it departs from the meridian it apparently moves east or west for 5 h. and 59 m., and then returns to the meridian again. When at its greatest distance from the meridian, east or west, it is said to be at its greatest *eastern* or *western* elongation.

The following tables show the times of its greatest eastern and western elongations.

Eastern elongations.

Days	April	May	June	July	August	Sept.
	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>
1.....	18 18	16 26	14 24	12 20	10 16	8 20
7.....	17 56	16 03	14 00	11 55	9 53	7 58
13.....	17 34	15 40	13 35	11 31	9 30	7 30
19.....	17 12	15 17	13 10	11 07	9 08	7 15
25.....	16 49	14 53	12 45	10 43	8 45	6 53

Western elongations.

Days	Oct.	Nov.	Dec	Jan.	Feb.	March
	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>
1.....	19 18	16 22	14 19	12 02	9 50	8 01
7.....	17 36	15 59	13 53	11 36	9 26	7 38
13.....	17 34	15 35	13 27	11 10	9 02	7 16
19.....	17 12	15 10	13 00	10 44	8 39	6 54
25.....	16 49	14 45	12 34	10 18	8 16	6 33

The eastern elongations are put down from the first of April to the first of October; and the western from the first of October to the first of April; the time is computed from 12 at noon. The western elongations in the first case, and the eastern in the second, occurring in the daytime, cannot be used. Some of those put down are also invisible, occurring in the evening, before it is dark, or after daylight in the morning. In such case, if it be necessary to determine the meridian at that particular season of the year, let 5 h. and 59 m. be added to, or subtracted from, the time of greatest eastern or western elongation, and the observation be made at night, when the star is on the meridian.

9. The following table exhibits the angle which the meridian plane makes with the vertical plane passing through the pole-star, when at its greatest eastern or western elongation: such angle is called the *azimuth*. The mean angle only is put down, being calculated for the first of July of each year:

Azimuth table.

Year	Lat. 32° Azimuth	Lat. 34° Azimuth	Lat. 36° Azimuth	Lat. 38° Azimuth	Lat. 40° Azimuth	Lat. 42° Azimuth	Lat. 44° Azimuth
1851.....	1°45½'	1°48'	1°50½'	1°53½'	1°56¾'	2°00¼'	2°04¼'
1852.....	1°45'	1°47½'	1°50'	1°53'	1°56¾'	1°59¾'	2°03¾'
1853.....	1°44½'	1°47'	1°49¾'	1°52½'	1°55¾'	1°59¾'	2°03¼'
1854.....	1°44¾'	1°46½'	1°49¾'	1°52'	1°55¾'	1°59'	2°02¾'
1855.....	1°43¾'	1°46¾'	1°48¾'	1°51¾'	1°54¾'	1°58½'	2°02¾'
1856.....	1°43¾'	1°45¾'	1°48¾'	1°51¾'	1°54½'	1°58'	2°01¾'
1857.....	1°43'	1°45¾'	1°48'	1°50¾'	1°54'	1°57½'	2°01¼'
1858.....	1°42½'	1°44¾'	1°47½'	1°50¾'	1°53½'	1°57'	2°00¾'
1859.....	1°42'	1°44½'	1°47'	1°49¾'	1°53'	1°56½'	2°00¼'
1860.....	1°41¾'	1°44'	1°46½'	1°49½'	1°52'	1°56'	2°00'
1861.....	1°41¾'	1°43¾'	1°46¾'	1°49'	1°52¼'	1°55¾'	1°59½'

The use of the above tables, in finding the true meridian, will soon appear.

TO FIND THE TRUE MERIDIAN WITH THE THEODOLITE.

10. Take a board, of about one foot square, paste white paper upon it, and perforate it through the center; the diameter of the hole being somewhat larger than the diameter of the telescope of the theodolite. Let this board be so fixed to a vertical staff as to slide up and down freely; and let a small piece of board, about three inches square, be nailed to the lower edge of it, for the purpose of holding a candle.

About twenty-five minutes before the time of the greatest eastern or western elongation of the pole-star, as shown by the tables of elongations, let the theodolite be placed at a convenient point and leveled. Let the board be placed about one foot in front of the theodolite, a lamp or candle placed on the shelf at its lower edge; and let the board be slipped up or down, until the pole-star can be seen through the hole. The light reflected from the paper will show the cross hairs in the telescope of the theodolite.

Then, let the vertical spider's line be brought exactly upon the pole-star, and, if it is an eastern elongation that is to be observed, and the star has not yet reached the most easterly point, it will move from the line toward the east, and the reverse when the elongation is west.

At the time the star attains its greatest elongation, it will appear to coincide with the vertical spider's line for some time, and then leave it, in the direction contrary to its former motion.

As the star moves toward the point of greatest elongation, the telescope must be continually directed to it, by means of the tangent-screw of the vernier plate; and when the star has attained its greatest elongation, great care should be taken that the instrument be not afterward moved.

Now, if it be not convenient to leave the instrument in its place until daylight, let a staff, with a candle or small lamp upon its upper extremity, be arranged at thirty or forty yards from the theodolite, and in the same vertical plane with the axis of the telescope. This is easily effected, by revolving the vertical limb about its horizontal axis without moving the vernier plate, and aligning the staff to coincide with the vertical hair. Then mark the point directly under the theodolite; the line passing through this point and the staff, makes an angle with the true meridian equal to the azimuth of the pole-star.

From the table of azimuths, take the azimuth corresponding to the year and nearest latitude. If the observed elongation was east, the true meridian lies on the west of the line which has been found, and makes with it an angle equal to the azimuth. If the elongation was west, the true meridian lies on the east of the line, and, in either case, laying off the azimuth angle with the theodolite, gives the true meridian.

TO FIND THE TRUE MERIDIAN WITH THE COMPASS.

11. 1. Drive two posts firmly into the ground, in a line nearly east and west; the uppermost ends, after the posts are driven, being about three feet above the surface, and the posts about four feet apart; then lay a plank, or piece of timber three or four inches in width, and smooth on the upper side, upon the posts, and let it be pinned or nailed, to hold it firmly.

2. Prepare a piece of board four or five inches square, and smooth on the under side. Let one of the compass-sights be placed at right angles to the upper surface of the board, and let a nail be driven through the board, so that it can be tacked to the timber resting on the posts.

3. At about twelve feet from the stakes, and in the direction of the pole-star, let a plumb be suspended from the top of an inclined stake or pole. The top of the pole should be of such a height that the pole star will appear about six inches below it; and the plumb should be swung in a vessel of water to prevent it from vibrating.

This being done, about twenty minutes before the time of elongation, place the board to which the compass-sight is fastened on the horizontal plank, and slide it east or west, until the aperture of the compass-sight, the plumb-line, and the star are brought into the same range. Then if the star depart from the plumb-line, move the compass-sight east or west along the timber, as the case may be, until the star shall attain its greatest elongation, when it will continue behind the plumb-line for several minutes, and will then recede from it in the direction contrary to its motion before it became stationary. Let the compass-sight be now fastened to the horizontal plank. During this observation it will be necessary to have the plumb-line lighted: this may be done, by an assistant holding a candle near it.

Let now a staff, with a candle or lamp upon it, be placed at a distance of thirty or forty yards from the plumb-line, and in the same direction with it and the compass-sight. The line so determined makes, with the true meridian, an angle equal to the azimuth of the pole star; and from this line the variation of the needle is readily determined, even without tracing the true meridian on the ground.

Place the compass upon this line, turn the sights in the direction of it, and note the angle shown by the needle. Now, if the elongation at the time of observation was west, and the north end of the needle is on the west side of the line, the azimuth, plus the angle shown by the needle, is the true variation. But should the north end of the needle be found on the east side of the line, the elongation being west, the difference between the azimuth and the angle would show the variation, and the reverse when the elongation is east.

1. Elongation west, azimuth.....	2° 04'
North end of the needle on the west, angle.....	4° 06'
Variation	6° 10' west.
2. Elongation west, azimuth.....	1° 59'
North end of the needle on the east, angle.....	4° 50'
Variation	2° 51' east.
3. Elongation east, azimuth.....	2° 05'
North end of the needle on the west, angle.....	8° 30'
Variation	6° 25' west.
4. Elongation east, azimuth.....	1° 57'
North end of the needle on the east, angle.....	8° 40'
Variation	10° 37' east.

REMARK I.—The variation at West Point, in September, 1835, was 6° 22' west.

REMARK II.—The variation of the needle should always be noted on every survey made with the compass, and then if the land be surveyed at a future time, the old lines can always be re-run.

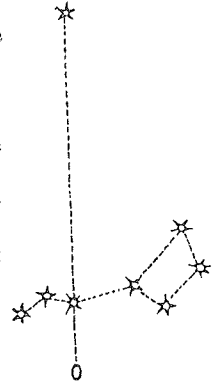
12. It has been found by observation, that heat and cold sensibly affect the magnetic needle, and that the same needle will at the same place indicate different lines at different hours of the day.

If the magnetic meridian be observed early in the morning, and again at different hours of the day, it will be found that the needle will continue to recede from the meridian as the day advances, until about the time of the highest temperature, when it will begin to return, and at evening will make the same line as in the

morning. This change is called the *diurnal variation*, and varies, during the summer season, from one-fourth to one-fifth of a degree.

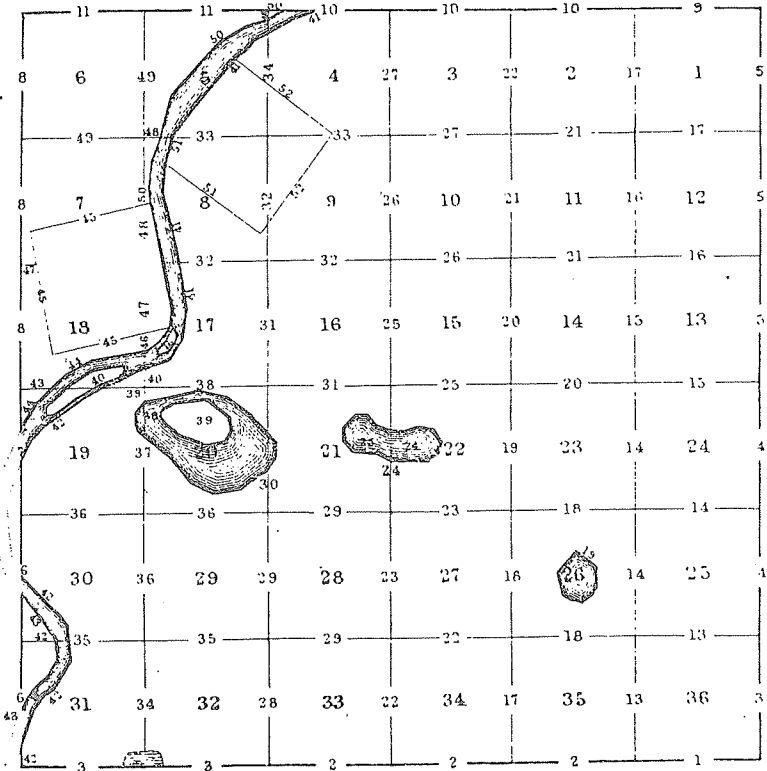
13. A very near approximation to a true meridian, and consequently to the variation, may be had, by remembering that the pole star very nearly reaches the true meridian, when it is in the same vertical plane with the star Alioth in the tail of the Great Bear, which lies nearest the four stars forming the quadrilateral.

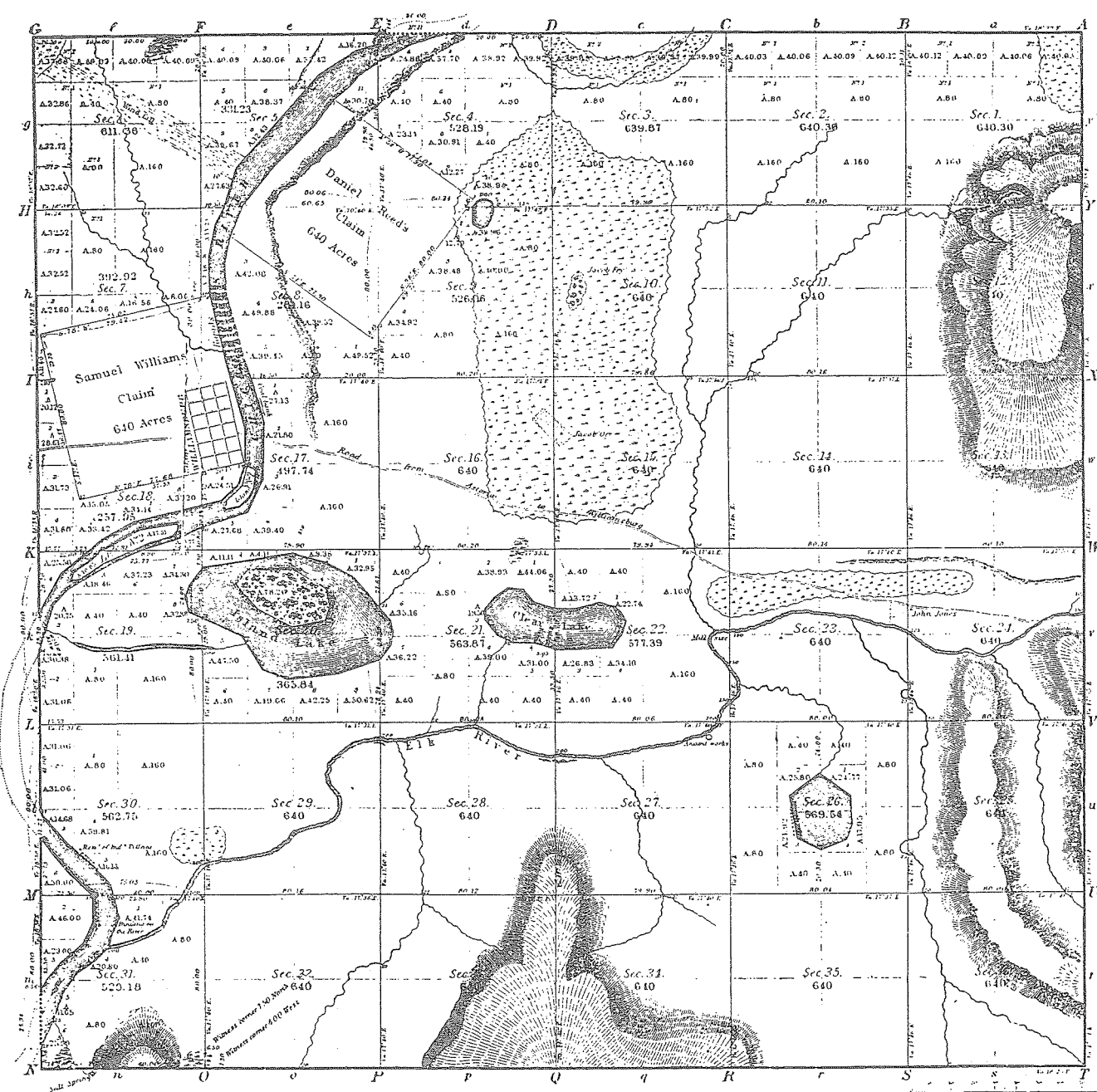
The vertical position can be ascertained by means of a plumb-line. To see the spider's lines in the field of the telescope at the same time with the star, a faint light should be placed near the object-glass. When the plumb-line, the star Alioth, and the north star, fall on the vertical spider's line, the horizontal limb is firmly clamped, and the telescope brought down to the horizon; a light, seen through a small aperture in a board, and held at some distance by an assistant, is then moved according to signals, until it is covered by the intersection of the spider's lines. A picket driven into the ground, under the light, serves to mark the meridian line for reference by day, when the angle formed by it and the magnetic meridian may be measured.



INDEX.

Referring the lines to the pages of the field-notes.
Town. 25 N. Range 2 W. Willamette Meridian





Scale 40 Chains to an Inch

A.

FIELD-NOTES OF THE SURVEY OF THE EXTERIOR BOUNDARIES OF TOWNSHIP 25 NORTH, OF RANGE 2 WEST, OF THE WILLAMETTE MERIDIAN, IN THE TERRITORY OF OREGON, BY ROBERT ACRES, DEPUTY SURVEYOR, UNDER HIS CONTRACT NO. 1, BEARING DATE THE 2D DAY OF JANUARY, 1854.

South boundary, T. 25 N., R. 2 W., Willamette meridian.

Chains:	<p>Begin at the post, the established corner to townships 24 and 25 north, ranges 2 and 3 west. The witness trees all standing, and agree with the description furnished me by the office, viz:</p> <p style="padding-left: 2em;">A black oak, 20 in. dia., N. 37 E. 27 links;</p> <p style="padding-left: 2em;">A bur oak, 24 in. dia., N. 43 W 35 links;</p> <p style="padding-left: 2em;">A maple, 18 in. dia., S. 27 W. 39 links;</p> <p>A white oak, 15 in. dia., S. 47 E. 41 links.</p> <p>East, on a random line on the south boundaries of sections 31, 32, 33, 34, 35, and 36.</p> <p style="padding-left: 2em;">Variation by Burt's improved solar compass, 18° 41' E.,</p> <p>I set temporary half-mile and mile posts at every 40 and 80 chains; and at 5 miles 74 chains 53 links, to a point 2 chains and 20 links north of the corner to townships 24 and 25 north, ranges 1 and 2 W., (Therefore the correction will be 5 chains 47 links <i>west</i> and 37 links <i>south</i> per mile.)</p> <p>I find the corner post standing, and the witness trees to agree with the description furnished me by the surveyor general's office, viz:</p> <p style="padding-left: 2em;">A bur oak, 17 in. dia., bears N. 44 E. 31 links;</p> <p style="padding-left: 2em;">A white oak, 16 in. dia., N. 26 W. 21 links;</p> <p style="padding-left: 2em;">A lynn, 20 in. dia., S. 42 W. 15 links;</p> <p style="padding-left: 2em;">A black oak, 24 in. dia., S. 27 E. 14 links.</p> <p>From the corner to townships 24 and 25 N., ranges 1 and 2 west, I run at a variation of 18° 25' east)</p> <p>West, on a <i>true</i> line along the south boundary of section 36,</p>
40.00	<p>Set a post for quarter-section corner, from which</p> <p style="padding-left: 2em;">A beech, 24 in. dia., bears N. 11 E., 38 links dist.;</p> <p style="padding-left: 2em;">A beech, 9 in. dia., bears S. 9 E., 17 links dist.</p>
62.50	A brook, 6 links wide, runs north.
80.00	<p>Set a post for corner to sections 35 and 36, 1 and 2, from which</p> <p style="padding-left: 2em;">A beech, 9 in. dia., bears N. 22 E., 16 links dist.;</p> <p style="padding-left: 2em;">A beech, 8 in. dia., bears N. 19 W., 14 links dist.;</p> <p style="padding-left: 2em;">A white oak, 10 in. dia., bears S. 52 W., 7 links dist.;</p> <p style="padding-left: 2em;">A black oak, 14 in. dia., bears S. 46 E., 8 links dist.</p> <p>Land level, good soil, fit for cultivation.</p> <p>Timber, beech; various kinds of oak, ash, and hickory.</p>
40.00	<p>West, on a <i>true</i> line along the south boundary of section 35,</p> <p style="padding-left: 2em;">Variation 18° 25' east,</p> <p>Set a post for quarter-section corner, from which</p> <p style="padding-left: 2em;">A beech, 8 in. dia., bears N. 20 E., 8 links dist.</p> <p>No other tree convenient; made trench around post.</p>
65.00	Begin to ascend a moderate hill; bears N. and S.
80.00	<p>Set a post with trench for corner of sections 34 and 35, 2 and 3, from which</p> <p style="padding-left: 2em;">A beech, 10 in. dia., bears N. 56 W., 9 links dist.;</p> <p style="padding-left: 2em;">A beech, 10 in. dia., bears S. 51 E., 13 links dist.</p> <p>No other trees convenient to mark.</p> <p>Land level, or gently rolling, and good for farming.</p> <p>Timber, beech, oak, ash, and hickory; some walnut and poplar.</p>
40.00	<p>West, on a <i>true</i> line along the south boundary of section 34,</p> <p style="padding-left: 2em;">Variation 18° 25' east,</p> <p>Set a quarter-section post with trench, from which</p>

South boundary, T. 25 N., R. 2 W., Willamette meridian—Continued.

Chains.	A black oak, 10 in. dia., bears N. 2 E., 635 links dist. No other tree convenient to mark.
80.00	To point for corner of sections 33, 34, 3 and 4, Drove charred stakes, raised mounds with trenches, as per instructions, from which A bur oak, 16 in. dia., bears N. 31 E. 344 links; and A hickory, 12 in. dia., bears S. 43 W. 231 links. No other trees convenient to mark. Land level, rich, and good for farming. Timber, some scattering oak and walnut.
37.51	West, on a true line along the south boundary of section 33, Variation 18° 25' east,
40.00	A black oak, 24 in. dia. Set a post for quarter-section corner, from which A black oak, 18 in. dia., bears N. 25 E., 32 links dist.; A white oak, 15 in. dia., bears N. 43 W., 22 links dist.
62.00	To foot of steep hill, bears N. E. and S. W.
80.00	Set a post for corner to sections 32, 33, 4 and 5, from which A white oak, 15 in. dia., bears N. 23 E., 27 links dist.: A black oak, 20 in. dia., bears N. 82 W., 75 links dist.: A bur oak, 20 in. dia., bears S. 37 W., 92 links dist. A white oak, 24 in. dia., bears S. 26 E., 42 links dist. Land gently rolling; good rich land for farming. Timber, black and white oak, hickory, and ash.
37.50	West, on a true line along the south boundary of section 32. Variation 18° 25' east.
40.00	A creek, 20 links wide, runs north. Set a granite stone, 14 in. long, 10 in. wide, and 4 in. thick, for quarter- section corner, from which A maple, 20 in. dia., bears N. 41 E., 25 links dist.: A birch, 24 in. dia., bears N. 35 W., 22 links dist.
76.00	To S. E. edge of swamp. As it is impossible to establish <i>permanently</i> the corner to sections 31, 32, 5, and 6 in the swamp, I therefore at this point, 400 chains east of the true point for said section cor., raise a witness mound with trench, as per instructions, from which A black oak, 20 in. dia., bears N. 51 E. 115 links.
80.00	A point in deep swamp for corner to sections 31, 32, 5, and 6. Land, rich bottom; west of creek part wet; east of creek good for farm- ing. Timber, good; oak, hickory, and walnut.
11.00	West, on a true line along the south boundary of section 31. Variation 18° 25' east.
40.00	Leave swamp and rise bluff 30 feet high; bears N. and S. Set post for quarter-section corner, from which A sugar tree, 27 in. dia., bears S. 81 W., 42 links dist.: A beech, 24 in. dia., bears S. 71 E. 24.
54.00	Foot of rocky bluff, 30 feet high; bears N. E. and S. W.
57.50	A spring branch comes out at the foot of the bluff 5 links wide; runs N. W. into swamp.
61.00	Enter swamp; bears N. and S.
70.00	Leave swamp; bears N. S. The swamp contains about 15 acres, the greater part in section 31.
74.73	The corner to townships 24 and 25 N., ranges 2 and 3 W. Land, except the swamp, rolling, good, rich soil. Timber, sugar tree, beech, and maple.

January 25, 1854.

Between ranges 1 and 2 W., T. 25 N., Willamette meridian.

Chains.	Between ranges 1 and 2 west, T. 25 N., Willamette meridian. From the corner to townships 24 and 25 N., ranges 1 and 2 W., I run North, along the east boundary of section 36. Variation 17° 51' E.,
1	A brook 5 links wide, runs N. W.
18.00	To foot of hill, bearing N. W. and S. E.
20.00	To rocky bluff 50 feet high, bears N. W. and S. E.
40.00	Set a post for quarter-section corner, from which A beech 13 in. dia., bears N. 36 E., 22 links dist.; A poplar, 20 in. dia., bears S. 39 E., 42 links dist.
55.00	To top of rocky bluff 40 feet high; bears N. W. and S. E.
57.00	To foot of bluff, enter level, rich land.
72.50	A brook 10 links wide, runs N. W.
80.00	Set a post for corner to sections 25, 36, 30, and 31, from which A birch, 24 in. dia., bears N. 20 E., 49 links dist.; A sugar tree, 12 in. dia., bears N. 81 W., 25 links dist.; A white oak, 9 in. dia., bears S. 40 W., 60 links dist.; A poplar, 15 in. dia., bears S. 38 E., 12 links dist.
	Land, north and south parts rich and good for farming; middle part broken, 3d rate. Timber, beech, sugar tree, poplar, and white oak.
	North, on the east boundary of section 25, Variation 18° east,
5.51	A maple, 20 in. dia.
6.00	To foot of hill, rises moderately; bears E. and N. W.
40.00	Set quarter-section stone, (a rose quartz,) 15 inches long, 12 inches wide, and 3 inches thick, (on steep side hill, slopes west,) from which A poplar, 40 in. dia., bears N. 40 W., 10 links dist.; A beech, 9 in. dia., bears S. 42 W., 11 links dist.
73.21	A white oak, 20 in. dia.
80.00	Set a post for corner of sections 24, 25, 19, and 30, from which A beech, 20 in. dia., bears N. 64 E., 41 links dist.; A white oak, 10 in. dia., bears N. 30 W., 13 links dist.; A beech, 12 in. dia., bears S. 32 W., 26 links dist.; A white oak, 11 in. dia., bears S. 34 E., 48 links dist.
	Land rolling; good soil; nearly 1st rate. Timber, sugar tree, beech, walnut, elm, and white oak.
	North, on the east boundary of section 24, Variation 17° 55' east,
21.17	A white walnut, 20 in. dia.
40.00	Set a quarter-section post, from which A buckeye, 14 in. dia., bears N. 39 E., 27 links dist.; A buckeye, 10 in. dia., bears S. 48 W., 6 links dist.
44.00	The road (at the foot of the bluff) from Williamsburg to Astoria, bears east and west
49.00	Elk Creek, 150 links wide, gentle current, runs west.
57.10	A brook, 10 links wide, runs S. W.
59.67	A black oak, 24 in. dia.
65.50	Leave creek bottom and enter upland, bears E. and W.
80.00	Set a limestone, 16 in. long, 14 wide, and 3 in. thick, for corner to sections 13, 24, 18, and 19, from which A beech, 12 in. dia., bears N. 30 E., 50 links dist.; A walnut, 9 in. dia., bears N. 18 W., 29 links dist.; A walnut, 8 in. dia., bears S. 8 W., 51 links dist.; A beech, 6 in. dia., bears S. 20 E., 40 links dist.
	Land, except creek bottom, rolling; good rich soil. The bottom dry and rich, not subject to inundation. Timber, good: walnut, beech, maple, ash, and hickory.

Between ranges 1 and 2 W., T. 25 N., Willamette meridian—Continued.

Chains.	North, on the east boundary of section 13, Variation 17° 55' east,
14.00	A white oak, 24 in. dia.
21.00	Enter high, broken ridges, bearing east and N. W.
40.00	Set a post for quarter-section corner, from which A cherry, 10 in. dia., bears N. 35 W., 2 links dist.; A cherry, 10 in. dia., bears S. 52 E., 21 links dist.
43.71	A bur oak, 30 in. dia.
80.00	Set a post for corner to sections 12, 13, 7 and 18, from which A hickory, 15 in. dia., bears N. 40 E., 14 links dist.; A hickory, 20 in. dia., bears N. 39 W., 38 links dist.; A beech, 12 in. dia., bears S. 36 W., 16 links dist.; A sugar tree, 10 in. dia., bears S. 42 E., 23 links dist. Land (except 21.00 chains, south part) high, broken, and mountainous Timber, beech, hickory, sugar tree, and blackjack.
	North, on the east boundary of section 12, Variation 17° 55' east,
7.26	A black oak, 24 in. dia.
40.00	Set a post for quarter-section corner, from which A white ash, 10 in. dia., bears N. 35 W., 15 links dist.; An elm, 10 in. dia., bears S. 83 E., 2 links dist.
68.00	The foot of the mountain bears east and N. W.
80.00	Set a post on the top of eastern extremity of mountain, 300 feet high, for corner to sections 1, 12, 6 and 7, from which An elm, 12 in. dia., bears N. 46 E., 30 links dist.; A beech, 10 in. dia., bears N. 40 W., 28 links dist.; A hickory, 10 in. dia., bears S. 55 W., 40 links dist.; A beech, 10 in. dia., bears S. 40 E., 6 links dist. Land mountainous and broken. Timber, hickory, white oak, black oak, beech, and ash.
	North, on the east boundary of section 1, Variation 17° 55' east,
9.00	The foot of mountain bears east and west,
25.37	A white oak, 16 in. dia.
40.00	Set a post, in deep ravine bearing S. W., for quarter-section corner, from which A poplar, 9 in. dia., bears N. 76 E., 7 links dist.; A sugar tree, 9 in. dia., bears S. 22 E., 15 links dist.
44.00	Leave timber and enter prairie; bears E. and N. W.
80.00	To a point for corner to townships 25 and 26 N., ranges 1 and 2 W. Drove charred stake, and raised a mound with trench, as per instructions, and planted N. W. 4 chestnuts, S. W. 2 hickory nuts, N. E. 4 cherry stones, and S. E. 4 white-oak acorns. Land, south of prairie, mountainous and broken; prairie good for farming. Timber, sugar tree, cedar, and pine.
	January 26, 1854.
	From the corner to townships 24 and 25 N., ranges 2 and 3 west, I run North, on the range line between sections 31 and 36, Variation 18° 56' east,
8.56	Set a post on the left bank of Chickeeles River for corner to fractional sections 31 and 36, from which A hackberry, 11 in. dia., bears N. 50 E., 11 links dist.; A sycamore, 60 in. dia., bears S. 15 W., 24 links dist.

Between ranges 2 and 3 W., T. 25 N., Willamette meridian—Continued.

Chains.	<p>I now cause a flag to be set on the <i>right</i> bank of the river, and in the line between sections 31 and 36. I now cross the river, and from a point on the right bank thereof, <i>west</i> of the corner just established on the left bank, I run <i>north</i>, on an offset line, 25 chains and 94 links, to a point 8 chains and 56 links <i>west</i> of the flag. I now set a post, in the place of the flag, for corner to fractional sections 31 and 36, from which</p> <p style="padding-left: 40px;">A beech, 10 in. dia., bears N. 2 E., 12 links dist.;</p> <p style="padding-left: 40px;">A black oak, 12 in. dia., bears N. 80 W., 16 links dist.</p> <p>34.50 The corner above described.</p> <p>40.00 Set a post for quarter-section corner, from which</p> <p style="padding-left: 40px;">A bur oak, 20 in. dia., bears N. 37 E., 26 links dist.;</p> <p style="padding-left: 40px;">A black oak, 24 in. dia., bears S. 75 W., 21 links dist.</p> <p>43.41 A black walnut, 30 in. dia.</p> <p>80.00 Set a post for corner to sections 30, 31, 25 and 36, from which</p> <p style="padding-left: 40px;">A beech, 14 in. dia., bears N. 20 E., 14 links dist.;</p> <p style="padding-left: 40px;">A hickory, 9 in. dia., bears N. 25 W., 12 links dist.;</p> <p style="padding-left: 40px;">A beech, 16 in. dia., bears S. 40 W., 16 links dist.;</p> <p style="padding-left: 40px;">A white oak, 10 in. dia., bears S. 44 E., 20 links dist.</p> <p>Land level; rich bottom; not subject to inundation. Timber, white and black oak, beech, hickory, and ash.</p>
27.73	<p>North, between sections 25 and 30, Variation 18° 50' east,</p> <p>Set a post, for corner to fractional sections 25 and 30, on the right bank of Chickeeles River, a navigable stream, which here runs S. E., from which</p> <p style="padding-left: 40px;">A willow, 6 in. dia., bears S. 37 W., 55 links dist.;</p> <p style="padding-left: 40px;">A maple, 20 in. dia., bears S. 30 E., 11 links dist.</p> <p>I now cause a flag to be set on the left bank of the river, and in the line between sections 25 and 30. From the above corner I run west 3.33 chains, to a point from which the flag bears N. 16° 30' E., which gives for the distance across the river on the line 11.27 chains; to which add 27.73, makes</p> <p>39.00 To the flag on the bank. I here set a post for corner to fractional sections 25 and 30, from which</p> <p style="padding-left: 40px;">A hickory, 8 in. dia., bears N. 44 E., 17 links dist.;</p> <p style="padding-left: 40px;">A white oak, 8 in. dia., bears N. 15 W., 8 links dist.</p> <p>40.00 Set a post for quarter-section corner, from which</p> <p style="padding-left: 40px;">A hickory, 9 in. dia., bears N. 16 E., 16 links dist.;</p> <p style="padding-left: 40px;">A buckeye, 10 in. dia., bears S. 16 E., 18 links dist.</p> <p>43.71 A hickory, 24 in. dia.</p> <p>80.00 Set a post for corner to sections 19, 30, 24, 25, from which</p> <p style="padding-left: 40px;">An elm, 6 in. dia., bears N. 82 E., 25 links dist.;</p> <p style="padding-left: 40px;">A sugar tree, 14 in. dia., bears N. 49 W., 4 links, dist.;</p> <p style="padding-left: 40px;">An elm, 9 in. dia., bears S. 42 W., 30 links dist.;</p> <p style="padding-left: 40px;">A sugar tree, 10 in. dia., bears S. 55 E., 45 links dist.</p> <p>Land good; rich bottom; 1st rate. Timber, hickory, elm, buckeye, sugar tree, and ash.</p>
32.50	<p>North, between sections 19 and 24, Variation 18° 50' east,</p> <p>A hickory, 20 in. dia., on the left bank of Chickeeles River, marks it for corner to fractional sections 19 and 24, from which</p> <p style="padding-left: 40px;">A hackberry, 20 in. diam., bears S. 13 W., 27 links dist.;</p> <p style="padding-left: 40px;">A black oak, 24 in. dia., bears S. 27 E., 31 links dist.</p>

Between ranges 2 and 3 W., T. 25 N., Willamette meridian—Continued.

Chains.	I now cause a flag to be set on the right bank of the river, and in the line between sections 19 and 24, and from the corner run a base east 5.90 chains, to a point from which the flag bears N. 17 W.; continue the base east to a point 9.00 chains east of the corner of the river bank, from which the flag bears N. 25° 15' W., which gives, by calculation, as the mean result of the two observations, for the distance across the river, on the line between sections 19 and 24, 19.30 chains, to which add 32.50 chains, the distance to the river, makes
51.80	To the flag on the right bank of the river. I here set a post for corner to fractional sections 19 and 24, from which A beech, 12 in. dia., bears N. 24 E. 39 links dist.; A beech, 14 in. dia., bears S. 55 W., 120 links dist.
55.74	NOTE.—The point for quarter-section corner falling in the river, it cannot, therefore be established.
80.00	A black oak, 30 inches diameter. Set a post for corner to sections 18, 19, 13, and 24, from which A white oak, 18 in. dia., bears N. 55 E. 24 links dist.; A white oak, 17 in. dia., bears N. 64 W., 18 links dist.; A red oak, 27 in. dia., bears S. 26 W., 20 links dist.; A red oak, 15 in. dia., bears S. 29 E., 40 links dist. Land good; rich bottom; not subject to inundation. Timber, various kinds of oak, beech, hickory, and ash; undergrowth, same and vines.
	North, between sections 13 and 18, Variations 18° 53' east,
5.00	Leave bottom and enter upland; bears N. E. and S. W.
21.88	A red oak, 20 in. dia.
38.60	A white oak, 24 in. dia.
40.00	Set a post for quarter-section corner, from which A white oak, 22 in. dia., bears N. 27 W., 27 links dist.; A white oak, 23 in. dia., bears S. 28 E., 92 links dist.
46.50	A road from Williamsburg bears east and west.
68.37	A black walnut, 21 in. dia.
80.00	Set a post for corner to sections 7, 18, 12, and 13, from which A white oak, 12 in. dia., bears N. 55 E. 68 links dist.; A black oak, 8 in. dia., bears N. 53 W., 40 links dist.; A black oak, 16 in. dia., bears S. 40 W., 55 links dist.; A red oak, 10 in. dia., bears S. 44 E., 50 links dist. Land rolling, and next the bottom broken; soil 2d rate. Timber good; various kinds of oak and hickory.
	North, between sections 7 and 12, Variation 18° 53' east,
15.18	A white oak, 15 in. dia.
30.26	A white oak, 21 in. dia.
40.00	Set a post for quarter-section corner, from which A white oak, 12 in. dia., bears S. 13 W., 60 links dist.; A white oak, 15 in. dia., bears S. 35 E., 55 links dist.
68.37	A black walnut, 21 in. dia.
80.00	Set a post for corner to section 6, 7, 1, 12, from which A white oak, 17 in. dia., bears N. 58 E., 60 links dist.; A white oak, 18 in. dia., bears N. 54 W., 51 links dist.; A white oak, 18 in. dia., bears S. 51 W., 20 links dist.; A hickory, 14 in. dia., bears S. 64 E., 42 links dist. Land gently rolling; 2d rate. Timber, oak and hickory; undergrowth, oak and hazel.

Between ranges 2 and 3 W., T. 25 N., Willamette meridian—Continued.

Chains.	North, between sections 1 and 6, Variation $18^{\circ} 53'$ east,
3.00	Enter <i>stony</i> barrens; timber scattering; bears E. and W.
25.31	A blackjack, 12 in. dia.
40.00	Set a quartz stone, 13 in. long, 12 in. wide, and 4 in. thick, for quarter-section corner, with trench, as per instructions, from which A blackjack, 20 in. dia., bears S. 44 E., 95 links dist. No other tree convenient to mark.
45.00	Leave <i>stony</i> barrens; bears E. and W.
61.11	A hickory, 16 in. dia. Here leave timber and enter prairie, bearing W. and N. E.
80.00	Set a granite stone 18 in. long, 12 in. wide, and 6 in. thick, for corner to townships 25 and 26 north, ranges 2 and 3 west; raise a stone mound, with trench, as per instructions. Land broken and stony; too poor for cultivation. Timber, scattering and poor; blackjack and hickory.
	January 27, 1851.
	From the corner to townships 25 and 26 N., ranges 2 and 3 west, I run East, on a <i>random</i> line between said townships, the variation of my compass being $18^{\circ} 41'$ E., I set temporary half-mile and mile posts at 40.00 and 80.00 chains. At 160.09 intersected the right bank of Chickeeles River, a navigable stream, where set a temporary post; obtain the distance across the river on the line by causing my flag to be set on the left bank of the river, in said line. From the temporary post on the right bank, I run north. 7 chains 63 links to a point, thence east, on an offset line, and at 30.00 chains, a point north of the flag standing on the left bank of the river, set a temporary post in the place of the flag. I find the township line to be 5 miles 76 chains 53 links, and the falling to be 25 links north of the township corner. The correction for the true line will therefore be 3 chains 47 links west and 4.2 links south per mile.
	From the corner to townships 25 and 26 north, ranges 1 and 2 west, I run West, on a <i>trac</i> line between sections 1 and 36, Variation $18^{\circ} 39'$ east,
20.00	Leave prairie and enter scattering timber; bears N. and S.
40.00	Set a post for quarter-section corner, from which A beech, 24 in. dia., bears N. 11 E., 38 links dist.; A beech, 9 in. dia., bears S. 9 W., 19 links dist.
43.71	A black walnut, 30 in. dia.
80.00	Set a sandstone, 16 in. long, 12 in. wide, and 3 in. thick, for corner to sections 1, 2, 35, and 36, from which A buckeye, 9 in. dia., bears N. 66 E., 15 links dist.; An elm, 20 in. dia., bears N. 4 W., 10 links dist.; An elm, 36 in. dia., bears S. 65 W., 8 links dist.; A buckeye, 10 in. dia., bears S. 40 E., 20 links dist. Land level, or gently rolling and 1st rate. Timber, scattering next the prairies; elm, buckeye, beech, walnut, and oak.
	West, on a <i>trac</i> line between sections 2 and 35, Variation $18^{\circ} 39'$ east,
27.13	A white oak, 24 in. dia.
40.00	Set a post for quarter-section corner, from which A white oak, 9 in. dia., bears N. 24 E., 28 links dist.;

Between townships 25 and 26 N., R. 2 W., Willamette meridian—Continued.

Chains.	A buckeye, 12 in. dia., bears S. 48 W., 9 links dist.
75.59	A black oak, 24 in. dia.
80.00	Set a post for corner to sections 2, 3, 34, and 35, from which
	A sugar tree, 15 in. dia., bears N. 46 E., 15 links dist.
	No tree convenient in section 34.
	A beech, 16 in. dia., bears S. 35 W., 16 links dist.;
	A sugar tree, 14 in. dia., bears S. 30 E., 14 links dist.
	Land gently rolling, and 1st rate.
	Timber, good; elm, buckeye, beech, walnut, and oak.
West, on a <i>true</i> line between sections 3 and 34, Variation 18° 39' east.	
9.00	Enter wet prairie; bears N. and S.
16.00	A beautiful spring branch, 5 links wide, runs S. W.
22.00	Leave prairie; bears N. E. and S. W.
31.27	A black oak, 20 in. dia.
40.00	Set a post for quarter-section corner from which
	A white walnut, 16 in. dia., bears N. 64 E., 7 links dist.;
	A white walnut, 12 in. dia., bears S. 73 W., 31 links dist.
41.33	A white oak, 30 in. dia.
74.52	A point 4 links south of a black oak, 24 in. dia.; mark it by cutting 2 notches south side.
75.00	Leave timber and enter narrow strip of prairie; bears N. W. and S. E.
80.00	A point for corner to sections 3, 4, 33, and 34, drove a charred stake, and raised a mound, with trench, as per instructions, from which
	A white oak, 20 in. dia., bears N. 73 E., 540 links dist.;
	A black oak, 30 in. dia., bears S. 76 E., 613 links dist.
	Land gently rolling; 1st rate.
	Timber, white and black oak, walnut, and sugar tree.
West, on a <i>true</i> line between sections 4 and 33, Variation 18° 39' east.	
7.50	Leave prairie; bears N. W. and S. E.
21.50	A spring branch, 15 links wide, runs N. W.
49.00	A black walnut, 30 in. dia.; mark it for quarter-section corner, from which
	A buckeye, 9 in. dia., bears S. 45 E., 11 links dist.;
	A black walnut, 20 in. dia., bears N. 29 W., 25 links dist.
41.40	Leave upland and enter river bottom; bears N. E. and S. W.
46.44	Set a post on the left bank of Chickeeles River, for corner to fractional sections 4 and 33, from which
	An elm, 8 in. dia., bears N. 71 E., 5 links dist.;
	An elm, 10 in. dia., bears S. 19 W., 6 links dist.
	The line running in the river, the distance on the <i>random</i> line was obtained on an offset by running <i>north</i> from the temporary post on the right bank 7 chains 63 links to a point, thence <i>east</i> 30.00 chains, and coming back to <i>true</i> line on the left bank of the river.
76.44	Set a post on the right bank of the river for corner to fractional sections 4 and 33, from which
	A cherry, 6 in. dia., bears N. 61 E., 17 links dist.;
	A sugar tree, 20 in. dia., bears S. 75 W., 20 links dist.
76.64	A sugar tree, 23 in. dia.
80.00	Set a post for corner to sections 4, 5, 32, and 33, from which
	A hackberry, 7 in. dia., bears N. 67 E., 17 links dist.;
	A sugar tree, 20 in. dia., bears N. 71 W., 43 links dist.;

Between townships 25 and 26 N., R. 2 W., Willamette meridian—Continued.

Chains.	A locust, 14 in. dia., bears S. 30 W., 16 links dist.; A beech, 20 in. dia., bears S. 20 E., 50 links dist. Land, east of bottom, rolling; good soil; the bottom subject to inundation 4 feet. Timber, on upland, oak; in bottom, sugar, cherry, and hackberry.
24.40	West, on a <i>true</i> line between sections 5 and 32, Variation 18° 39' east, A white oak, 16 in. dia. Here leave bottom and enter hills; bears N E. and S. W.
40.00	Set a post for quarter-section corner, from which A hickory, 18 in. dia., bears N. 88 E., 40 links dist. A mulberry, 14 in. dia., bears S. 69 W., 103 links dist.
42.73	A black ash, 15 in. dia.
80.00	Set a post for corner to sections 5, 6, 31, and 32, from which A sugar tree, 20 in. dia., bears N. 89 E., 60 links dist.; An elm, 14 in. dia., bears N. 12 W., 24 links dist.; An elm, 15 in. dia., bears S. 14 W., 23 links dist.; A sugar tree, 16 in. dia., bears S. 15 E., 26 links dist. Land gently rolling, and 1st rate; the bottom level. Timber, sugar tree, walnut, and oak; undergrowth same, and spice.
8.00	West, on a <i>true</i> line between sections 6 and 31, Variation 18° 39' east, To swamp of about 15 acres; bears N. E. and S. W.
18.00	Leave swamp; bears N. E. and S. W.; the line passes through the middle of the swamp.
18.26	A red oak, 30 in. dia., on N. W. bank of swamp.
34.30	A hickory, 18 in. dia.
40.00	Set a post for quarter-section corner, from which A bur oak, 27 in. dia., bears N. 49 E., 46 links dist.; A sugar tree, 20 in. dia., bears N. 56 W., 60 links dist. No tree convenient <i>south</i> of the line.
48.65	A stream, 14 links wide, runs south.
57.40	A white oak, 28 in. dia.
61.00	Enter prairie; bears N. E. and S. W.
76.53	To the established corner to townships 25 and 26 N., ranges 2 and 3 west. Land level; 1st rate for farming. Timber, good; various kinds of oak, hickory, and sugar tree; undergrowth, hazel, hickory, and vines.

GENERAL DESCRIPTION.

This township contains a large amount of first-rate land for farming. It is well timbered with the various kinds of oak, hickory, sugar tree, walnut, beech, and ash.

Chickeles River is navigable for small boats in low water, and does not often overflow its banks, which are from ten to fifteen feet high.

The township will admit of a large settlement, and should therefore be subdivided.

B.

FIELD-NOTES OF THE SUBDIVISION LINES AND MEANDERS OF CHICKEELES RIVER, IN
TOWNSHIP 25 NORTH, RANGE 2 WEST, WILLAMETTE MERIDIAN.*Township 25 N., range 2 W., Willamette meridian.*

Chains.	To determine the proper adjustment of my compass for subdividing this township, I commence at the corner to townships 24 and 25 N., R. 1 and 2 W., and run North, on a blank line along the east boundary of section 36, Variation $17^{\circ} 51'$ east,
40.05	To a point 5 links west of the quarter-section corner,
80.09	To a point 12 links west of the corner to sections 25 and 36. To retrace this line or run parallel thereto, my compass must be adjusted to a variation of $17^{\circ} 46'$ east. Subdivision commenced February 1, 1854. From the corner to sections 1, 2, 35, and 36, on the south boundary of the township, I run North, between sections 35 and 36, Variation $17^{\circ} 46'$ east,
9.19	A beech, 30 in. dia.
29.97	A beech, 30 in. dia.
40.00	Set a post for quarter-section corner, from which A beech, 8 in. dia., bears N. 23 W., 45 links dist.; A beech, 15 in. dia., bears S. 48 E., 12 links dist.
51.00	A beech, 18 in. dia.
76.00	A sugar tree, 30 in. dia.
80.00	Set a post for corner to sections 25, 26, 35, and 36, from which A beech, 28 in. dia., bears N. 60 E., 45 links dist.; A beech, 24 in. dia., bears N. 62 W., 17 links dist.; A poplar, 20 in. dia., bears S. 70 W., 50 links dist.; A poplar, 36 in. dia., bears S. 66 E., 34 links dist. Land level; 2d rate. Timber, poplar, beech, sugar tree, and some oak; undergrowth, same and hazel.
	East, on a <i>random</i> line between sections 25 and 36, Variation $17^{\circ} 46'$ east,
9.00	A brook, 20 links wide, runs north.
15.00	To foot of hills, bear N. and S.
40.00	Set a post for temporary quarter-section corner.
55.00	To opposite foot of hill, bears N. and S.
72.00	A brook, 15 links wide, runs north.
80.00	Intersected east boundary at post corner to sections 25 and 36, from which corner I run West, on a <i>true</i> line between sections 25 and 36, Variation $17^{\circ} 46'$ east,
40.00	Set a post on top of hill, bears N. and S., from which A hickory, 14 in. dia., bears N. 60 E., 27 links dist.; A beech, 15 in. dia., bears S. 74 W., 9 links dist.
80.00	The corner to sections 25 and 26, 35 and 36, Land, east and west parts, level, 1st rate; middle part broken, 3d rate. Timber, beech, oak, ash, &c.; undergrowth, same and spice in the branch bottoms.
	North, between sections 25 and 26, Variation $17^{\circ} 46'$ east,
7.00	A poplar, 40 in. dia.
17.20	A brook, 25 links wide, runs N. W.
18.05	A walnut, 30 in. dia.
23.44	A brook, 25 links wide, runs N. E.
40.00	Set a post for quarter-section corner, from which

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	A bur oak, 36 in. dia., bears N. 42 E., 18 links dist.;
	A beech, 30 in. dia., bears S. 72 W., 9 links dist.
60.15	A beech, 30 in. dia.
80.00	Set a post for corner to sections 23, 24, 25, and 26, from which
	A white oak, 14 in. dia., bears N. 50 E., 40 links;
	A sugar tree, 12 in. dia., bears N. 14 W., 31 links dist.;
	A white oak, 13 in. dia., bears S. 38 W., 32 links dist.;
	A sugar tree, 12 in. dia., bears S. 42 E., 14 links dist.
	Land level on the line, high ridge of hills through the middle of section
	25 running N. and S.
	Timber, beech, walnut, ash, sugar tree, &c.
	East, on a <i>random</i> line between sections 24 and 25,
	Variation 17° 46' east,
8.90	A stream, 30 links wide, rapid current, runs N. W.
12.00	To foot of hill, bears south and N. E.
40.00	Set a post for temporary quarter-section corner.
48.00	To opposite foot of hill, bears south and N. W.
60.50	A stream, 30 links wide, runs N.; soon turns N. W.
73.00	To foot of hill, rises moderately, bears S. and N. W.
80.12	Intersected east boundary of the township at the post corner to sections
	24 and 25, from which corner I run
	West, on a <i>true</i> line between sections 24 and 25,
	Variation 17° 46' east,
40.06	Set a post for quarter-section corner, from which
	A beech, 18 in. dia., bears N. 74 W., 26 links dist.;
	A beech, 16 in. dia., bears S. 73 E., 22 links dist.
20.12	The corner to sections 23, 24, 25, 26.
	Land rolling between the branches; good, 2d rate; branch bottoms level,
	1st rate.
	Timber, walnut, beech, elm, and oak; undergrowth. same and spice.
	North, between sections 23 and 24,
	Variation 17° 46' east,
6.70	A white oak, 20 in. dia.
9.65	A stream, 25 links wide, runs N. W.
13.50	Same stream, 25 links wide, runs N. E.
16.00	Same stream, 25 links wide, runs N. W.
40.00	Set a post near the south bank of a stream for quarter-section corner,
	from which
	A cottonwood, 18 in. dia., bears S. 7 W., 7 links dist.;
	A white walnut, 24 in. dia., bears S. 22 E., 4 links dist.
40.35	Elk Creek, 125 links wide, runs N. W.; general course, west.
	John Jones has a field on the north side of the creek and west of the
	line; his house is 2 chains south of the road and 2 chains east of the
	line.
54.00	To the road from Astoria to Williamsburg; bears E. and W.
58.00	Enter wet prairie; bears east and west.
68.00	Leave prairie and enter timber bearing east and west.
	This prairie extends <i>east</i> into section 24 and about 30 chains.
75.12	A white oak, 30 in. dia.
75.00	Leave creek bottom and enter hills bearing east and west.
80.00	Set a post for corner to sections 13, 14, 23, 24, from which
	A white walnut, 16 in. dia., bears N. 42 E., 15 links dist.;
	A white walnut, 24 in. dia., bears N. 59 W., 27 links dist.;
	An elm, 8 in. dia., bears S. 67 W., 16 links dist.;
	A black oak, 14 in. dia., bears S. 38 E., 17 links dist.
	Land mostly level; 1st rate soil.
	Timber, walnut, various kinds of oak, buckeye, and hickory; under-
	growth, same and spice.
	February 1, 1854.

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	East, on a <i>random</i> line between sections 13 and 24, Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
80.10	Intersected the east boundary of township, 16 links south of post corner, to sections 13 and 24, from which corner I run West, on a <i>true</i> line between sections 13 and 24, Variation 17° 53' east,
40.05	Set a post for quarter-section corner, from which A sugar tree, 30 in. dia., bears N. 80 W., 22 links dist.; A white oak, 16 in. dia., bears S. 53 E., 20 links dist.
80.10	The corner to sections 13, 14, 23, 24. Land mostly rolling; good rich soil; 1st rate. Timber, walnut, sugar tree, oak, elm, and buckeye; undergrowth, same and spice.
	North, between sections 13 and 14, Variation 17° 46' east,
6.17	A white oak, 30 in. dia.
22.15	A beech, 30 in. dia.
40.00	Set a post for quarter-section corner, from which A beech, 24 in. dia., bears N. 66 W., 6 links dist.; A beech, 20 in. dia., bears S. 45 E., 40 links dist.
52.25	A beech, 24 in. dia.
62.61	A bur oak, 30 in. dia.
80.00	Set a post for corner to sections 11, 12, 13, 14, from which A black oak, 26 in. dia., bears N. 53 E., 10 links dist.; A black oak, 21 in. dia., bears N. 20 W., 35 links dist.; A sugar tree, 30 in. dia., bears S. 32 W., 25 links dist.; A white oak, 20 in. dia., bears S. 24 E., 20 links dist. Land gently rolling; good, 2d rate. Timber, beech, oak, and ash; undergrowth, same and hazel.
	East, on a <i>random</i> line between sections 12 and 13, Variation 17° 46' east,
20.50	Foot of hills, and enter broken ridges bearing north and south.
40.00	Set a post for temporary quarter-section corner,
80.10	Intersected east boundary 13 links north of post corner to sections 12 and 13, from which corner I run West, on a <i>true</i> line between sections 12 and 13, Variation 17° 46' east,
40.05	Set a post for quarter-section corner, from which An elm, 24 in. dia., bears N. 51 E., 50 links dist.; A beech, 18 in. dia., bears S. 51 W., 29 links dist.
80.10	The corner to sections 11, 12, 13, 14. Land west 20 chains; gently rolling; good, 2d rate; the balance high, broken ridges. Timber, beech, black oak, and white oak; undergrowth, same and hazel.
	North, between sections 11 and 12, Variation 17° 46' east,
10.81	An elm, 15 in. dia.
40.00	Set a post for quarter-section corner, from which A beech, 30 in. dia., bears N. 33 W., 9 links dist.; A beech, 20 in. dia., bears S. 64 W., 20 links dist.
52.25	A beech, 24 in. dia.
62.61	A black oak, 30 in. dia.
75.40	A spring branch, 10 links wide, runs west.
80.00	Set a post for corner to sections 1, 2, 11, and 12, from which A poplar, 32 in. dia., bears N. 41 E., 30 links dist.; A poplar, 36 in. dia., bears N. 43 W., 25 links dist.;

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	<p>A sugar tree, 30 in. dia., bears S. 32 W., 25 links dist.;</p> <p>A sugar tree, 21 in. dia., bears S. 35 E., 40 links dist.</p> <p>Land level; good, 2d rate.</p> <p>Timber, sugar tree, poplar, walnut, and oak; undergrowth, same and hazel.</p>
23.00	East, on a <i>random</i> line between sections 1 and 12, Variation 17° 46' east,
40.00	Enter high, broken ridges, bearing N. E. and south.
42.50	Set a post for temporary quarter-section corner.
63.00	A spring branch, 10 links wide, runs S. W.
80.24	To foot of high mountain; bears north and south.
	Intersected the east boundary of the township 13 links north of post corner to sections 1 and 12, from which corner I run West, on a <i>true</i> line between sections 1 and 12, Variation 17° 40' east,
40.12	Set a post on top of narrow ridge, bearing north and south, for quarter- section corner, from which A sugar tree, 20 in. dia., bears N. 20 E., 32 links dist.;
	A sugar tree, 24 in. dia., bears S. 56 W., 25 links dist.
80.24	The corner to sections 1, 2, 11, 12. Land very broken and mountainous. Timber, sugar tree, beech; various kinds of oak and hickory.
	On this line, and toward the foot of the mountain, we discovered gold dust; and throughout the line we observed many specimens of what appeared to be rich auriferous quartz.
	North, on a <i>random</i> line between sections 1 and 2, Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
80.11	Intersected the north boundary 32 links east of corner to sections 1 and 2, from which corner I run South, on a <i>true</i> line between sections 1 and 2, Variation 18° 00' east,
40.11	Set a post for quarter-section corner, from which A white oak, 20 in. dia., bears N. 31 W., 65 links dist.;
	A sugar tree, 14 in. dia., bears S. 49 E., 32 links dist.
80.11	The corner to sections 1, 2, 11, 12. Land level; good, rich, soil. Timber, walnut, sugar tree, beech, and various kinds of oak; open woods. <i>February 2, 1854.</i>
	North, between sections 34 and 35, Variation 17° 46' east.
6.56	A hickory, 36 in dia.
23.00	To foot of hill; bears east and west.
34.58	A walnut, 38 in. dia.
40.00	Set a post for quarter-section corner, from which A beech, 16 in. dia., bears S. 18 E., 13 links dist.;
	A beech, 10 in. dia., bears N. 69 W., 40 links dist.
50.00	A maple, 24 in. dia.
75.86	An ash, 24 in dia.
80.00	Set a post for corner to sections 26, 27, 34, and 35, from which An ash, 30 in. dia., bears N. 30 E., 24 links dist.;
	An ash, 36 in. dia., bears N. 52 W., 19 links dist.;
	A beech, 16 in. dia., bears S. 69 W., 41 links dist.;
	A beech, 14 in. dia., bears S. 67 E., 12 links dist.
	Land, south 23 chains, broken; the balance level, rich soil. Timber, ash, beech, oak, and hickory; undergrowth, same and spice.

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	East, on a <i>random</i> line between sections 26 and 35. Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
80.08	Intersected N. and S. line 20 links north of the corner to sections 25, 26, 35, and 36, from which corner I run West, on a <i>true</i> line between sections 26 and 35, Variation 17° 37' east,
40.04	Set a post for quarter-section corner, from which A beech, 14 in. dia., bears N. 56 E., 12 links dist.; A beech, 12 in. dia., bears S. 32 W., 32 links dist.
20.08	The corner to sections 26, 27, 34, and 35. Land level; good, rich soil. Timber, beech, elm, ash, and walnut.
	North, between sections 26 and 27, Variation 17° 46' east,
8.47	An elm, 26 in. dia.;
29.18	A lynn, 34 in. dia.
40.00	Set a post for quarter-section corner, from which A sugar tree, 14 in. dia., bears N. 54 E., 27 links dist.; A beech, 12 in. dia., bears S. 13 W., 31 links dist.
46.37	A poplar, 40 in. dia.;
60.48	A black oak, 36 in. dia.
80.00	Set a post for corner to sections 22, 23, 26, 27, from which A white oak, 30 in. dia., bears N. 50 E., 13 links dist.; A walnut, 30 in. dia., bears N. 36 W., 14 links dist.; A walnut, 24 in. dia., bears S. 24 W., 16 links dist.; An ironwood, 8 in. dia., bears S. 32 E., 24 links dist Land, south half, 2d rate; north half, 1st rate. Timber, walnut, poplar, white oak, beech, and hickory. About 10 chains from this corner on the S. W., and on the left bank of Elk Creek, we discovered evidences of extensive ancient works, supposed to be fortifications, with many ancient mounds in the vicinity.
	East, on a <i>random</i> line between sections 23 and 26, Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
48.00	A stream, 12 links wide, outlet to a lake in the middle of section 26, runs N. W.
80.00	Intersected north and south line 15 links north of post corner to sections 23, 24, 25, 26, from which corner I run West, on a <i>true</i> line between sections 23 and 26, Variation 17° 40' east,
40.00	Set a post for quarter-section corner, from which A beech, 16 in. dia., bears N. 72 W., 18 links dist.; A beech, 10 in. dia., bears S. 72 W., 16 links dist.
80.00	The corner to sections 22, 23, 26, 27. Land level, good; 2d rate soil. Timber, beech, sugar tree, elm, and hickory.
	<i>Notes of the meanders of a small lake in section 26</i>
	Begin at the quarter-section corner on the line between sections 23 and 26, and run thence south,
24.00	To the north margin of the lake, where set a post for meander corner, from which A beech, 14 in. dia., bears N. 45 E., 10 links dist.; A beech, 9 in. dia., bears N. 15 W., 14 links dist.
	Thence meander around the lake as follows: S. 53° E., 17.75. At 75 links cross outlet to lake, 10 links wide, runs N. E. S. 3° E., 13.00, S. 30° W., 8.00,

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	<p>S. 65° W., 12.00, to a point previously determined 20.30 chains north of the quarter-section corner, on the line between sections 26 and 35, Set post meander corner, maple, 16 in. dia., bears S. 15 W., 20 links dist. Ash, 12 in. dia., bears S. 21 E., 15 links dist.</p> <p>N. 63° W., 10.00 { In this vicinity we discovered remarkable fossil remains of animals well worthy the attention of naturalists. N. 13° W., 21.00 { N. 52° E., 17.30, to the place of beginning.</p> <p>This is a beautiful lake, with well-defined banks from 6 to 10 feet high. Land, 1st rate.</p>
8.00 24.20 40.00 41.60 47.00 65.00 68.00 69.92 70.50 80.00	<p>North, between sections 22 and 23, Variation 17° 46' east, Elk Creek, 150 links wide, runs S. W. Same creek, rapid current, rocky bed and banks, 150 links wide, runs S. E. Set a post for quarter-section corner, from which A black oak, 20 in. dia., bears N. 34 E., 48 links; A black oak, 20 in. dia., bears S. 9 W. 45 links. Same creek, 150 links wide, rocky bed and banks, runs west. About 500 chains below the crossing of the line, a stream 20 links wide comes in from the north. Two chains below the mouth of this stream the creek turns south. Here is a very fine mill seat, the fall in the river being about 6 feet in the distance of three chains. Both banks of the creek about 10 feet high, composed principally of limestone of excellent quality. Enter wet prairie near the west end, bearing N. W. and east. Leave wet prairie, bearing east and west. The road from Astoria to Williamsburg, bearing S. 80 E., and N. 60 W. A white oak, 18 in. dia. Enter high, rolling land, bearing east and west. Set a post for corner to sections 14, 15, 22, and 23, from which An elm, 16 in. dia., bears N. 27 E., 50 links dist.; An elm, 24 in. dia., bears N. 34 W., 45 links dist.; A sugar tree, 18 in. dia., bears S. 60 W., 42 links dist.; A sugar tree, 24 in. dia., bears S. 52 E., 23 links dist. Land, south of wet prairie at 47 chains, broken, 3d rate; the balance part wet, 2d rate. Timber, elm, sugar tree, oak, and hickory.</p>
February 3, 1854.	
40.00 80.14 40.07 80.14	<p>East, on a random line between sections 14 and 23, Variation 17° 46' east, Set a post for temporary quarter-section corner. Intersected north and south line 14 links north of the corner to sections 13, 14, 23, and 24, from which corner I run West, on a true line between sections 14 and 23, Variation 17° 40' east, Set a post for quarter-section corner, from which A sugar tree, 30 in. dia., bears N. 39 E., 31 links dist.; A mulberry, 12 in. dia., bears S. 26 W., 4 links dist. To corner to sections 14, 15, 22, 23. Land gently rolling; good soil. Timber, elm, sugar tree, oak, and mulberry.</p>
14.14 34.13 40.00	<p>North, between sections 14 and 15, Variation 17° 46' east, A sugar tree, 14 in. dia. A white oak, 22 in. dia. Set a post for quarter-section corner, from which A beech, 24 in. dia., bears N. 45 W., 37 links dist.;</p>

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	A sugar tree, 20 in. dia., bears S. 43 E., 74 links dist.
47.20	A walnut, 27 in. dia.
61.84	A white oak, 36 in. dia.
77.72	A stream, 25 links wide, rapid current, runs S. W.
80.00	Set a post for corner to sections 10, 11, 14, 15, from which A bur oak, 28 in. dia., bears N. 16 E., 40 links dist.; A black oak, 30 in. dia., bears N. 17 W., 32 links dist.; A white oak, 14 in. dia., bears S. 15 W., 38 links dist.; A hickory, 15 in. dia., bears S. 12 E. 36.
	Land gently rolling; 2d rate.
	Timber, various kinds of oak, beech, and walnut; open woods.
	East, on a <i>random</i> line between sections 11 and 14, Variation 17° 46' east,
8.25	A stream, 25 links wide, runs S. W.
13.00	A stream, 10 links wide, runs N. W.
40.00	Set a post for temporary quarter-section corner.
80.16	Intersected N. and S. line 20 links north of post corner to sections 11, 12, 13, 14, from which corner I run West, on a <i>true line</i> between sections 11 and 14, Variation 17° 37' east,
40.08	Set a post for quarter-section corner, from which A sugar tree, 16 in. dia., bears N. 66 E., 35 links dist.; A sugar tree, 14 in. dia., bears S. 44 W., 13 links dist.
80.16	To corner to sections 10, 11, 14, 15. Land rolling, but not broken; good soil. Timber, good; various kinds of oak, beech, sugar tree, elm, and ash.
	North, between sections 10 and 11, Variation 17° 40' east,
5.29	A white oak, 24 in. dia.
39.16	A white oak, 36 in. dia.
40.00	Set a post for quarter-section corner, from which A beech, 15 in. dia., bears N. 18 W., 42 links dist.; A beech, 18 in. dia., bears S. 62 E., 12 links dist.
45.17	A sugar tree, 27 in. dia.,
63.79	A sugar tree, 30 in. dia.
71.12	A brook, 20 links wide, rapid current, gravelly bottom, runs west; soon turns south.
80.00	Set a post for corner to sections 2, 3, 10, 11, from which A sugar tree, 18 in. dia., bears N. 13 E., 61 links dist.; A beech, 24 in. dia. bears N. 48 W., 26 links dist.; A white oak, 13 in. dia., bears S. 39 W., 40 links dist. No tree in section 11 convenient to mark. Land gently rolling, good, 2d rate. Timber, various kinds of oak, beech, walnut; open woods.
	East, on a <i>random</i> line between sections 2 and 11, Variation 17° 40' east,
18.36	A brook, 20 links wide, runs S. W.
40.00	Set a post for temporary quarter-section corner.
80.10	Intersected N. and S. line 12 links north of the corner to sections 1, 2, 11, 12, from which corner I run West, on a <i>true line</i> between sections 2 and 11, Variation 17° 35' east,
40.05	Set a post for quarter-section corner, from which A beech, 18 in. dia., bears N. 35 W., 5 links dist.; A beech, 14 in. dia., bears S. 47 E., 49 links dist.
80.10	The corner to sections 2, 3, 10, 11. Land gently rolling; soil good. [open woods. Timber, beech, sugar tree, elm, and oak; west part brushy; east part

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	North, on a <i>random</i> line between sections 2 and 3, Variation 17° 30' east,
40.00	Set a post for temporary quarter-section corner.
80.00	Intersected the north boundary of the township 25 links east of the corner to sections 2 and 3, from which corner I run South, on a <i>true</i> line between sections 2 and 3, Variation 17° 51' east,
40.00	Set a post for quarter-section corner, from which An elm, 8 in. dia., bears N. 35 W., 5 links dist.;
80.00	A hickory, 10 in. dia., bears S. 75 E., 18 links dist. The corner to sections 2, 3, 10, 11. Land gently rolling; good, 2d rate. Timber, various kinds of oak, beech, elm, and hickory; open woods. <i>February 4, 1854.</i>
	North, between sections 33 and 34, Variation 17° 46' east,
5.61	An ash, 22 in. dia.
13.20	An elm, 15 in. dia.
40.00	Set a sand stone, 15 in. long, 12 in. wide, and 4 in. thick, for quarter-section corner, from which A beech, 15 in. dia., bears N. 22 E., 18 links dist.;
	A beech, 24 in. dia., bears S. 78 W., 15 links dist.
49.10	A black oak, 36 in. dia.
71.04	An elm, 30 in. dia.
80.00	Set a post on high ridge bearing N. S. for corner to sections 27, 28, 33, 34, from which A white oak, 14 in. dia., bears N. 22 E., 18 links dist.;
	A beech, 8 in. dia., bears N. 48 W., 14 links dist.;
	An elm, 12 in. dia., bears S. 16 W., 42 links dist.;
	A beech, 10 in. dia., bears S. 74 E., 14 links dist. Land broken, poor soil, not fit for cultivation. Timber, beech, oak, sugar tree, and elm.
	East, on a <i>random</i> line between sections 27 and 34, Variation 17° 46' east,
18.00	To foot of hill bearing north and S. E.
40.00	Set a post for temporary quarter-section corner.
48.20	A brook, 20 links wide, runs north.
50.20	A brook, 15 links wide, runs N. W.
79.90	Intersected N. and S. line 14 links north of the corner to sections 26, 27, 34, and 35, from which corner I run West, on a <i>true</i> line between sections 27 and 34, Variation 17° 40' east,
39.95	Set a post for quarter-section corner, from which A sugar tree, 15 in. dia., bears N. 32 W., 32 links dist.;
	A sugar tree, 15 in. dia., bears S. 52 E., 26 links dist.
79.90	The corners to sections 27, 28, 33, and 34. Land east of hill gently rolling; good soil. Timber, sugar tree, elm, oak, and ash.
	North, between sections 27 and 28, Variation 17° 46' east.
2.11	A black oak, 30 in. dia.
20.42	An elm, 36 in. dia.
34.00	To foot of hill bearing S. W. and S. E.
40.00	Set a post for quarter-section corner, from which A buckeye, 10 in. dia., bears N. 30 W., 6 links dist.;
	A poplar, 36 in. dia., bears S. 15 E., 38 links dist.
62.16	A sugar tree, 24 in. dia.
64.20	Elk Creek, 200 links wide, rapid current; bluff bank 20 feet high; south

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	
80.00	side runs west; enter bottom after crossing creek. Set a sandstone, 16 in long, 12 in. wide, and 6 in. thick, for corner to sections 21, 22, 27, 28, from which An elm, 15 in. dia., N. 31 E., 14 links dist.; A beech, 14 in. dia., bears N. 43 W., 37 links dist.; An elm, 20 in. dia., bears S. 24 W., 24 links dist.; A beech, 24 in. dia., bears S. 20 E., 52 links dist. Land, south of creek, broken and rolling, 3d rate; north of creek rich bottom. Timber, beech, elm, various kinds of oak and hickory.
40.00	East, on a <i>random</i> line between sections 22 and 27, Variation 17° 46' east, Set a post for temporary quarter-section corner.
75.70	Elk Creek, 200 links wide, gentle current, gravelly bottom, runs S. W.
80.06	Intersected north and south line 15 links north of the corner to sections 22, 23, 26, and 27, from which corner I run West, on a <i>true</i> line between sections 22 and 27, Variation 17° 40' east,
40.03	Set a post for quarter-section corner, from which An elm, 14 in. dia., bears N. 50 E., 16 links dist.; A mulberry, 10 in. dia., bears S. 87 W., 43 links dist.
80.06	The corner to sections 21, 22, 27, 28. Land level; rich bottom; 2d rate. Timber, elm, beech, oak, and hickory.
3.15	North, between sections 21 and 22, Variation 17° 46' east, A walnut, 18 in. dia.
32.32	An ash, 24 in. dia.
33.50	Set a post on the south bank of a lake of deep, clear water for corner to fractional sections 21 and 22, from which A maple, 16 in. dia., bears S. 33 W., 21 links dist.; An ash, 12 in. dia., bears S. 21 E., 34 links dist. To obtain the distance across the lake, I send my flagman around the west end thereof, who sets the flag on its north bank, and in the line between sections 21 and 22. I now run a base <i>west</i> (from the corner on south bank) 5.60 chains, to a point from which the flag bears N. 16° 15' E., and continue said base line west; and at 9 chains and 6 links, a point from which said flag bears N. 25° 15' E., and taking the mean between the results so ascertained, find for the distance across the lake, on the line between sections 21 and 22, 19 chains and 20 links, to which add 33.50 chains, makes
52.70	To the flag on the north bank of the lake. Here set a post for corner to fractional sections 21 and 22, from which An ash, 16 in. dia., bears N. 21 E., 15 links dist.; An elm, 14 in. dia., bears N. 71 W., 23 links dist. The point for quarter-section corner, being in the lake, cannot be established.
56.11	An elm, 36 in. dia.
80.00	Set a post for corner to sections 15, 16, 21, 22, from which A black oak, 12 in. dia., bears N. 83 E., 23 links dist.; A buckeye, 10 in. dia., bears N. 82 W., 17 links dist.; A white oak, 14 in. dia., bears S. 14 W., 14 links dist.; A black oak, 15 in. dia., bears S. 28 E., 24 links dist. Land level; rich bottom; not subject to inundation. Timber, elm, oak, hickory and ash.

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	<i>Field-notes of the meanders of Clear Lake.</i>
	<p>Begin at the corner to fractional sections 21 and 22, on the north bank, and run thence, in section 22, as follows:</p> <p>East 10.00 chains; thence N. 80 E. 12.00 chains; thence S. 75 E. 5.00 chains; thence S. 60 E. 5.00 chains; thence S. 30 E. 5.00 chains; thence S. 10 W. 6.00 chains; thence S. 36 W. 8.00 chains; thence S. 82 W. 10.00 chains; thence West 10.00 chains; thence N. 89 W. 8.55 chains, to the corner to fractional sections 21 and 22, on the south bank of the lake; thence, in section 21, N. 75 W., 9.00 chains, thence N. 87 W., 10.50 chains, thence N. 62 W., 8.00 chains, thence N. 43 W., 5.50 chains, thence N. 34 W., 4.20 chains, thence North, 5.00 chains, thence N. 35 E., 7.00 chains, thence N. 55 E., 8.00 chains, thence East, 5.00 chains, thence S. 75 E., 3.00 chains, thence S. 35 E., 6.50 chains, thence S. 67½ E., 11.10 chains, to the corner to fractional sections 21 and 22, on the north bank of the lake, and place of beginning.</p> <p>Land, around this lake, good, rich soil; banks from 8 to 10 feet high, except at the western part, as far south as the outlet, where the land is level and wet.</p> <p>Timber, good black oak, hickory, and ash.</p> <p style="text-align: right;">MONDAY, February 6, 1854.</p> <p>If If the deputy should find it more convenient to meander the lake before continuing the line north of it, he will do so.</p>
	<p>East, on a <i>random</i> line between sections 15 and 22, Variation 17° 46' east,</p>
40.00	Set a post for temporary quarter-section corner.
58.00	The road from Astoria to Williamsburg bearing N. W. and S. E.
65.50	A stream, 20 links wide, runs south.
79.94	Intersected north and south line 12 links north of the corner to sections 14, 15, 22, and 23, from which corner I run
	West, on a <i>true</i> line between sections 15 and 22, Variation 17° 41' east,
39.97	Set a post for quarter-section corner, from which A sugar tree, 20 in. dia., bears N. 35 W., 21 links dist.; A lynn, 13 in. dia., bears S. 28 E., 81 links dist.
79.94	The corner to sections 15, 16, 21, 22. Land, gently rolling; good, rich soil. Timber, good; various kinds of oak, hickory, ash, and sugar tree.
	<p>North, between sections 15 and 16, Variation 17° 46' east,</p>
4.68	An elm, 24 in. dia.
13.00	Leave timber and enter high rolling prairie, bearing east and west.
16.75	The road from Astoria to Williamsburg bears N. 80 W., and S. 80 E.
40.00	Set a hard flint stone, which cannot be marked, for quarter-section corner; said stone is 16 in. long, 12 in. wide, and 8 in. thick, and from

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	which a cone white oak, 16 in. dia., bears N. 42 W., 351 links dist. No other tree convenient to mark.
50.00	Enter John Orr's field, bearing N. W. and S. E.
55.00	A point 3 chains west of Orr's house;
61.00	Leave field bearing N. W. and S. E.. This field contains about 10 acres; the line passing through the middle.
80.00	Set a post in mound, with trench, as per instructions, for corner to sections 9, 10, 15, 16, from which corner a granite boulder, four feet in diameter at the surface of the ground, and three feet high, bears N. 72 E., 257 links distant. I cut a cross near the top, facing the corner; the cross-marks being four inches long, and one-fourth of an inch deep. Land high, rolling prairie; good soil; not stony, but occasional boulders appear above the natural surface.
	East, on a <i>random</i> line between sections 10 and 15, Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
46.50	Leave prairie and enter timber, bearing north, and S. 40 E.
61.40	A stream, 25 links wide, gentle current, muddy bottom, runs south.
79.86	Intersected N. and S. line at the post corner to sections 10, 11, 14, 15, from which corner I run West, on a <i>true</i> line between sections 10 and 15, Variation 17° 46' east,
39.93	Set a sandstone, 20 in. long, 12 in. wide, and 4 in. thick for quarter-section corner, raise a mound 2 feet high, west side of stone. From the stone a bur oak, 16 in. dia., in the eastern edge of the timber, bears N. 75 E., 674 links distant.
79.86	The corner to sections 9, 10, 15, 16. Land; the prairie rolling; good soil; timber land level; 1st rate. Timber, oak, hickory, and ash.
	North, between sections 9 and 10, Variation 17° 46' east,
40.00	Set a post for quarter-section corner, raise a mound with trench, as per instructions. A lone bur oak, 10 in. dia., bears S. 75 E., 530 links distant; no other tree near. This corner about 10 chains <i>west</i> of a grove of oak and hickory of about 15 acres. From this corner Jacob Fry's house, in the north end of grove, bears N. 45 E.
51.25	A point from which Fry's house bears east, a field of about 10 acres north of the house.
80.00	Deposited a quart of charcoal, and set a post for corner to sections, 3, 4, 9, 10, and raised a mound, as per instructions, and planted N. W. 4 white-oak acorns, S. W. wild cherry stones, N. E. beech nuts, and S. E. a butter nut. Land high, rolling prairie; good rich soil, fit for cultivation.
	East, on a <i>random</i> line between sections 3 and 10, Variation 17° 46' east,
40.00	Set a post for temporary quarter-section corner.
55.00	Leave prairie and enter timber, bearing N. and S.
79.90	Intersected N. and S. line 1½ links south of the corner to sections 2, 3, 10, 11, from which corner I run West, on a <i>true</i> line between sections 3 and 10, Variation 17° 52' east,
39.95	Set a sand stone, 16 in. long, 12 in. wide, and 4 in. thick, for quarter-section corner, from which a granite boulder, 4 feet long E. and W., by 3½ feet wide N. and S., and 2 feet high above ground, and marked ¼ with a pick, bears N. 31 E., 153 links distant; no other boulder in

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains. 79.90	sight of this corner. The corner to sections 3, 4, 9, 10. Land level; good rich soil. Timber, elm, beech, maple, and ash.
40.00 42.00 55.15 66.50 79.95	North, on a <i>random</i> line between sections 3 and 4, Variation 17° 46' east, Set a post for temporary quarter-section corner. Leave prairie and enter timber, bearing S. E. and S. W. A spring branch, 10 links wide, runs N. W. Enter prairie, bearing N. W. and S. E.
39.95	Intersected the north boundary of the township 30 links east of the corner to sections 3 and 4, from which corner I run South, on a <i>true</i> line between sections 3 and 4, Variation 17° 59' east, Set a mulberry post, 6 in. diameter, in the north point of prairie, from which A white oak, 16 in. dia., bears N. 41 E. 195 links; A black oak, 20 in. dia., bears N. 37 W. 205 links.
79.95	The corner to sections 3, 4, 9, 10. Land level, good rich soil, fit for cultivation. Timber, oak, hickory, and elm. <p style="text-align: right;"><i>February 7, 1854.</i></p>
40.00 80.06 40.03 80.06	All traces of the corner to sections 4, 5, 32 and 33, on the south boundary of the township, having disappeared, I restore and reestablish said corner in the following manner, viz: Begin at the quarter-section corner the line between sections 4 and 33. One of the witness trees to this corner has fallen down, and the post is gone. The black oak, 18 in. dia., bearing N. 25 E. 32 links, standing and sound. I find also the black-oak station tree, 24 in. dia., called for at 37.51 chains; and at 2.49 chains west of the quarter-section corner set a <i>new</i> post at the point for quarter-section corner, and mark for witness tree a white oak, 20 in. dia., bears N. 34 W., 37 links dist. West, with the <i>old</i> marked line, Variation 18° 25' east, Set a post for temporary corner to sections 4, 5, 32, and 33. To a point 7 links south of the quarter-section corner on the line between sections 5 and 32. This corner agrees with its description, and from which I run East, on the <i>true</i> line between sections 5 and 32, Variation 18° 22' east, Set a lime stone, 18 in. long, 12 in. wide, and 3 in. thick, for <i>re-established</i> corner to sections 4, 5, 32 and 33, from which A white oak, 12 in. dia., bears N. 21 E., 41 links dist.; A white oak, 16 in. dia., bears N. 41 W., 21 links dist.; A black oak, 18 in. dia., bears S. 17 W., 32 links dist.; A bur' oak, 20 in. dia., bears S. 21 E., 37 links dist. Thence between sections 4 and 33. The quarter-section corner on said line. The difference in measurement, being very small, will be rejected.
19.85 32.37 40.00	North, between sections 32 and 33, Variation 17° 40' east, A beech, 25 in. dia. An elm, 30 in. dia. Set a post for quarter-section corner, from which A beech, 24 in. dia., bears N. 11 E., 30 links dist.;

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	A sugar tree, 20 in. dia., bears S. 40 W., 9 links dist.
48.75	A stream, 20 links wide, rapid current, runs east; general course N. E.
58.20	A sugar tree, 30 in. dia.
75.96	A sugar tree, 25 in. dia.
80.00	Set a post with trench for corner to sections 28, 29, 32, and 33, from which An elm, 20 in. dia., bears N. 66 W., 29 links dist.; A beech, 10 in. dia., bears S. 16 E., 13 links dist. No other trees convenient to mark. Planted N. E. 4 hickory nuts, and S. W. 4 cherry stones. Land gently rolling; good, rich soil. Timber, oak, elm, beech, and sugar tree.
19.50	East, on a <i>random</i> line between sections 28 and 33, Variation 17° 40' east, A stream 25 links wide, runs north; rapid current. The line crosses about two chains below the mouth of a beautiful spring branch, 10 links wide; comes from the hills on the S. E.
40.00	Set a post for temporary quarter-section corner,
60.00	To foot of hills bearing N. and S.
80.12	Intersected the N. and S. line 7 links north of the corner to 27, 28, 33, and 34, from which corner I run West, on a <i>true</i> line, between sections 28 and 33, Variation 17° 37' east,
40.06	Set a post for quarter-section corner, from which A hickory, 10 in. dia., bears N. 25 W., 22 links dist.; An elm, 24 in. dia., bears S. 9 W., 14 links dist.
80.12	The corner to sections 28, 29, 32, 33. Land, 20 chains, east part very broken; the balance gently rolling; good rich soil. Timber, oak, elm, ash, and sugar tree.
17.13	North, between sections 28 and 29, Variation 17° 40' east, A sugar tree, 30 in. dia.
29.65	A beech, 24 in. dia.
40.00	Set a post for quarter-section corner, from which An elm, 14 in. dia., bears N. 6 W., 200 links dist.; A white oak, 12 in. dia., bears S. 41 E., 122 links dist.
52.73	A beech, 36 in. dia.
71.15	Top of limestone bluff, 20 feet high, on south bank of Elk Creek, 200 links wide; rapid current, gravelly bottom, runs west; soon turns S. W.
80.00	Enter low wet bottom, on the right bank of creek. Set a post for corner to sections 20, 21, 28, 29, from which A hickory, 13 in. dia., bears N. 30 E., 16 links dist.; A hickory, 18 in. dia., bears N. 32 W., 22 links dist.; A walnut, 17 in. dia., bears S. 48 W., 40 links dist.; A walnut, 26 in. dia., bears S. 56 E., 34 links dist. Land, south of creek, rolling; good, rich soil. Timber, oak, elm, beech, and sugar tree; open woods; no undergrowth.
23.00	East, on a <i>random</i> line between sections 21 and 28, Variation 17° 40' east, A stream, 10 links wide, runs S. W.
40.00	Set a post for temporary quarter-section corner.
43.20	A stream 20 links wide, low, muddy banks and bottoms, runs south.
80.18	Intersected north and south line, 20 links north of the corner to sections 21, 22, 27, 28, from which corner I run

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	West, on a <i>true</i> line between sections 21 and 28, Variation 17° 31' east.
40.09	Set a post about 200 links north of the right bank of the creek for quarter-section corner, from which A sugar tree, 14 in dia., bears N. 57 E., 45 links dist.; A buckeye, 15 in dia., bears S. 61 W., 61 links dist.
80.18	The corner to sections 20, 21, 28, 29. Land, level; wet bottom; subject to inundation from 4 to 6 feet deep. Timber, oak, hickory, and ash; no undergrowth.
	North, between sections 20 and 21, Variation 17° 40' east,
8.24	A bur oak, 24 in. dia.
28.94	An ash, 15 in. dia., on the S. E. margin of a large lake, across which no sight can be had, because of the water bushes around lake lying principally in section 20, with low, muddy banks; mark said tree for corner to fractional sections 20 and 21, from which A red oak, 15 in. dia., bears S. 35 W., 32 links dist ; A water willow, 10 in. dia., bears S. 21 E., 12 links dist. NOTE.—The point for quarter-section corner being in the lake, it cannot be established. I now run as follows around the east end of the lake in section 21. N. 35 E., 3.00 chains, thence N. 10 E., 6.50 chains, thence N. 15 W., 5.50 chains, thence N. 40 W., 6.70 chains, to a point in the line between sections 20 and 21. The northing on the 4 courses of meanders is 23.39 chains, to which add 28.94 chains, makes
52.33	To the point in the line between sections 20 and 21, on the N. E. bank of the lake. Here set a post for corner to fractional sections 20 and 21, from which An elm, 20 in. dia., bears N. 22 E., 24 links dist.; A red oak, 24 in. dia., bears N. 17 W., 21 links dist.
54.20	A stream 25 links wide, gentle current, running S. W. into lake.
57.31	A red oak, 16 in. dia.
72.50	Leave level, rich bottom, and enter upland, bearing E. and W.,
80.00	Set a post for corner to sections 16, 17, 20, 21, from which A black oak, 10 in. dia., bears N. 53 E., 50 links dist.; A beech, 14 in. dia., bears N. 16 W., 14 links dist.; A bur oak, 12 in. dia., bears S. 8 W., 20 links dist.; A beech, 16 in. dia., bears S. 19 E., 15 links dist. Land mostly low, level, rich bottom; subject to inundation from 4 to 6 feet deep. Timber, oak, beech, maple, and ash; open woods.
	February 8, 1854.
	East, on a <i>random</i> line between sections 16 and 21, Variation 17° 40' east,
18.90	A brook, 10 links wide, runs south.
19.50	Same brook runs north.
21.55	Same brook runs south.
40.00	Set a post for temporary quarter-section corner.
61.50	Enter a small bushy swamp.
70.00	Leave swamp, which contains about 15 acres, and lies mostly in section 21.
80.20	Intersected N. and S. line 16 links north of the corner to sections 15, 16, 21, and 22, from which corner I run

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	West, on a <i>true</i> line between sections 16 and 21, Variation 17° 33' east,
40.10	Set a post for quarter-section corner, from which A beech, 30 in. dia., bears N. 19 W., 31 links dist.; A buckeye, 24 in. dia., bears S. 11 E., 29 links dist.
80.20	The corner to sections 16, 17, 20, 21. Land rolling, 2d rate; wet around swamp. Timber, oak, beech, buckeye, and hickory; thick undergrowth of same and hazel.
	North, between sections 16 and 17, Variation 17° 40' east,
9.72	A bur oak, 30 in. dia.
26.84	A bur oak, 36 in. dia.
39.00	The road from Astoria to Williamsburg, bearing N. 80 W. and S. 80 E
40.00	Set a post for quarter-section corner, from which A lynn, 15 in. dia., bears N. 88 W., 17 links dist.; A black oak, 18" dia., bears S. 76 E., 21 links dist.
54.20	A white oak 28 in. dia.
80.00	Set a post for corner to sections 8, 9, 16, 17, from which An elm, 10 in. dia., bears N. 28 E., 5 links dist.; A black oak, 10 in. dia., bears N. 13 W., 48 links dist.; An elm, 12 in. dia., bears S. 41 W., 42 links dist.; A bur oak, 6 in. dia., bears S. 17 E., 105 links dist. Land gently rolling; good, 2d rate. Timber, good quality and open woods, oak, elm, ash, and hickory.
	East, on a <i>random</i> line between sections 9 and 16, Variation 17° 40' east,
40.00	Set a post for temporary quarter-section corner.
45.00	Enter prairie, bearing N. and S.
81.20	Intersected the N. and S. line 22 links north of the corner to sections 9, 10, 15, 16; section 16 is, therefore, out of the proper limits, and I am of opinion that the error is in the measure of the line between sec- tions 9 and 16; remeasure the line <i>east</i> of the temporary quarter-sec- tion corner, and find it to be 40.18 chains. There was, therefore, an error of one chain in this part of the line, which brings section 16 within its proper limits. From the corner to sections 9, 10, 15, 16, I run
	West, on a <i>true</i> line between sections 9 and 16, Variation 17° 31' east,
40.10	Set a post for quarter-section corner, from which A white oak, 16 in. dia., bears N. 35 E., 32 links dist.; A bur oak, 12 in. dia., bears S. 25 W., 21 links dist.
80.20	The corner to sections 8, 9, 16, 17. Land gently rolling; good, rich soil. The timbered land is open, without undergrowth; oak, hickory, and elm.
	27 The line between sections 8 and 17 will strike the river in less than 80.00 chains. I therefore run it
	West, on a <i>true</i> line between sections 8 and 17. Variation 17° 40' east,
8.20	A black oak, 16 in. dia.
27.25	A black walnut, 12 in. dia.
	Here enter Chickeeles River bottom, bearing north and south.
40.00	Set a post for quarter-section corner, from which A hickory, 12 in. dia., bears N. 22 E., 10 links dist.; An ironwood, 8 in. dia., bears S. 7 E., 2 links dist.
55.10	A hickory, 16 in. dia.
56.50	Set a post on the left bank of Chickeeles River, a navigable stream, for

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	corner to fractional sections 8 and 17, from which A hickory, 12 in dia., bears N. 25 E., 8 links dist.; A hackberry, 12 in. dia., bears S. 25 E., 25 links dist. Land, the bottom level and rich, upland rolling. Timber, oak, hickory, buckeye, &c.
	North, between sections 8 and 9, Variation 17° 40' east,
7.42	A walnut, 18 in. dia.
40.00	Set a post for quarter-section corner, from which A sugar tree, 9 in. dia., bears N. 35 E., 12 links dist.; A walnut, 30 in. dia., bears S. 22 W., 11 links dist.
47.42	A walnut, 18 in. dia.
53.74	A sugar tree, 20 in. dia.
80.00	Set a lime stone, 18 in. long, 12 in. wide, and 4 in. thick, for corner to sections 4, 5, 8, 9, from which A sand rock, 4 feet square at the surface of the ground, and 2 feet high, bears N. 47½ E., 341 links dist., marked with a (X) cross, each mark being 6 in. long and ½ in. deep; bearing and distance taken to the cross; A white oak, 36 in. dia., bears N. 24 W., 112 links dist.; A white oak, 30 in. dia., bears S. 13 W., 44 links dist. No tree in section 9 convenient to mark. Land rolling; good, 2d rate. Timber, oak, walnut, hickory, and sugar tree. Thick undergrowth, same, briars and vines.
	February 9, 1854.
	East, on a <i>random</i> line between sections 4 and 9, Variation 17° 40' east,
35.60	Leave timber and enter prairie, bearing south and N. E.
40.00	Set a post for temporary quarter-section corner.
43.50	Northwest edge of a small deep pond of about 15 acres, lying mostly in section 9, offset north 400 chains to a point; thence east 9.50 chains to a point; thence south 4 chains to a point on the east bank of the pond, and in the random line between sections 4 and 9, and
53.00	East of the corner to sections 4, 5, 8, 9.
80.24	Intersected the north and south line 21 links south of the corner to sections 3, 4, 9, 10, from which corner I run
	West, on a <i>true</i> line between sections 4 and 9, Variation 17° 49' east,
40.12	Set a white oak post, 6 inches diameter, in the eastern edge of prairie for quarter-section corner, from which A white oak, 16 in. dia., bears N. 56 W., 497 links dist.; A bur oak, 20 in. dia., bears S. 75 W., 512 links dist.
44.75	A black oak, 16 in. dia., in east edge of timber.
80.24	The corner to sections 4, 5, 8, 9. Land level; good soil. Timber, oak, hickory, and beech; very thick undergrowth; oak and hazel next the prairie.
	The line between sections 5 and 8 will strike Chickeeles River in less than 80 chains, I therefore run it a <i>true</i> line West, on a <i>true</i> line between sections 5 and 8, Variation 17° 40' east,
13.77	A white oak, 20 in. dia.
40.00	Set a post for quarter-section corner, from which A white oak, 8 in. dia., bears N. 32 W., 4 links dist.; A white oak, 10 in. dia., bears S. 45 E., 5 links dist.
43.11	A white oak, 40 in. dia.
47.50	Leave broken upland and enter the bottom to Chickeeles River, bearing

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains. 60.65	<p>south and N. E. Set a post on the left bank of Chickeeles River, for corner to fractional sections 5 and 8, from which A blue ash, 24 in. dia., bears N. 66 E., 4 links dist.; An elm, 24 in. dia., bears S. 56 E., 20 links dist. Land, upland broken, 3d rate; the bottom level and rich. Timber, oak, hickory, &c.; in the bottom, elm and ash; undergrowth, same, pawpaw, spice, and vines.</p>
13.75 33.51 40.00	<p>The line between sections 4 and 5 will strike Chickeeles River before reaching the <i>township</i> line; I therefore run it North, on a <i>truc</i> line between sections 4 and 5, Variation 17° 40' east, A cherry, 20 in. dia; A white oak, 24 in. dia.</p>
43.15 45.50	<p>Set a post for quarter-section corner, from which A white oak, 12 in. dia., bears N. 24 E., 12 links dist.; A beech, 28 in. dia., bears S. 44 E., 21 links dist. No tree west of the line convenient to mark. A white oak, 30 in. dia.</p>
56.58 66.50	<p>Leave broken upland and enter Chickeeles River bottom, bearing N. E. and S. W. A hackberry, 24 in. dia. An elm, 12 in. dia., on the left bank of Chickeeles River; mark it for corner to fractional sections 4 and 5, from which A black oak, 14 in. dia., bears S. 10 W., 18 links dist.; An elm, 18 in. dia., bears S. 45 E., 35 links dist. The upland broken, 3d rate; the bottom level, 1st rate. Timber on upland, oak; in bottom, elm, oak, ash, and hickory; undergrowth, pawpaw and spice.</p>
	<i>February 10, 1854.</i>
12.98 38.19 40.00	<p>The point for corner to sections 5, 6, 31, and 32 being in a deep swamp, and not having been established, I begin at the witness corner on the S. E. edge of the swamp, 4.00 chains east of said point, and run thence east 250 links (with the line between sections 5 and 32) to a point; thence <i>north</i> 7.50 chains to a point; thence <i>west</i> 6.50 chains to a point on the north edge of the swamp and in the line between sections 31 and 32, and 7.50 chains <i>north</i> of the point for corner to sections 31 and 32, on the south boundary of the township. I here set a post for witness point, from which A bur oak, 16 in. dia., bears N. 31 E., 25 links dist.; An ash, 12 in. dia., bears N. 25 W., 17 links dist.</p>
57.74 66.19 80.00	<p>From this witness point I run North, between sections 31 and 32, counting the distance from the point for corner to said sections in the swamp, Variation 17° 40' east, A walnut, 22 in. dia. An ash, 35 in. dia. Set a post for quarter-section corner, from which A beech, 20 in. dia., bears N. 12 W., 45 links dist.; A sugar tree, 20 in. dia., bears S. 12 E., 13 links dist. An ash, 24 in. dia. A white oak, 36 in. dia. Set a post with trench for corner to sections 29, 30, 31, 32, from which A beech, 26 in. dia., bears N. 9 W., 12 links dist.; A sugar tree, 24 in. dia., bears S. 13 E., 56 links dist. And planted N. E. a butter nut, and S. W. 4 cherry stones. Land south, half level, north, half rolling; good soil. Timber, oak, beech, sugar tree, and walnut; undergrowth, same, and hazel on north part.</p>

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	East, on a <i>random</i> line between sections 29 and 32, Variation 17° 40' east,
40.00	Set a post for temporary quarter-section corner.
80.16	Intersected the N. and S. line 10 links N. of post corner to sections 28, 29, 32, and 33, from which corner I run West, on a <i>true</i> line between sections 29 and 32, Variation 17° 36' east,
40.08	Set a post for quarter-section corner, from which A black oak, 18 in. dia., bears N. 36 E., 42 links dist.;
80.16	A bur oak, 20 in. dia., bears S. 43 W., 47 links dist. The corner to sections 29, 30, 31, 32. Land gently rolling; good soil; fit for cultivation. Timber, oak, beech, hickory, and walnut; open woods.
	West, on a <i>true</i> line between sections 30 and 31, knowing that it will strike the Chickeeles River in less than 80.00 chains. Variation 17° 40' east,
3.41	A white oak, 15 in. dia.
5.00	Leave upland and enter creek bottom, bearing N. E. and S. W.
8.00	Elk Creek, 200 links wide, gentle current, muddy bottom and banks, runs S. W. Ascertain the distance across the creek on the line as follows, viz: Cause the flag to be set on the right bank of the creek, in the line be- tween sections 30 and 31. From the station on the left bank of creek, at 8.00 chains, I run <i>south</i> 245 links to a point from which the flag on the right bank bears N. 45 W., which gives for the distance across the creek on the line between sections 30 and 31, 2 chains, 45 links.
25.17	A bur oak, 24 in. dia.
40.00	Set a post for quarter-section corner, from which A buckeye, 24 in. dia., bears N. 15 W., 8 links dist.;
41.90	A white oak, 30 in. dia., bears S. 65 E., 12 links. Set a post on the left bank of Chickeeles River, a navigable stream, for corner to fractional sections 30 and 31, from which A buckeye, 16 in dia., bears N. 50 E., 16 links dist.;
	A hackberry, 15 in. dia., bears S. 79 E., 14 links dist. Land, low bottom; subject to inundation 3 or 4 feet deep. Timber, buckeye, hackberry, oak, and hickory.
	North, between sections 29 and 30, Variation 17° 40' east,
6.50	Enter creek bottom, bearing N. E. and S. W.
13.00	Elk creek, 200 links wide, runs S. W.
15.00	Enter a small prairie, about 40 acres.
31.00	Leave prairie and enter timber, bearing E. and W.
40.00	Set a post for quarter-section corner, from which A hickory, 14 in dia., bears N. 78 E., 16 links dist.;
	A bur oak, 26 in. dia., bears N. 63 W., 19 links dist.
49.71	A black oak, 30 in dia.
68.19	A walnut, 36 in dia.
80.00	Set a post for corner to sections 19, 20, 29, 30, from which A beech, 15 in. dia., bears N. 24 E., 18 links dist.;
	A blue ash, 24 in. dia., bears N. 79 W., 10 links dist.;
	A bur oak, 9 in. dia., bears S. 14 W., 10 links dist.;
	A black oak, 8 in. dia., bears S. 11 E., 14 links dist. Land, first half-mile, level prairie, and brushy, oak and hazel; second half-mile, some good timber, oak, &c.; thick undergrowth same.
	East, on a <i>random</i> line between sections 20 and 29, Variation 70° 25' east,
40.00	Set a post for temporary quarter-section corner.
80.10	Intersected the N. and S. line 20 links north of the corner to sections

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	20, 21, 28, 29, from which corner I run West, on a <i>true</i> line between sections 20 and 29, Variation 17° 31' east,
40.05	Set a post for quarter-section corner, from which A sugar tree, 24 in. dia., bears N. 17 W., 20 links dist.; A walnut, 14 in. dia., bears S. 10 E., 36 links dist.
80.10	The corner to sections 19, 20, 29, 30. Land level, and rather wet. Timber, oak, sugar tree, beech and walnut; open woods.
	West, on a <i>random</i> line between sections 19 and 30, Variation 17° 40' east,
40.00	Set a post for temporary quarter-section corner.
75.53	Intersected the west boundary of the township, 20 links south of the corner to sections 19 and 30, from which corner I run East, on a <i>true</i> line between sections 19 and 30, Variation 17° 31' east,
35.52	Set a post for quarter-section corner, from which A sugar tree, 18 in. dia., bears N. 26 W., 23 links dist.; An ash, 10 in. dia., bears S. 86 E., 32 links dist.
75.52	The corner to sections 19, 20, 29, 30. Land level; rich soil; not subject to inundation. Timber, sugar tree, beech, walnut, and ash; undergrowth, spice, prickly ash, and vines. February 11, 1854.
	North, between sections 19 and 20, Variation 17° 40' east,
7.70	A bur oak, 20 in. dia.
27.16	A locust, 18 in. dia.
34.00	A pond, 200 links wide, muddy bottom, and low banks; water not so deep as to prevent measuring across on the line with the chain. This pond extends about 15 chains east into section 20, and lies mostly in section 19, extending west.
40.00	Set a post for quarter-section corner, from which A beech, 9 in. dia., bears N. 56 E., 44 links dist.; A lynn, 12 in. dia., bears S. 36 W., 111 links dist.
49.00	The S. W. bank of a lake to be meandered. Set a post for corner to fractional sections 19 and 20, from which A red oak, 12 in. dia., bears S. 45 W., 21 links dist.; A lynn, 15 in. dia., bears S. 23 E., 24 links dist. From this corner offset <i>west</i> 7.50 chains to a point; thence <i>north</i> on an offset line 24.00 chains to a point; thence <i>east</i> 7.50 chains to a point in the line between sections 19 and 20, 50 links in advance of lake; thence <i>south</i> to N. W. margin of lake, 50 links, where set a post for corner to fractional sections 19 and 20, from which A red oak, 20 in. dia., bears N. 27 E., 31 links dist.; A bur oak, 15 in. dia., bears N. 36 W., 24 links dist. This corner is 72.50 chains <i>north</i> of the corner to sections 19, 20, 29, 30, and from which I continue the line between sections 19 and 20 <i>north</i> , counting the distance from the corner to sections 19, 20, 29, 30.
80.00	Set a post for corner to sections 17, 18, 19, 20, from which A chestnut, 10 in. dia., bears N. 14 E., 14 links dist.; A buckeye, 12 in. dia., bears N. 86 W., 13 links dist.; A beech, 20 in. dia., bears S. 13 W., 16 links dist.; A buckeye, 20 in. dia., bears S. 27 E., 35 links dist. Land level; rich soil, but too wet for cultivation. Timber, oak, walnut, buckeye, and beech; undergrowth, prickly ash and vines.

Township 25 N., range 2 W., Willamette meridian—Continued.

Chains.	East, on a <i>random</i> line between sections 17 and 20, Variation 17° 40' east,
40.00	Set a post for temporary quarter-section corner.
79.90	Intersected N. and S. line 7 links north of post corner to sections 16, 17, 20, 21, from which corner I run West, on a <i>true</i> line between sections 17 and 20, Variation 17° 37' east,
39.95	Set a post near the north bank of the lake for quarter-section corner, from which A white oak, 12 in. dia., bears N. 33 E., 19 links dist.; A white oak, 15 in. dia., bears S. 16 W., 34 links dist. From this corner I run south 150 links, to a point on the north bank of the lake, where set a meander corner, from which A red oak, 15 in. dia., bears N. 21 E., 15 links dist.; An ash, 12 in. dia., bears N. 16 W., 12 links dist.
79.90	The corner to sections 17, 18, 19, 20. Land level and wet; rich soil. Timber, oak, ash, elm, and beech; undergrowth same, briars and vines.

Meanders of Island Lake.

Begin at the corner to fractional sections 19 and 20, on the N. W. margin of the lake, and run thence along the N. W. margin thereof, in fractional section 20, as follows, viz:

N. 79 E., 20.00 chains, thence

N. 84 E., 20.43 chains to the meander corner 150 links *south* of the quarter-section corner, on the line between sections 17 and 20, thence

S. 73 E., 16.00 chains, thence

S. 61 E., 14.00 chains, thence

S. 40½ E., 19.22 chains, to the corner to fractional sections 20 and 21, on the N. E. bank of lake, at 52.33 chains. At 18.00 chains on this line cross the mouth of a branch, 30 links wide, coming from N. E.

Begin at the corner to fractional sections 20 and 21, on S. E. bank of lake, at 28.94 chains, and run thence along the southern bank of said lake in fractional section 20, as follows:

S. 70 W., 20.00 chains, thence

N. 85 W., 23.00 chains, thence

N. 70 W., 12.00 chains, thence

N. 30 W., 18.00 chains, thence*

N. 63 W., 20.24 chains, to the corner to fractional sections 19 and 20, at

49.00 chains; thence in section 19 as follows, viz:

N. 75 W., 5.00 chains, thence

N. 60 W., 2.00 chains, thence

N. 10 W., 6.00 chains, thence

N. 10 E., 6.00 chains, thence

N. 25 E., 3.00 chains, thence

N. 38¼ E., 8.48 chains to the corner to fractional sections 19 and 20, on the bank of lake at 72.50 chains.

This lake has low, wet, brushy banks, and has an island of timber in the middle, which ought to be meandered. Timber around lake, ash, maple, and red oak. I cause a flag to be set on the north bank of the island *south* of the meander corner, which is 150 links *south* of the quarter-section corner on the line between sections 17 and 20. From the meander corner run a base 7.50 *east* to a point, from which the flag bears S. 45 W., which gives for the distance across the water to the flag on the island 7.50 chains. Set a meander post in the place of the flag, from which a red oak, 15 in. dia., bears S. 21 W. 24 links, and an ash, 10 in. dia., bears S. 25 E., 17 links dist. From the meander post I run around the island as follows:

S. 62 E., 7.50 chains, thence

Between townships 25 and 26 N., R. 2 W., Willamette meridian—Continued.

Chains.	<p>S. 55 E., 10.00 chains, thence S. 20 E., 5.00 chains, thence South, 4.00 chains, thence S. 25 W., 6.00 chains, thence S. 62 W., 5.00 chains, thence S. 80 W., 4.00 chains, thence West, 3.50 chains, thence N. 70 W., 5.00 chains, thence N. 62 W., 15.00 chains, thence N. 45 W., 10.00 chains, thence N. 35 W., 6.00 chains, thence N. 40 E., 6.50 chains, thence N. 82 E., 8.00 chains, thence S. 88½ E., 14.20 chains, to the meander corner and place of beginning. This island is well timbered, and is good, dry land. Timber, oak, hickory, beech, and ash; undergrowth, same and vines.</p>
	<p>The line between sections 18 and 19 will strike the river before reaching the range line; I therefore run it West, on a <i>true</i> line between sections 18 and 19, Variation 17° 40' east,</p>
7.91	A buckeye, 15 in. dia.;
16.54	A locust, 24 in. dia.
28.90	Set a post on the left bank of Chickeeles River for corner to fractional sections 18 and 19, from which A buckeye, 24 in. dia., bears N. 76 E., 22 links dist.;
	A hackberry, 16 in. dia., bears S. 24 W., 15 links.
	There is an island in the river opposite this corner. To ascertain the distance on the line between sections 18 and 19 to the island, I send my flagman across the slough, who sets the flag on the S. E. bank of the island, and in the line between sections 18 and 19, from the corner to said sections on the left bank of the river. I run south 260 links to a point from which the flag on the island bears N. 45½ W., which gives for the distance 3.79 chains, to which add 28.90 chains, makes
32.69	To the flag. Set a post in the place of the flag for corner to fractional sections 18 and 19, from which A white oak, 16 in. dia., bears N. 41 W., 37 links dist.;
	A bur oak, 14 in. dia., bears S. 81 W., 16 links dist.
36.52	A white oak, 20 in. dia.;
39.10	A bur oak, 16 in. dia.
40.00	Set a post for quarter-section corner, from which A white oak, 15 in. dia., bears N. 15 W., 21 links dist.;
	A walnut, 20 in. dia., bears S. 21 E., 17 links dist.
45.50	Set a post on the N. W. bank of the island for corner to fractional sections 18 and 19, from which A hackberry, 10 in. dia., bears N. 85 E., 15 links dist.,
	A hickory, 15 in. dia., bears S. 51 E., 17 links dist.
	From this corner I meander around the island as follows: In section 19, S. 60 W., 10.00 chains, thence S. 43 W., 8.00 chains, thence South, 2.00 chains, thence East, 2.00 chains, thence N. 55 E., 4.00 chains, thence N. 60 E., 10.00 chains, thence N. 66½ E., 14.15 chains, to the corner to fractional sections 18 and 19, on the S. E. bank of the island, thence in section 18 N. 70 E., 10.00 chains, thence N. 75 E., 10.00 chains, thence N. 25 E., 4.00 chains, thence

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	North, 2.50 chains, thence West, 1.00 chains, thence S. 66 W., 2.00 chains, thence S. 75 W., 4.00 chains, thence S. 80 W., 10.00 chains, thence S. 63½ W., 21.10 chains, to the corner to fractional sections 18 and 19 on the N. W. bank of island, and place of beginning. Land, on island and main shore, level and rich; not subject to inundation. Timber, oak, hickory, ash, and walnut; undergrowth, same and vines.
6.57 10.80	North, between sections 17 and 18, Variation 17° 40' east, A hickory, 20 in. dia. Set a post on the left bank of Chickeeles River for corner to fractional sections 17 and 18, from which A buckeye, 8 in. dia., bears S. 25 W., 15 links dist.; A hackberry, 10 in. dia., bears S. 61 E., 3 links dist. MONDAY, February 13, 1854.

Meanders of the left bank of Chickeeles River through the township.

Chains.	Distances.	Remarks
		Begin at the corner to fractional sections 4 and 33, in the north boundary of the township and on the left and S. E. bank of the river, and run thence down stream with the meanders of the left bank of said river, in fractional section 4, as follows:
	<i>Chains.</i>	
S. 76 W.	18.50	
S. 61 W.	10.00	
S. 59 W.	8.30	To the corner to fractional sections 4 and 5; thence in section 5.
S. 54 W.	10.70	
S. 40 W.	5.60	
S. 50 W.	8.50	
S. 37 W.	17.00	
S. 44 W.	22.00	
S. 38 W.	26.72	To the corner to fractional section 5 and 8; thence in section 8.
S. 21 W.	16.00	
S. 10 W.	13.00	
South	8.50	To the head of rapids.
S. 9 E.	5.00	
S. 17 E.	20.00	
S. 10 E.	12.00	To foot of rapids.
S. 22¼ E.	8.46	To the corner to fractional sections 8 and 17. Land, along fractional section 8, high, rich bottom; not subject to inundation. The rapids are 37.00 chains long; rocky bottom; estimated fall 10 feet.
		<i>Meanders in section 17.</i>
S. 17 E.	15.00	At 5 chains discovered a vein of coal, which appears to be 5 feet thick, and may be readily worked.
S. 8 E.	12.00	
S. 4 W.	22.00	At 3.00 chains the ferry across the river to Williamsburg.

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.		Distances.	Remarks
		<i>Chains.</i>	on the opposite side of the river.
S. 25	W.	17.00	
S. 78	W.	12.00	
S. 71	W.	9.55	To the corner to fractional sections 17 and 18; thence in section 18.
S. 65	W.	15.00	
S. 73 $\frac{3}{4}$	W.	15.93	To the corner to fractional sections 18 and 19.
S. 65	W.	14.00	In section 19.
S. 60	W.	23.00	
S. 42	W.	10.00	
S. 20	W.	10.00	
S. 16 $\frac{1}{2}$	W.	13.83	At 2 chains cross outlet to pond and lake, 50 links wide, to the corner to fractional sections 19 and 24, on the range line, 32.50 chains north of the corner to sections 19, 30, 24, and 25.
			Begin at the corner to fractional sections 25 and 30, on the range line 1-chain south of the quarter-section corner on said line, and run thence down stream with the meanders of the left bank of Chickeeles River, in fractional section 30, as follows, viz:
S. 41	E.	20.00	At 10 chains discovered a fine mineral spring.
S. 49	E.	15.00	Here appear the remains of an Indian village.
S. 42	E.	12.00	
S. 12 $\frac{3}{4}$	E.	5.30	To the corner to fractional sections 30 and 31; thence in section 31.
S. 12	E.	10.00	
S. 12	W.	13.50	To the mouth of Elk River, 200 links wide; comes from the east.
S. 41	W.	9.00	At 200 links across the creek.
S. 58	W.	11.00	
S. 35	W.	11.00	
S. 20	W.	20.00	At 15 chains mouth of stream, 25 links wide; comes from S. E.
S. 23 $\frac{3}{4}$	W.	8.80	To the corner to fractional sections 31 and 36, on the range line, and 8.56 chains north of the corner to sections 1, 6, 31, and 36, or S. W. corner to this township
			Land along the left bank of Chickeeles River is level, rich soil, and only a small part subject to inundation.
			Timber, oak, hickory, beech, and elm; not much undergrowth.
<i>February 14, 1854.</i>			
Chains.	From the corner to sections 30 and 31, on the west boundary of the township, I run		
	East, on a true line between sections 30 and 31,		
	Variation 18° east,		
15.10	A white oak, 16 in. dia.		
23.50	Intersected the right bank of Chickeeles River, where set a post for corner to fractional sections 30 and 31, from which		
	A black oak, 16 in. dia., bears N. 60 W., 25 links dist.;		
	A white oak, 20 in. dia., bears S. 35 W., 32 links dist.		
	From this corner I run south 12 links, to a point west of the corner to fractional sections 30 and 31, on the left bank of the river; thence		

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	<p>continue south 314 links, to a point from which the corner to fractional sections 30 and 31, on the left bank of the river, bears N. 72 east; which gives for the distance across the river, 9.65 chains. The length of the line between sections 30 and 31 as follows, viz.:</p> <table border="0"> <tr> <td>Part east of river-----</td> <td style="text-align: right;">41.90 chains.</td> </tr> <tr> <td>Part across river-----</td> <td style="text-align: right;">9.65</td> </tr> <tr> <td>Part west of river-----</td> <td style="text-align: right;">23.50</td> </tr> <tr> <td style="text-align: center;">Total -----</td> <td style="text-align: right; border-top: 1px solid black;">75.05</td> </tr> </table> <p>Commence the meanders of section 31 at the corner to fractional sections 31 and 36, on the right bank of Chickeeles River, and run thence up stream with the meanders of the right bank of said river, in fractional section 31, as follows:</p> <p>N. 25 E. 7.00 chains; thence N. 38 E. 11.00 chains thence N. 50 E. 12.50 chains; thence N. 25 E. 10.00 chains; thence North 13.40 chains, to the corner to fractional sections 30 and 31; thence, in section 30, N. 45° W. 14.00 chains; thence N. 40 W. 12.00 chains; thence N. 34½ W. 10.50 chains, to the corner to fractional sections 25 and 30, on the right bank of Chickeeles River, 27.73 chains north of the corner to sections 25, 30, 31, 36. Land level; rich bottom; not subject to inundation. Timber, oak, hickory, and ash; undergrowth, same, spice and vines.</p>	Part east of river-----	41.90 chains.	Part across river-----	9.65	Part west of river-----	23.50	Total -----	75.05
Part east of river-----	41.90 chains.								
Part across river-----	9.65								
Part west of river-----	23.50								
Total -----	75.05								
3.52 17.31 21.00	<p>From the corner to sections 18, 19, 13, and 24, I run East, on a true line between sections 18 and 19, Variation 18° 00' east, A bur oak, 20 in. dia. A white oak, 15 in. dia. Set a post on the right bank of Chickeeles River for corner to fractional sections 18 and 19, from which A white oak, 15 in. dia., bears N. 10 E., 31 links dist.; A black oak, 20 in. dia., bears S. 80 W., 15 links dist. From this corner the corner to fractional sections 18 and 19, on the N. W. bank of the island, bears east. To obtain the distance across the river between the two corners, I run (from the corner on right bank) north 375 links to a point from which the corner on the island bears S. 68 E.; which gives for the distance 9.27 chains. The length of the line between sections 18 and 19 is 75.77 chains, the several parts of which being as follows:</p> <table border="0"> <tr> <td>East of river and across the island, including 3.79 chains across the slough-----</td> <td style="text-align: right;">45.50 chains.</td> </tr> <tr> <td>Across the river N. W. of island-----</td> <td style="text-align: right;">9.27</td> </tr> <tr> <td>West of river -----</td> <td style="text-align: right;">21.00</td> </tr> <tr> <td style="text-align: center;">Aggregate, as above -----</td> <td style="text-align: right; border-top: 1px solid black;">75.77</td> </tr> </table>	East of river and across the island, including 3.79 chains across the slough-----	45.50 chains.	Across the river N. W. of island-----	9.27	West of river -----	21.00	Aggregate, as above -----	75.77
East of river and across the island, including 3.79 chains across the slough-----	45.50 chains.								
Across the river N. W. of island-----	9.27								
West of river -----	21.00								
Aggregate, as above -----	75.77								
	<p>From the corner to fractional sections 19 and 24, on the right bank of Chickeeles River, I run up stream with the right bank of said river, in fractional section 19, as follows, viz:</p> <p>N. 30 E. 20.00 chains; thence N. 45¼ E. 15.50 chains, to the corner to fractional sections 18 and 19; thence, in section 18, N. 58 E. 10.00 chains; thence N. 63 E. 17.00 chains; thence</p>								

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	N. 75 $\frac{1}{4}$ E. 32.12 chains, to a point on the right bank of Chickeeles River north of the corner to fractional sections 17 and 18, on the left bank of the river. I here set a post for corner to fractional sections 17 and 18, on the north side of river, from which A black oak, 15 in. dia., bears N. 25 E., 21 links dist.; A black oak, 20 in. dia., bears N. 27 W., 17 links dist. To obtain the distance across the river, on the line between sections 17 and 18, I run a base line west 430 links, to a point from which the post corner to fractional sections 17 and 18, on the left and south bank of the river, bears S. 23 east; which gives for the distance 10.13 chains, to which add 10.80 chains, makes
20.93	To the corner to fractional sections 17 and 18, on the right and north bank of the river.
<i>Survey of a claim of 640 acres, confirmed by law to Samuel Williams.</i>	
Begin at a black oak, 15 inches diameter, on the right bank of Chickeeles River, opposite the head of a small island in said river. Mark said tree with a blaze, 15 inches long and 6 inches wide, a notch at the top and another at the bottom of the blaze, and on the face of the blaze, with a marking iron, the letters P. S. C., (private survey claim.) From the corner tree A black oak, 20 in. dia., bears N. 27 W., 55 links dist.; A bur oak, 16 in. dia., bears S. 50 W., 41 links dist. Both trees marked with a blaze and notch at the lower end of the blaze, facing the corner tree; and on the blaze, with a marking iron, cut the letters W. P. S., (witness private survey.) This is also the S. E. corner of the town of Williamsburg, and from which I run up stream with the meanders of the right bank of Chickeeles River as follows: At an assumed Variation 18° 00' east, North 17.00 chains; at 11.00 chains ferry landing; N. 12 W. 16.00 chains; N. 18 W. 20.00 chains; at 14 chains foot of rapids; N. 12 W. 27.45 chains, to a point on the right bank of the river, where set a post for corner to this survey, from which A black oak, 20 in. dia., bears N. 75 W., 33 links dist.; A white oak, 20 in. dia., bears S. 43 W., 35 links dist. NOTE.—At 3 chains on the last course of meanders cross the mouth of stream, 40 links wide; comes from the N. W. From this corner I run S. 7 $\frac{1}{2}$ W., with the northern line of this survey, 15.17 A black oak, 20 in. dia. 20.00 A stream, 30 links wide, rapid current, runs S. E. 37.51 A bur oak, 20 in. dia. 52.34 A hickory, 16 in. dia. 62.41 A white oak, 20 in. dia. 79.42 Set a post for corner to this survey, from which A black oak, 16 in. dia., bears N. 25 E., 16 links dist.; A white oak, 20 in. dia., bears N. 10 W., 21 links dist.; A white oak, 24 in. dia., bears S. 21 W., 16 links dist.; A black oak, 24 in. dia., bears S. 60 E., 17 links dist.; thence S. 12 E., with the western line of this survey, 10.25 A black oak, 16 in. dia. 17.51 A white oak, 15 in. dia. 41.73 A sugar tree, 20 in. dia. 55.00 The road to Williamsburg, bearing E. and W. 61.53 An elm, 14 in. dia. 80.00 Set a post for corner of this survey, from which	

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains. 15.73 25.31 45.61 67.20 77.68	<p>A white oak, 16 in. dia., bears N. 73 E., 25 links dist., A white oak, 12 in. dia., bears N. 21 W., 17 links dist.; A black oak, 20 in. dia., bears S. 61 W., 22 links dist.; A black oak, 24 in. dia., bears S. 31 E., 23 links dist.; thence N. 78 E., with the southern line of this survey, A black oak, 16 in. dia. A black oak, 20 in. dia. A white oak, 12 in. dia. A white oak, 18 in. dia. To the corner tree and place of beginning. The land of this claim rolling; good, 2d rate soil, somewhat broken along the rapids in the N. E. part; well timbered, black oak, white oak, hickory, and bur oak; not much undergrowth; some hazel, briers, and vines. The town of Williamsburg, situated on the S. E. part of the claim, is pleasantly located on the right bank of the river, some 8 or 10 feet above high water, and has at this time sixteen families residing in it. Some three or four tenements are now being con- structed within the limits of the town.</p> <p style="text-align: right;"><i>February 15, 1854.</i></p>
22.73 36.45	<p>From the corner to fractional sections 17 and 18, on the right and north bank of Chickeeles River, 20.93 chains north of the corner to sections 17, 18, 19, 20, I run North, between sections 17 and 18, sufficing the distance from the cor- ner to sections 17, 18, 19, 20, Variation 18° east, A black oak, 20 in. dia. Intersected the southern line of Samuel Williams's claim, where set a post for corner to fractional sections 17 and 18, from which A black oak, 16 in. dia., bears S. 50 W., 22 links dist.; A white oak, 20 in. dia., bears S. 21 E., 31 links dist. From this corner I run N. 78 E., along the southern line of the said claim, 20.15 chains, to the corner tree on the right bank of Chickeeles River and S. E. corner of said claim; thence down stream, on the right bank of said river, in fractional section 17, as follows: S. 16 W. 10.00 chains; thence S. 45 W. 10.00 chains; thence S. 72 W. 10.30 chains, to the corner to fractional sections 17 and 18.</p>
	<p style="text-align: center;"><i>Field-notes of the survey of a small island in Chickeeles River, lying wholly in section 17.</i></p> <p>Cause the flag to be set on the head of the island, at a point bearing S. 45 E. from the black oak tree, the S. E. corner to Samuel Williams's claim; from said corner tree run S. 45 W. 215 links, to a point west of the flag on the head of the island; which gives for the distance from the corner tree to the flag 215 links. Set a meander post in the place of the flag, from which A bur oak, 16 in dia., bears S. 10 W., 15 links dist.; A white oak, 12 in. dia., bears S. 15 E., 21 links dist. From the meander post I run around the island as follows: S. 16 W. 9.00 chains; thence S. 45 W. 10.00 chains; thence S. 10 W. 2.00 chains; thence South 1.50 chains, to the lower end of island; thence East 1.50 chains; thence N. 75 E. 4.00 chains; thence N. 50 E. 5.00 chains; thence N. 30 E. 6.00 chains; thence</p>

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	<p>N. 10 E. 6.00 chains; thence N. 10 W. 3.00 chains; thence. N. 73 W. 2.96 chains, to the meander post and place of beginning. This island is well timbered; white and black oak and hickory; not subject to inundation; undergrowth, same, spice, and vines.</p>
7.93	<p>From the corner to sections 7, 18, 12, and 13, on the range line, I run East, on a <i>true</i> line between sections 7 and 18, Variation 18° 00' east, Intersected the western line of Samuel Williams's survey of 640 acres, and at said intersection set a post for corner to fractional sections 7 and 18, from which A white oak, 15 in. dia., bears N. 25 W., 15 links dist.; A black oak, 20 in. dia., bears S. 34 W., 19 links dist. From this corner I run N. 12 W., with the western line of said Williams's claim, 23.23 chains, to the N. W. corner thereof. Land gently rolling. Timber, oak and hickory.</p>
40.00	<p>From the corner to fractional sections 17 and 18, in the southern line of Samuel Williams's survey, and 36.45 chains <i>north</i> of the corner to Sections 17, 18, 19, 20, I run North, on a blank line passing through Samuel Williams's survey, counting the distance from the corner to said sections 17, 18, 19, 20, Variation 18° 00' east, Point for quarter-section corner in Samuel Williams's survey; corner not established.</p>
52.50	The road leading into Williamsburg.
80.00	<p>Set a temporary corner to sections 7, 8, 17, 18, in said Williams's claim. This line passes through the back part of the town of Williamsburg, but I make no connection with the lines of said town.</p>
12.50	<p>North, on a <i>blank</i> line between section 7 and 8, Variation 18° 00' east,</p>
38.10	<p>To creek, 30 links wide; runs east; comes from N. W. Intersected the north boundary of Samuel Williams's survey, where set a post for corner to fractional section 7 and 8, from which A black oak, 10 in. dia., bears N. 10 E., 15 links dist.; A bur oak, 15 in. dia., bears N. 16 W., 17 links dist. From this corner I run N. 73 E., on the north line of said claim, 440 links, to the N. E. corner thereof, on the right bank of Chickeeles River. From the corner of fractional sections 7 and 8, in the north line of Samuel Williams's survey, North, on a <i>true</i> line between sections 7 and 8, counting the distance from a temporary corner to sections 7, 8, 17, 18, within said Williams's survey,</p>
40.00	<p>Set a post for quarter-section corner, from which A black oak, 15 in. dia., bears N. 25 E., 16 links dist.; A white oak, 16 in. dia., bears N. 73 W., 12 links dist. A white oak, 18 in. dia. A bur oak, 15 in. dia.</p>
45.17	Set a post for corner to sections 5, 6, 7, 8, from which
63.71	A red oak, 20 in. dia., bears N. 20 E., 40 links dist.;
80.00	A white oak, 16 in. dia., bears N. 16 W., 43 links dist.;
	A red oak, 24 in. dia., bears S. 80 W., 39 links dist.;
	A white oak, 40 in. dia., bears S. 75 E., 22 links dist.
	Land gently rolling; good rich soil. Timber, oak, hickory, and ash.

February 16, 1854.

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	East, on a <i>true</i> line between sections 5 and 8, Variation 18° 00' east,
5.16	A white oak, 15 in. dia.
7.41	A bur oak, 12 in. dia.
10.50	Set a post on the right bank of Chickeeles River for corner to fractional sections 5 and 8, west of river, from which A red oak, 30 in. dia., bears N. 58 W., 5 links dist.; A hickory, 12 in. dia., bears S. 42 W., 5 links dist.
	From this corner the post corner to fractional sections 5 and 8, on the left bank of the river, bears S. 89 E.
	From a point 16 links <i>south</i> of this corner, and <i>west</i> of the corner to fractional sections 5 and 8, on the left and east bank of the river, I run north 454 links, to a point from which the corner post on the left bank of the river bears S. 63 E., which gives for the distance across the river 8.91 chains. The length of the line between sections 5 and 8, including the distance across the river is, therefore, 80.06 chains, viz:
	East of river ----- 60.65 chains.
	Across river ----- 8.91
	West of river ----- 10.50
	Total ----- 80.06
	West, on a <i>random</i> line between sections 6 and 7, Variation 18° 00' east,
25.10	A stream, 25 links wide, gentle current, runs south.
40.00	Set a post for temporary quarter-section corner.
56.00	A stream, 15 links wide, runs S. E.
76.26	Intersected the west boundary 21 links north of the corner to sections 6 and 7, from which corner I run East, on a <i>true</i> line between sections 6 and 7, Variation 18° 09' east,
36.26	Set a post for quarter-section corner, from which A black oak, 16 in. dia., bears N. 15 W., 21 links dist.; A white oak, 40 in. dia., bears S. 21 W., 33 links dist.
76.26	The corner to sections 5, 6, 7, 8. Land hilly; 2d rate. Timber, oak, sugar tree, and hickory; undergrowth, same and hazel.
	North, on a <i>random</i> line between sections 5 and 6, Variation 18° 00' east,
20.00	Enter windfall, bearing N. 60 W. and S. 60 E.
35.00	Leave windfall, having same bearings.
40.00	Set a post for temporary quarter-section corner.
80.06	Intersected the north boundary of the township 24 links east of the corner to sections 5 and 6, from which corner I run South, on a <i>true</i> line between said sections 5 and 6, Variation 18° 10' east,
40.06	Set a post for quarter-section corner, from which A hickory, 20 in. dia., bears N. 18 E., 27 links dist.; A white oak, 24 in. dia., bears S. 31 W., 18 links dist.
80.06	The corner to sections 5, 6, 7, 8. Land rolling, and 2d rate. Timber, oak, hickory, sugar tree, and ash; undergrowth, same and hazel.
	From the corner to sections 4, 5, 32, and 33, on the north boundary of the township, I run South, on a <i>true</i> line between sections 4 and 5, Variation 18° 00' east,
2.10	A white oak, 15 in. dia.
4.00	Set a post on the right bank of Chickeeles River for corner to fractional

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	<p>sections 4 and 5, from which A bur oak, 16 in. dia., bears N. 25 E., 34 links dist.; A black oak, 20 in. dia., bears N. 33 W., 21 links dist. From this corner the post corner to fractional sections 4 and 5, on the left bank of the river, bears S. ½ W. To obtain the distance across the river I run (from the corner on the right bank) N. 89° 30' W. 326 links, to a point from which the post corner to fractional sections 4 and 5, on the left bank, bears S. 18° 30' E., which gives for the distance 9.46 chains. The length of the line between sections 4 and 5 will, therefore, be as follows, viz:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Part south of the river -----</td> <td style="text-align: right;">66.50 chains.</td> </tr> <tr> <td>Part across the river -----</td> <td style="text-align: right;">9.46</td> </tr> <tr> <td>Part north of the river -----</td> <td style="text-align: right;">4.00</td> </tr> <tr> <td style="border-top: 1px solid black;">Aggregate -----</td> <td style="border-top: 1px solid black; text-align: right;">79.96</td> </tr> </table>	Part south of the river -----	66.50 chains.	Part across the river -----	9.46	Part north of the river -----	4.00	Aggregate -----	79.96
Part south of the river -----	66.50 chains.								
Part across the river -----	9.46								
Part north of the river -----	4.00								
Aggregate -----	79.96								
	<p>From the corner to fractional sections 4 and 33, on the right bank of Chickeeles River, I run down stream with the meanders of the right and N. W. bank of said river as follows, viz:</p> <p>In section 4— S. 40° 45' W. 5.35 chains, to the corner to fractional sections 4 and 5; thence, in section 5, S. 72 W. 11.00 chains; thence S. 55 W. 20.00 chains; thence S. 40 W. 20.00 chains, (at this point the bluff comes to the river;) thence S. 42 W. 18.00 chains; thence S. 40 W. 18.00 chains; thence S. 18¼ W. 19.75 chains; to the corner to fractional sections 5 and 8. Land rolling along the last three courses, which are under a bluff bank from 20 to 30 feet high; the bottom, along the first three courses of meanders, good, rich land Timber, oak, hickory, ash, elm, and buckeye; undergrowth, same and vines in the bottom.</p>								
	<p>From the corner to fractional sections 5 and 8, on the right bank of the river, I continue the meanders down stream, along fractional section 8, as follows, under a bluff bank from 20 to 30 feet high: S. 26 W. 9.70 chains; thence S. 10 W. 15.00 chains; thence South 15.00 chains, to the head of rapids; thence S. 12 E. 2.55 chains, to the corner to fractional section 8 and N. E. corner of Samuel Williams's claim. Mark the black oak witness tree to this corner, bearing N. 75 W., 33 links distant, "Section 8." Land rolling, and rather broken along the river. Timber, principally oak. <i>February 17, 1854.</i></p>								
	<p style="text-align: center;"><i>Private claim surveyed after public survey.</i></p> <p>Survey of a claim of 640 acres, confirmed by law to Daniel Reed. Begin at the corner to fractional sections 5 and 8, on the left bank of Chickeeles River. The corner post standing, and witness trees agree with the description furnished me, viz: A blue ash, 24 in. dia., bears N. 66 E., 4 links dist.; An elm, 24 in. dia., bears S. 56 E., 20 links dist. From this corner I run down stream with the meanders of the left and east bank of said river S. 21 W. 16.00 chains, to a point where set a post on the left and east bank of Chickeeles River for the S. W. corner of the said Reed's claim, from which A black oak, 16 in. dia., bears N. 44 E., 37 links dist.</p>								

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	This tree marked with a blaze, 15 inches long, 6 inches wide, facing the corner post, with two notches—one at the upper end and the other at the lower end of the blaze; also marked with a marking iron on the face of the blaze the letters D. R., (Daniel Reed,) W. P. C., (witness private claim.) A bur oak, 20 in. dia., bears S. 47 E., 45 links dist. Marked with a blaze and notch at the lower end of the blaze facing the corner post, with the letters R. 2 W., T. 25 N., sec. 8. From the corner post I run S. 54 E. along the S. W. boundary line of said claim, Variation 17° 40' east,
10.51	A bur oak, 16 in. dia.
20.67	A black oak, 20 in. dia.
31.00	Leave river bottom and enter upland, bearing N. and S.
44.73	A white oak, 24 in. dia.
57.34	A white oak, 20 in. dia.
77.90	Set a post for corner of this claim and fractional section 8, from which A white oak, 16 in. dia., bears N. 40 W., 31 links dist. This tree marked with a blaze and two notches facing the corner post— one notch above and the other below the blaze. Mark the letters W. P. C. (witness private claim) on the face of the blaze. A black oak, 20 in. dia., bears S. 10 W., 21 links dist.; A bur oak, 15 in. dia., bears S. 45 E., 13 links dist. Both trees marked with a blaze and notch facing the post, and S. 8 with a marking iron. From this corner I run N. 36 E. along the southeastern line of this claim, Variation 17° 40' east,
3.41	A white oak, 15 in. dia.
5.45	Intersected the line between section 8 and 9, where set a post for corner to fractional sections 8 and 9, from which A white oak, 16 in. dia., bears S. 25 W., 22 links dist.; A bur oak, 20 in. dia., bears S. 37 E., 18 links dist. From this corner I run <i>south</i> with the line between said sections 23.70 chains, to the corner to sections 8, 9, 16, 17.
33.73	A white oak, 15 in. dia.
41.17	A bur oak, 16 in. dia.
57.31	A white oak, 20 in. dia.
60.57	A black oak, 30 in. dia.
64.00	Leave timber and enter prairie, bearing N. and S.
75.17	Intersected the line between sections 4 and 9, where set a post with mound and trench for corner to fractional sections 4 and 9. Plant N. E. a hickory nut, S. E. 4 apple seeds. To obtain the distance on the line between sections 4 and 9, from the fractional-section corner just established to the corner to sections 3, 4, 9, 10, I run as follows: <i>North</i> 4.00 chains (to avoid the pond) to a point; thence <i>east</i> on an offset line 12.00 chains to a point; thence <i>south</i> 4.00 chains, to the line between said sections 4 and 9; thence <i>east</i> with said line, and at 39.33 chains, the corner to sections 3, 4, 9, 10, the distance being counted from the corner to fractional sections 4 and 9, in the S. E. line of Daniel Reed's claim.
80.00	To a point for the east corner of the claim. Set a lime stone, 10 inches square and 6 inches thick, and post with mound and trench, as per instructions, for corner to said claim and to fractional section 4. From the corner a white oak, 16 in. dia., standing in the edge of the timber, bears N. 65 W., 555 links distant. Mark said tree with a blaze and two notches—one above and the other below the blaze—facing the corner. With a marking iron cut the letters W. P. C. (witness private claim)

Township 25, N. range 2 W., Willamette meridian—Continued.

Chains.	on the face of the blaze. This corner about 3.00 chains N. W. of a small pond. Thence I run
	N. 54 W. along the N. E. boundary line of this claim,
	Variation 17° 40' east,
5.50	Leave prairie and enter timber, bearing N. E. and S. W.
10.53	A bur oak, 15 in. dia.
25.34	A black oak, 16 in. dia.
54.07	Intersected the line between sections 4 and 5.
	Here set a post for corner to fractional sections 4 and 5, from which
	A black oak, 16 in. dia., bears N. 43 E., 22 links dist.;
	A white oak, 20 in. dia., bears N. 37 W., 17 links dist.
	From this corner I run north with the line between said sections 4 and 5, and at 30.81 chains, the corner to fractional sections 4 and 5, on the left and south bank of Chickeeles River.
64.00	Leave upland, and enter river bottom, bearing N. E. and S. W.
65.50	A bur oak, 20 in. dia.
71.53	A bur oak, 16 in. dia.
75.36	A walnut, 36 in. dia.
77.90	Set a post on the left and S. E. bank of Chickeeles River, for corner of this claim and fractional section 5, from which
	A white oak, 16 in. dia., bears N. 60 E., 31 links dist.
	Marked with a blaze and notch facing the post, and section 5 on the face of the blaze.
	A bur oak, 15 in. dia., bears S. 40 E., 37 links dist.
	Marked with a blaze and two notches facing the post. The letters W. P. C. (witness private claim) cut with a marking iron on the face of the blaze.
	From this corner I run up stream with the meanders of the left and S. E. bank of the river in fractional section 5.
	N. 37 E., 1.00 chains, thence
	N. 50 E., 3.50 chains, thence
	N. 40 E., 5.60 chains, thence
	N. 54 E., 10.70 chains, to the corner to fractional sections 4 and 5, on the left bank of the river.
	From the corner to fractional section 5, and the upper corner to the claim on the left bank of Chickeeles River, I run down stream with the meanders of the left bank of said river, within the claim, as follows:
	S. 37 W., 16.00 chains, thence
	S. 44 W., 22.00 chains, thence
	S. 38 W., 26.72 chains, to the original corner to fractional sections 5 and 8, on the left and east bank of Chickeeles River, and place of beginning.
	Land, much the largest portion of this claim gently rolling upland; good, 2d rate timber, oak, walnut, hickory, and sugar tree. The bottom land along the river is dry, rich land, not subject to inundation. Timber, walnut, oak, hickory, and hackberry; undergrowth same, briars and vines.

February 18, 1854.

GENERAL DESCRIPTION

The quality of the land in this township is considerably above the common average. There is a very fair proportion of rich bottom land, chiefly situated on both sides of Chickeeles River, which is navigable through the township for steamboats of light draught, except over the rapids in section 8. These rapids are 37 chains long; estimated fall, about 10 feet.

The uplands are generally rolling, good 1st and 2d rate land, and well adapted

for cultivation. Elk River is a beautiful stream of clear water, running through the southern part of the township, and emptying into Chickeeles River, in section 31. There is a fine mill-seat on this stream in section 22.

Timber, chiefly oak, beech, hickory, hackberry, and sugar tree, and is very equally distributed over the township, except in the prairie embracing parts of sections 3, 4, 9, 10, 15, and 16.

The town of Williamsburg was laid out by Samuel Williams, some two years since, on the right bank of Chickeeles River, a little below the foot of the rapids. It now contains sixteen houses, and others are being built; has a good landing in front, with a ferry, and has the appearance of thrift and prosperity.

There are several good quarries of stone (principally lime) along the Chickeeles and Elk Rivers, which will afford inexhaustible quantities of excellent building materials. On the line between sections 1 and 12 I discovered gold dust and auriferous quartz, and in section 17, on the left bank of Chickeeles River, opposite Williamsburg, a valuable coal bank. There are three settlements—one on the N. W. quarter of section 10, one on the N. W. quarter of section 15 and N. E. quarter of section 16, and the other on the N. E. quarter of section 23 and N. W. quarter of section 24.

A valuable salt spring was discovered crossing the south boundary of section 31, running N. W.; also the remains of an Indian village on the left bank of Chickeeles River, in section 30. Fossil remains on the west bank of a small lake in section 26, and ancient works on the left bank of Elk river, in the N. E. quarter of section 27.

LIST OF NAMES.

A list of the names of the individuals employed to assist in running, measuring, or marking the lines and corners described in the foregoing field notes of township No. 25, north of the base line of range No. 2, west of the Willamette meridian, showing the respective capacities in which they acted: Peter Long, chainman; John Short, chainman; George Sharp, axeman; Adam Dull, axeman; Henry Flagg, compassman.

We hereby certify that we assisted Robert Acres, deputy surveyor, in surveying the exterior boundaries and subdividing township number twenty-five north of the base line of range number two west of the Willamette meridian, and that said township has been, in all respects, to the best of our knowledge and belief, well and faithfully surveyed, and the boundary monuments planted according to the instructions furnished by the surveyor general.

PETER LONG, *Chainman.*
 JOHN SHORT, *Chainman.*
 GEORGE SHARP, *Axeman.*
 ADAM DULL, *Axeman.*
 HENRY FLAGG, *Compassman.*

Subscribed and sworn to by the above-named persons, before me, a justice of the peace for the county of _____, in the State (or Territory) of _____, this _____ day of _____, 185—.

HENRY DOOLITTLE,
Justice of the Peace.

I, Robert Acres, deputy surveyor, do solemnly swear that, in pursuance of a contract with _____, surveyor of the public lands of the United States in the State (or Territory) of _____, bearing date the _____ day of _____, 185—, and in strict conformity to the laws of the United States and the instructions furnished by the said surveyor general, I have faithfully surveyed the exterior boundaries (or subdivision and meanders, as the case may be) of township number twenty-five north of the base line of range number two west of the Willamette meridian, in the _____ aforesaid, and do further solemnly swear that the foregoing are the true and original field notes of such survey.

ROBERT ACRES,
Deputy Surveyor.

Subscribed by said Robert Acres, deputy surveyor, and sworn to before me, a justice of the peace for _____ County, in the State (or Territory) of _____, this _____ day of _____, 185—.

HENRY DOOLITTLE,
Justice of the Peace.

To each of the original field books, the surveyor general will append his official approval, according to the following form, or so varied as to suit the facts in the case:

SURVEYOR'S OFFICE AT _____,
_____ , 185—.

The foregoing field notes of the survey of (here describe the survey) executed by Robert Acres, under his contract of the _____ day of _____, 185—, in the month of _____, 185—, having been critically examined, the necessary corrections and explanations made, the said field notes, and the surveys they describe, are hereby approved.

A. B.,
Surveyor General.

To the copies of the field notes transmitted to the seat of Government, the surveyor general will append to each township the following certificate:

I certify that the foregoing transcript of the field notes of the survey of the (here describe the character of the surveys, whether meridian, base line, standard parallel, exterior township lines, or subdivision lines, and meanders of a particular township) in the State (or Territory) of _____, has been correctly copied from the original notes on file in this office.

A. B.,
Surveyor General.

Table showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

Minutes	Links	Minutes	Links	Minutes	Links
1.....	2¼	21.....	49	41.....	95¾
2.....	4¾	22.....	51¼	42.....	98
3.....	7	23.....	53¾	43.....	100¼
4.....	9¼	24.....	56	44.....	102¾
5.....	11¾	25.....	58¼	45.....	105
6.....	14	26.....	60¾	46.....	107¼
7.....	16¼	27.....	63	47.....	109¾
8.....	18¾	28.....	65¼	48.....	112
9.....	21	29.....	67¾	49.....	114¼
10.....	23¼	30.....	70	50.....	116¾
11.....	25¾	31.....	72¼	51.....	119
12.....	28	32.....	74¾	52.....	121¼
13.....	30¼	33.....	77	53.....	123¾
14.....	32¾	34.....	79¼	54.....	126
15.....	35	35.....	81¾	55.....	128¼
16.....	37¼	36.....	84	56.....	130¾
17.....	39¾	37.....	86¼	57.....	133
18.....	42	38.....	88¾	58.....	135¼
19.....	44¼	39.....	91	59.....	137¾
20.....	46¾	40.....	93¼	60.....	140

COMMENTS OF W. D. JONES

The first instructions given to the deputy surveyors must have been given orally by the Geographer of the United States, who was in the field with the surveyors, and, as later the Surveyors General gave written instructions, said instructions were by letters. The matter that was in those letters of instruction must have developed from the experience of the best surveyors who worked in the field and their reports as to what was needed. And it was only when a letter became especially good that it attracted attention and was published. The instructions of 1871 are a reprint of the 1855 instructions. The more recent the instructions, the more matter they generally contain, but the recent instructions do not tell how the old work was done.

In regard to measurements, the 1815 instructions say, "the level or horizontal length is to be taken, not . . . over the surface of the ground when . . . uneven and hilly; for this purpose . . . let down one end of the chain to the ground and raise the other to a level : . . . a plumb should be let fall . . . , and where the land is very steep it will be necessary to shorten the chain by doubling the links together . . . Though the line be measured by a chain of two perches, you are . . . to keep your reckoning in chains of four perches of 100 links."

The same directions, sometimes in a little different words, are contained in the 1834-1846-1850-1851 and 1855 instructions. The 1855 instructions got into more detail by saying, "In measuring with a two-pole chain, every five chains are called a tally because . . . the last of ten tally pins . . . will have been stuck . . . each (chainman) registers the distance by slipping a thimble, (button, or ring of leather,) or something of the kind, on a belt worn for the purpose. The hind chainman then comes up, and having counted in the presence of his fellow the tally pins . . . proceeds (ahead) to set the pins." "Thus the chainmen alternately change places . . . so that one is forward in all odd and the other in all even tallies" . . . "To insure accuracy in measurement, facilitate the recollection of the distance to objects on the line, and render a mistally almost impossible."

Experience has shown that tallies had been forgotten sometimes. It is well for us to remember this two-pole chain. It explains some of the mistakes of five chains we find in the length of section or of half-mile lines. Except that the 1855 instructions say, "on . . . level ground . . . the four-pole chain may be used"; it was not until 1881 that the government allowed the deputy surveyor to use a four-pole chain and then instead of requiring it to be standard length of 66.00 feet they required

it to be 66.06 feet long. By that time the old chain "made of good iron wire" (as per 1850 instructions) had gone out of use and the steel tape graduated to the length of a chain had taken its place. It seems that the habit of making a mile measure more than eighty chains, on account of the constant wear of the many joints in the old wire chain, had become so fixed that the officials were afraid to take any chances of making the mile measure less than eighty chains, on account of inaccurate measurement with a correct chain, so they required the chain to be too long by 0.06 of a foot. That practice has now been discontinued. The 1850 instructions provide for a telescope with "two parallel lines . . . in the principal focus" and "a rod, divided into feet, inches and tenths of an inch" with which to measure meander distances, etc. Said instructions say "The principal source of error in surveying is in the measurement by the chain."

In the 1815 and 1834 instructions, the deputy surveyor was allowed to choose the number of tally pins he wished to use; after that eleven tally pins were required. Until 1855 the tally pins could be "seasoned wood pointed with iron or steel," and "weighty enough toward the point to make them drop plumb." By the 1855 instructions said pins were required to be of steel.

Not much is said about Marking Irons except that "There shall be cut with a marking iron," (as per 1815 instructions) until the 1851 instructions which say, "you are to provide yourself with marking irons of the most approved description, which are to be used only by experienced and skillful markers." "In marking of your corners, whether in prairie or timber, particular care is to be taken . . . The importance of this caution will be manifest, when you reflect that it is upon this evidence alone that the settler depends in locating or entering his land." Evidently, the man who wrote these 1851 instructions knew that the true location of a lost quarter corner cannot be ascertained by simply measuring forty chains from a section corner monument.

The 1815 and 1834 instructions say, "all those trees which your line cuts must have two notches made on each side of the trees where the line cuts; but *no spot* or *blaze* . . . and all or most of the trees on each side of the line and near it, must be marked with two spots or blazes diagonally or quartering toward the line." The 1846-1850-1851 and 1855 instructions add to this for the blazes on "two sides" of the tree on each side of the line that "the blazes (are) to approach nearer each other the farther the line passes from the blazed trees, and to be as nearly opposite—coinciding with the line—as possible, in cases where they are barely passed." *Niles*

Weekly Register of 1817 and the instructions of 1834 use the term "Station or Line Trees" and the instructions of 1850 and 1855 call them "Sight Trees," "Line Trees" or "Station Trees." In the early instructions, the estimated diameter of line and bearing trees was allowed but by 1846 the measured diameter was required. By the 1815 and 1850 instructions *not all trees* on the true lines were marked as station or line trees but "the names and estimated diameter of at least one or two of these trees . . . with their exact distance on the line, between every two corners."

BEARING TREES AND WITNESS TREES

In 1815 instructions and *Niles Weekly Register* of 1817 say, "The numbers of each section . . . township and range, are marked with a marking iron . . . on a bearing tree or some *other tree* within and near each corner of a section." The 1846 and 1851 instructions say "Bearing trees are those of which you take the course and distance from a corner. Witness trees are . . . marked as above but the course and distance to them, as well as the small chop, are omitted." Of course the letters B. T. do not appear on witness trees. The 1846 instructions say "at interior section corners four trees, one to stand within each of the four sections, are to be marked with the section, township and range, but no record is made of where they stand with reference to the corner. If we find the blaze and iron marks on these "Witness Trees" we know the blaze is on the side of the nearest corner but we do not know within almost 90 degrees what the direction is and we do not know how far the corner is from the tree. Evidently the man who wrote those instructions was not thinking of the land surveyor who should look for that section corner 100 years after it was set, when one witness tree might be the only tree of those four marked trees, left standing.

The letters B.T., meaning bearing tree, were not required until the 1846 instructions, which say, "The letters B.T. are also to be marked upon a smaller chop, directly under the large one and as near the ground as is practicable." And the 1850 instructions say "in case of resurveys, the letters N.B.T. to denote . . . a new bearing tree, must be cut into the wood, in the blaze, a little above the notch."

Having the above mentioned exceptions in mind, a pretty clear understanding of what is said about bearing trees in all of the instructions here mentioned may be had by quoting from the 1834 instructions which say, "You will ascertain and state . . . the course and distance from several section and township corner posts, trees and 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; the notch to be at the lower end of the blaze; and on the blaze . . . you will mark, with a marking iron, . . . 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. And if no tree so state."

Quarter corners have but two bearing trees because for only two sections, and section corners on the township and range lines the same, (except at township corners), for the same reason. Bearing tree from quarter corners are marked only $\frac{1}{4}$ S. Two bearing trees are required from posts set at swamps, creeks, etc., to be blazed and notched only. But at navigable rivers or lakes said two trees will also be marked "with the proper number of the fractional section township and range." Therefore it seems the land surveyor was to make that important decision as to what bodies of water are navigable.

Monuments at the section and quarter section corners were stakes, trees, stones, mounds, and after 1834, and perhaps after 1828, "not less than two quarts of charcoal." No charcoal was ever required by any of these instructions at quarter corners. None is mentioned for any corner in the 1815 instructions, nor do the 1815 instructions mention mounds, but *Niles Weekly Register* of April 12, 1817, says, "But in the prairie . . . where there are no trees . . . a mound of earth is raised at each corner, not less than two and one-half feet high nor less than that in diameter at the base, in which posts are placed." Of course such a mound would not stand long against the weather. Probably they were larger at the base. We may say that up to and including 1855 the posts were set in the mounds and the charcoal was under the post when it was provided. Surveyors often say "I never found charcoal" and sometimes they say that, when they are working in a part of the country where the sections were created before charcoal was required by the instructions. Of course we cannot say that *no charcoal* was ever set before the instructions required it; it probably was, but if it was, the notes would most likely say so. Since most of the original survey notes in Iowa do not mention charcoal, it is not likely that it was used extensively. It is well to remember that if a tree stands at any section corner, it is notched, as a post would be notched, with six notches on four sides if at a township corner, and, if on a township line, with the number of notches on two sides that it is miles from the township corners; and, if at an interior section corner, with the number of notches it is miles from the township line and range line.

THE RUNNING OF LINE

Section lines, meander lines, township lines, range lines, Indian boundary lines, base lines, principal meridian lines, guide meridians, and correction lines, at least until after 1836 (when Burt's Solar Compass was invented), were all run with the magnetic compass or with the sights of the compass by some "other means" which "must be adopted, so as to ensure the correct execution of the work," as is specified in the 1834 instructions for when "lines cannot be accurately surveyed with . . . the needle," leaving to the deputy surveyor to determine what "other means must be adopted." He was, however, to tell in his notes what he did. The 1846 instructions, and all after them require "Base, meridian, correction and township lines . . . to be run with an instrument that operates independently of the magnetic needle." But up to and including those of 1855, the instructions say, "Where the needle can be relied on . . . the ordinary compass may be used in subdividing and meandering." We sometimes think that the surveyors had too much faith in the needle.

The telescope is not mentioned until the 1850 instructions, which say, "To enable you to have all your random lines correctly run by the sun, . . . independently of the . . . magnetic needle, you are allowed to employ, by the month, an assistant surveyor, who is well skilled in the use of the solar compass." Something must have happened. There must have been a law providing for the payment of that assistant by the United States, not by the contracting deputy surveyor. The truth was beginning to dawn, that you cannot get, by obligation and contract, careful and correct surveys out of men who have not the ability to do that kind of work, and who are paid less than one-tenth of what the kind of work is worth. But none of the other instructions herein discussed make such a provision.

All instructions require "the compass to be adjusted to the true meridian" or in some cases for subdividing work, to the east line of the township. The 1855 instructions tell how to find the true meridian with the compass:

"Drive two posts firmly into the ground" so that they are left about three feet high and four feet apart, about east and west. Upon the posts nail a smooth plank three or four inches wide. Then fasten a compass sight at right angles to a smooth piece of board four or five inches square. Drive a nail just through the small piece of board. At about 12 feet northerly from this "let a plumb be suspended from the

top of an inclined . . . pole . . . at such a height that the pole will appear about six inches below it ; the plumb should be swung in water . . . About twenty minutes before . . . elongation, place the board . . . (with) . . . compass-sight . . . on the horizontal plank and slide it east or west, until "in line with the plumb line and the star. Then if the star depart from the plumb line move the compass-sight east or west along the plank . . . until the star shall attain its greatest elongation, when it will continue behind the plumb-line for several minutes, and will then recede from it in the contrary direction." Now drive the nail which you have in the small piece of board into the plank. You will now have the direction of elongation of the North Star. Turn off the required azimuth angle for the true North. (These instructions are taken almost verbatim from Gummere 1825.)

About all the instructions of 1815 say about the running of township lines is, "All township and section lines which you may survey are to be marked in the "manner hitherto practiced in the surveys of the United States Lands," then telling how to mark trees, posts, etc., and how to measure. Instructions of 1834 say, "Township boundary lines must be run with the compass adjusted to the true meridian" and "range lines . . . will be run north, and corners or 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 . . . All other east and west 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." By these instructions errors are allowed of five chains in closing a township, one chain in closing a section, and one and one-half chains per mile in closing meanders.

The 1846 instructions say also about township lines: "Upon the base or township lines . . . south boundary of your district, township corners are established at . . . six miles. From each of these corners you are to run range lines due north, six miles; . . ., where you will set a temporary township cornerpost. You will then commence at a township corner upon the first range line east of your district and immediately east of the township corner post temporarily set by you, and from thence run due west across your whole district, intersecting your range lines at or within three and one-half chains due north or south of your six-mile

posts. At points of intersection, if within three and one-half chains, you will establish a township corner. Upon this township or last mentioned line, quarter section and section corners are to be established observing that the length of each . . . township line . . . , is in no case to exceed or fall short of the length of the corresponding township boundary upon the south, more than three and one-half chains."

The 1850 and 1851 instructions are about the same as this. So are the 1855, except that the 1855 instructions required the east and west township lines to be run on a random line east and then to run and measure this township line west on true line. The random must not fall more than three and one-half chains north or south of true corner, nor must the measurement vary more than three and one-half chains from its calculated length.

Following the directions for subdividing a township in the 1846 instructions we find the following note: "Should you find a manifest error in the measurement of any of the township lines of your district, you are to correct the same, by resurveying and reestablishing such line or lines, from the point where the error was detected, to the north and west thereof, noting your intersection with each one of the erroneous corners as you progress, which you are to demolish and deface with all evidence thereof. Of such remeasurement and corrections you are to take full and complete field notes, in a separate book, . . . *For such corrections, however the Surveyor General is not authorized to make any compensation.*"

Before discussing the instructions for running the subdividing lines of the townships it may be well for us all to consider what was meant by, a true line, true north, true east or west, and by a random line. Of course a random line is a trial line but as far as being parallel of latitude, the random lines in the Government Surveys were just as near true east and west as the true lines. And the random north lines were just as near meridian lines as were the so-called true north lines. For even though they did have the true meridian they could not hold true north with a magnetic needle. *Now* the United States Government Surveyors run a curved line, a true parallel of latitude as true east and west; and *now* the Canadian Government Surveyors in creating the south boundary of a township make it a six-mile chord to the true parallel of latitude. In our old government surveys a random line, then, is one that was *not* blazed and marked for a true line. And a true line is one that was blazed and marked for a true line.

Just a word about jogs. In the earliest surveys three corners were placed on township and range lines; then two corners, still making a jog

at township and range lines. Jogs were also made at the rivers on east and west, and sometimes on north and south lines. The 1846 instructions discontinued the jogs. It is said that the jogs were revived by the 1856 instructions but for those instructions only.

Generally speaking, the method of subdividing a township into sections is pretty well described by the 1834 instructions.

By the 1846 instructions and all after them, except the 1856, the practice of running on a so-called true line between the north and west ranges of sections and for east and west section lines which cross "Navigable rivers or other water courses," was discontinued and therefore the jogs were discontinued.

The instructions of 1815 say: "In fractional townships on rivers it will be necessary to vary from the foregoing rules, and the lines must be continued from the rectilinear boundaries of the township . . . , perpendicularly to those boundaries till they meet the river. The sections, however, must be made complete on the sides of the township bounded by straight lines, and all excess or defect of measure must be thrown into the fractional sections on the river. The measure of the lines from the last entire section corner should be made very exact, in order to calculate the fractional section with exactness.

This note by McDermott, (who is talking about 1858 instructions which seem to be a reprint of 1856 instructions), is of interest. Mr. McDermott says: In many of the old surveys, the field notes show that the surveyor ran from corner to corner on the west and north tiers of sections. This appears to be the case in Township 39 N., Range 14 E., of the third principal meridian, surveyed by Mr. John Wall in 1821. This will also appear from the old instructions p. 54, sec. 21, where it is stated as follows: "Previous to 1828, some of the deputies considered, in making the calculations of the area of the north and west tiers of quarter sections in a township, that the quarter section corners on the township and range lines were common to the sections on both sides of the line, whilst others adopted the method now in use. 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."

The 1850 instructions are said to be for Michigan and no jogs were made by those instructions at the north line or west line of the townships. That is, the section corners are common with those of the townships adjoining. In such a case of course the quarter corners would be shown

to be half way in all but section six and be shown there as common with the corners in the townships adjoining.

The method of subdividing in the 1850 instructions differs from all others mentioned. In those instructions, a random line is run through the center of the township, west from the east line to the west line and then corrected east as if it were a township boundary line. The subdivision is then made by average distances to the south boundary of the township and to the north by throwing any error in measurement into the north half mile next to the north line of the township.

Chapter IV

SPECIAL INSTRUCTIONS TO THE DEPUTY SURVEYORS

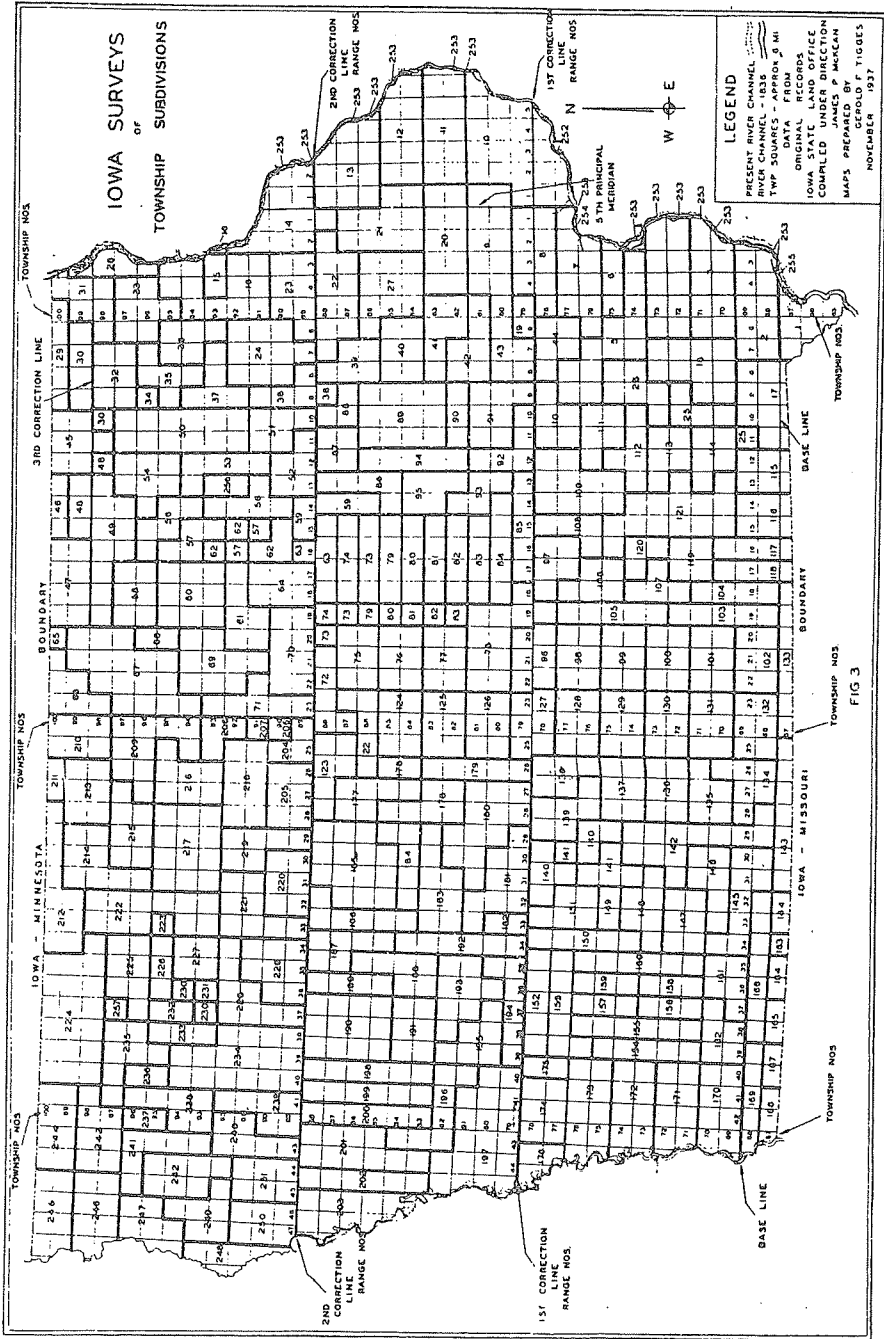
This chapter deals with the surveys of Iowa. All surveys were conducted under contract between the Surveyor General and a deputy surveyor. The deputy worked under the general instructions current at the time and under the special instructions which applied to and accompanied each contract.

Three maps are included in this chapter. The first, Fig. 1, on page 196, shows the location of the principal meridian, the correction lines, the guide meridians, and the names of the surveyors who executed the surveys. The second map, Fig. 2, on page 198, shows the names of the deputies who surveyed the township exteriors and the areas included in the contract of each such surveyor. The third map, Fig. 3, on page 199, shows the areas included in each contract for the subdivision of townships and a number to indicate the name of the deputy. A table follows this map and contains the name of the deputy surveyor corresponding to the number upon the map and other information regarding the contract, including the date and a reference to the letter of special instructions which were to govern the survey.

Following the table is a series of 99 county index maps which show by means of numbers, referring to tabular material below each, the complete index of information regarding each original survey. This index refers to the special letters of instruction which make up the body of the chapter.

The special instructions were each in the form of a letter to the deputy surveyor and contained: a list of the townships and ranges included in the contract; whether township or subdivision; places of beginning and places of ending; instructions as to connections with adjacent surveys; diagrams showing pertinent data for areas already surveyed; copies of general instructions; innumerable special references; and others.

Naturally, these special instructions contained many items that were similar. In fact they contained identical paragraphs. It would be a waste of valuable space to repeat those paragraphs over and over. So a search was made through the instructions issued by each Surveyor Gen-



eral to find these paragraphs, which are here listed as "standard paragraphs." Each of these was given a number. When printing the special instructions from the Surveyor General to a deputy surveyor the proper number is inserted in place of the standard paragraphs which appear in the original letter. To reconstruct a full set of such instructions, then, the reader has only to turn to each of the standard paragraphs by number as the numbers are encountered in reading the abbreviated set here reproduced.

The standard paragraphs begin on page 352.

IOWA SURVEYS SHOWING SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
1	Jenifer T. Sprigg	1832	---	---
2	Perrin Kent	1837	A	187
3	Chas. H. Fish	1837, 1838	A	171
4	Basil Bentley & S. Goodnow	1837	A	181
5	Wm. L. D. Ewing	1837	A	233
	" " " "	1841	B	174
6	Daniel Brewer	1837, 1838	A	120
7	Thomas Brown	1837	A	248
8	W. R. Shoemaker	1837	A	186
9	Geo. C. VanZandt	1837	A	176
10	Wm. A. & A. Burt	1837	A	196
11	John Wharry	1837	A	183
12	Thomas Cox	1837	A	193
13	Moses M. Strong	1837	A	180
14	Hervey Parke	1837	A	178
15	Wm. Gordon	1838	A	218
16	Ira B. Brunson	1833	A	213
17	Uriah Biggs	1837	A	236
18	E. F. Lucas	1837	A	190
19	John Frierson	1839	B	192, 202
20	Willard Barrows	1836, 1837	A	37
21	Charles Legate	1837	A	224
22	Milo Jones	1837	A	218
23	Andrew Porter	1837	A	220
24	James Videto	1837	A	216
25	Hugill & Freeman	1841	B	217
26	Wiltse & Shannon	1841	B	118
27	John T. Haight	1838	A	117
28	Guy H. Carleton	1849	D	223
29	Ira Cook	1852	E	150
30	Horatio Waldo	1849	D	391
31	John Ball	1849, 1848	C	73
32	Jos. Moorehead	1849	D	365
33	J. G. McDonald	1849	D	72
34	Guy H. Carleton	1848	C	66
35	Hugh Trenor	1848, 1849	D	363
36	John Fitzpatrick	1848, 1849	D	15
37	Wm. H. Merritt	1848	D	15, 91
	Hy Maddin	1848	E	15
				51

SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS (Continued)

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
38	Wm. P. Hull	1841	B	125
39	Moses Vilas	1841	B	123
40	Thos. M. Weldon	1841	B	123
41	Whiteside & Campbell,	1841, 1842	B	124
42	Garret Vliet	1841, 1842	B	124
43	Thos. C. Child	1841	B	120
44	Foley & McDonald	1841	B	119
45	H. K. Averill, Jr.	1853	F	138
46	Michael Burke	1854	F	85
47	J. O. Brunius & T. Brockman	1853	F	77
48	Jesse T. Jarrett	1855	F	413
49	H. & J. T. Nowlin	1853	F	54
50	John Parker	1848, 1849	C	386
	" "	1848, 1849	D	121
51	Thos. Hurley	1846	C	49
52	Alex Anderson	1846	C	44
53	Pratt R. Skinner	1849	D	15, 91
54	A. K. Eaton	1849	D	112
55	Wm. I. Anderson	1853	F	54
56	George Berry	1848, 1849	D	42
57	Louis W. Davis	1849	D	132
58	Cyrus Sanders	1849	D	25
59	Geo. McHenry	1846	C	50
60	L. B. Hodges	1852, 1853	E	459
61	Alonzo Shaw	1851	D	506
62	G. Berry	1849	D	42
63	M. M. Hayden	1847	C	158
64	Sam. C. Wiltse	1849	D	173
65	John D. Pennylacker	1854	F	308
66	John Snook	1855	F	397
67	Geo. A. Shannon & S. W. Durham	1853	F	138
68	S. W. Durham	1853	F	460
69	John T. Everett	1852, 1853	F	584
70	J. G. McDonald	1849	D	174
71	Chas. Gilliam	1852	E	543
72	James Jackson	1849	D	170
73	Michael Karrick	1847	C	154
74	Rufus Bear	1847	C	135
75	John Ball	1847	C	155, 180, 365
76	Horatio Waldo	1847	C	180, 185
77	John Parker	1847	C	386
78	John D. Evans	1846, 1847	C	55, 166
79	Guy H. Carleton	1847	C	128
80	Guy Wells	1846, 1847	C	129
81	S. W. Durham	1846, 1847	C	45
82	Joseph Greene	1846, 1847	C	53
83	Wm. G. Ross	1846, 1847	C	79
84	Sam'l Whitmore	1847	C	131
85	Orson Lyon	1846	C	48
86	A. J. McLemore	1845	B	355
87	A. L. Haven	1845	B	343
88	Alex Calhoun	1844	B	278
89	I. Higbee	1843, 1844	B	227, 237, 273
90	Al Brown	1844	B	275
91	J. E. Whitcher	1843	B	229, 239

SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS (Continued)

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
92	John Senter	1844	B	276
93	S. W. Durham	1845	B	359
94	James Fanning	1845	B	348
95	A. L. Brown	1845	B	356
96	Sam'l Jacobs	1847	C	167
97	James Grant	1845	B	337
98	Jesse Williams	1847	C	167
99	A. McMichael	1847	C	165
100	John W. Webber	1847	C	165
101	J. G. McDonald	1847	C	133
102	Henry B. Hendershot	1847	C	132
103	John W. Ellis	1846	C	54
104	Enos Lowe	1845	B	339
105	Sam'l Jacobs	1846	C	47
106	W. L. D. Ewing	1845	B	340
107	J. B. Watson	1845	B	347
108	Stiles S. Carpenter	1847	C	178
109	H. A. Wiltse	1844	B	272, 277
110	Geo. W. Harris	1843	B	224
111	S. W. Durham	1843	B	228
112	James E. Freeman	1843	B	230
113	Alvin Burt	1843	B	235
114	Paul C. Jeffries	1846	B	413
114	Paul C. Jeffries	1846	C	93
115	Wm. Dewey	1843	B	236
116	S. L. Finley	1843	B	235
117	Louis V. Davis	1844, 1845	B	285
118	Orson Lyon	1844, 1845	B	290
119	Wm. Vandever	1844, 1845	B	287
120	Wm. Dewey	1844, 1845	B	236, 288
121	Geo. Wilson	1843, 1844, 1847, 1844	B	233, 282
122	Lewis A. Thomas	1847	C	180
123	Wm. J. Neely	1849	D	167
124	Thomas Hurley	1847	C	180, 188
125	Joseph Greene	1847	C	53
126	Jos. Moorehead	1847	C	164
127	S. W. Durham	1847	C	210
128	A. L. Gregoire	1847	C	210
129	Michael O'Brien	1847	C	210
130	John J. Silman	1847	C	184
131	Wm. Bonnifield	1847	C	186
132	A. C. Dodge	1847	C	186
133	John G. Clark	1852	E	378
134	Finley & McKeogh	1851	D	405
135	Ira Clafin	1849	D	36
136	W. S. Townsend	1849	D	63
137	E. W. Eastman	1849	D	56
138	Thos. Baker	1848, 1849	D	34
139	John A. Pitzer	1849	D	35
140	Thos. J. McKean	1849	D	119
141	Thos. B. Neff	1852, 1853	E	543
142	Edwin James, Jr.	1849	D	136, 411
143	Wm. Dunn	1852	E	383
144	Wm. Shields	1852	E	380

SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS (Continued)

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
145	John D. Evans	1849	D	172
146	Wm. Leffler	1849, 1850	D	169
147	W. A. Patterson	1849	D	171
148	S. O. Woodworth	1849	D	135
149	Thos. J. McKean	1849	D	119
150	E. S. Norris	1851	E	139
151	Shadrack Burleson	1851	E	94
152	W. H. Henderson	1851, 1852	E	122
153	S. M. Ballard	1851	E	28
154	Jacob K. Starr	1851	E	82
155	Silas A. Hudson	1851	E	40
156	Peter Moriarty	1851	E	88
157	H. C. Moorehead	1852	E	328
158	John W. Ross	1852	E	59
159	Hebard & Garsides	1853	F	564
160	H. C. Moorehead	1851, 1852	E	34
161	Wm. Dunn	1851	E	46
162	Thos. D. Evans	1851	E	22
163	Lycurgus Shepard	1845	C	82
164	Thos. Monroe	1845	C	81
165	Wm. Shields	1852	E	380
166	Ambrose Carpenter	1852	D	636
167	Warren Reed	1845		
168	Geo. B. Sargent	1846	C	110
169	John S. Sheller	1851	E	100
170	J. Pierson	1851, 1852	E	52
171	J. H. D. Street	1851, 1852	E	76
172	Thos. Cassidy	1851, 1852	E	122
173	Geo. Bumgardner	1851, 1852	E	145
174	Clements & Seevers	1851	E	160
175	E. S. Norris	1851	E	139
176	W. Clement	1852	E	160
177	E. S. Norris	1849	D	164
178	J. E. Norman	1849	D	165
179	James Davis	1847	C	211
180	Wm. Henderson ('50, 51)	1849	D	166, 519
181	John T. Everett	1850	D	274
182	Francis Maderia	1851	D	667
183	H. Waldo & F. Maderia	1851	D	489
184	S. T. Caldwell	1853	E	191
185	J. T. & R. Jarrett	1852, 1854	E	543
186	H. C. Caldwell	1853	E	474
187	James Harlan	1852, 1853	E	481
188	Ira Cook	1852	E	375
189	Adam Sherrill	1856	F	600
190	John S. Sheller	1852, 1853	E	400
191	H. M. Shelby	1853	F	37
192	A. Carpenter	1852, 1853	E	308
193	Street & Warden	1852	E	495
194	Adam Perry	1852	E	576
195	Chas. McDonald	1853	F	58
196	David Sales	1852	E	471
197	Alex Anderson	1851	E	171, 462
198	J. W. Williams	1853	E	593

SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS (Continued)

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
199	Matt Cresswell	1853	F	19, 44
200	John P. Brown	1855	F	436
201	John W. Ross	1853	E	488
202	Seevers & Sawyer	1852	E	517
203	A. Anderson	1852	E	462
204	Jos. Jennings	1853	E	543
205	Chas. Gilliam	1851	D	567
206	McMichael & Harvey	1855	F	442
207	C. C. Carpenter	1857	G	200
208	Jos. C. Jennings	1852	E	543
209	James W. Woods	1854	F	412
210	Horatio Waldo	1854	F	308
211	John Snook	1855	F	397
212	Harvey & McMichael	1855, 1856	F	442
213	Orson Lyon	1854, 1855	F	308
214	John Haggard	1843, 1855	F	308
215	Geo. Temple	1854, 1855	F	296
216	Thos. McCulloch	1854, 1855	F	223
217	Leech & Bell	1854	F	220
218	W. W. Smith	1851	E	108
219	John W. Clark	1854	F	220
220	Geo. Berry	1854	F	232
221	R. O. C. Anderson	1854	F	308
222	Jesse T. Jarrett	1854	F	8
223	C. A. M. Estes	1859	G	253
224	C. A. M. Estes	1859, 1860	G	253
225	J. Pierson	1856	F	462
226	J. W. Webber	1855	F	600
227	Adams Sherrill	1856	F	600
228	W. W. Smith	1855	F	600
229	J. T. Nowlin	1855	F	600
230	J. Pierson	1857	F	462
231	Wm. B. Yerby	1853, 1859	G	253
232	Dennis Langton	1857	G	200
233	Geo. Temple	1856	F	296
234	S. W. Durham	1855	F	460
235	W. W. Smith	1856	F	600
236	Dennis Langton	1857	G	200
237	Dennis Langton	1857	G	200
238	Seth Millington	1856	F	436
239	Henry Allen	1853	F	131
240	David Ferguson	1854	F	141
241	Geo. Stump	1855	F	445
242	W. W. Smith	1854, 1855, 1856	F	374
243	Jeremiah Rierdon	1857	G	200
244	Thos. A. Smith	1858	G	253
245	C. A. Estes	1858	G	253
246	Wm. B. Yerby	1856	F	600
247	James Hanks	1854	F	303
248	J. L. Sharp	1854	F	144, 107
249	Waltman Trippitt	1854	F	297
250	John K. Cook	1854	F	192
251	Henry Allen	1855	F	300
252	Finley & Moorehead	1846	C	12, 13
253	J. E. Witcher	1842	B	176

SUBDIVISIONS OF TOWNSHIPS INTO SECTIONS (Continued)

KEY TO MAP	NAME OF SUBDIVIDER	YEAR	SURVEYOR GENERAL'S	
			LETTER BOOK	BOOK PAGE
254	Geo. Bumgardner	1852	E	263, 282
255	Nath. McCullough	1864	G	609
256	A. K. Eaton	1849	D	112
257	Dennis Langton	1853	F	228
258	Edwin James, Jr.	1852	E	338

In the foregoing table reference is made to the actual letter on file in the land office in the State House at Des Moines. When these letters were originally written they were carefully copied into letter books for the permanent office record of the sender. This record and these letter books were an important part of the records turned over to the state of Iowa upon the completion of the surveys. Forty-four of the letters are represented in the letter books by name and date only. If any letter accompanied the contract no copy is available. It is quite likely that a number of contracts were sent out without any advice other than in the contract itself. Information as to the area to be surveyed has been taken from the township plats, every one of which has been checked in the gathering of this material.

The following numbers in the preceding table refer to the missing letters: 35, 36, 37, 45, 49, 53, 55, 67, 69, 71, 75, 122, 124, 127, 128, 129, 141, 159, 185, 189, 190, 192, 202, 204, 207, 208, 210, 213, 214, 221, 222, 226, 227, 228, 229, 232, 235, 236, 237, 241, 242, 243, 246.

To use the above table to find out under what special instructions the deputy surveyor worked look at the map on page 199 for the township in which you are interested. There is a number on the map representing the contract which included this township. Turn to that number in the first column in the table. Say the number of 177. 177 is the number given to the contract of E. S. Norris in 1849, recorded in letter book D, page 164. Now turn to the letter of instruction in this chapter and under letter book D, page 164, you will find the special instructions under which Mr. Norris made his surveys. A blank indicates that no letter is available.

In the ninety-nine county maps which appear on pages 207 to 239 italic figures in the last column indicate that the letter accompanying the contract contained no special instructions and therefore there will be no corresponding letter in this chapter. Where the word "note" appears the contract information is to be found in special bound volumes for the Minnesota and Missouri boundaries in the Secretary of State's office. Below each map will be found under appropriate numbers tabular information regarding the original surveys for each township in the county. This list

will be frequently used first by the surveyors looking up the original instructions under which any particular surveys were made. For example, if a surveyor wants the special instructions under which T. 77 N., R. 30 West, 5th P. M. in Adair county was surveyed he will note that the East boundary bears letter "B" while the other boundaries bear the letter "A" and the township contains the number "6." In the Adair table, below the Adair county map, letter "A" refers to the contract for Township lines which Deputy Surveyor Andrew Leech made with Surveyor General Geo. W. Jones on August 3, 1848, and which is filed in letter book C, page 370. By turning to page 302 these special instructions will be found.

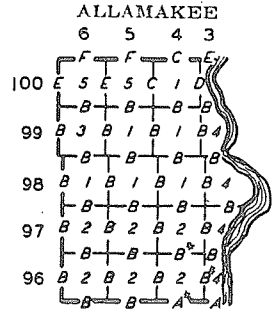
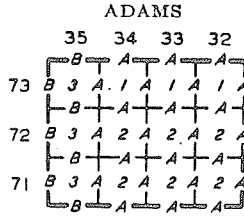
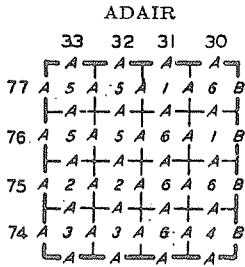
A surveyor with work to do in T. 77 N. R. 30 W. 5th P.M. and wishing to prepare himself well for an important survey which might be taken into court will do well to read the letter of Surveyor General Jones to Deputy Surveyor Andrew Leach on page 302 hereof and the standard paragraphs referred to on pages 356 and 357.

It is assumed that the general instructions current in 1848 as printed in full in Chapter III hereof and the instructions preceding and following those of 1846 are familiar to the surveyor. Then after reading the original notes of Mr. Leach's survey and comparing the record with the language of the special and general instructions and with the official plat of the township as prepared from the Leach original notes it should be possible to have a clear picture of the survey according to the record and instructions. At this point and before going into the field a careful study of the aerial photographs of the area will frequently disclose by the evidence of lines of occupation and culture any angular or linear discrepancies of importance which may help in the field work of retracement.

The letters of special instruction are good reading. They show the gradual development of the system which by 1855 had taken very definite form and was beginning to secure very good results, everything considered.

The surveyor using this book should enjoy reading the letters in this chapter just to get the spirit of the project. The survey of public lands of the United States was by far the biggest surveying project of the nineteenth century.

The maps which follow [pp. 207 to 239 inclusive] read from left to right as the county indexes read from top to bottom.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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ADAIR COUNTY

A Twp. Lines	Andrew Leech	Geo. W. Jones	Aug. 4, 1848	C:370
B Twp. Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1 Subdivision	Thos. J. McKean	C. H. Booth	July 20, 1849	D:119
2 Subdivision	Thos. J. McKean	C. H. Booth	July 20, 1849	D:119
3 Subdivision	S. O. Woodworth	C. H. Booth	Aug. 15, 1849	D:135
4 Subdivision	Edwin James Jr.	Geo. B. Sargent	May 8, 1851	D:411
5 Subdivision	Shadrack Burleson	Geo. B. Sargent	Sept. 3, 1851	E:94
6 Subdivision	Thos. B. Neff	Geo. B. Sargent	Dec. 14, 1852	E:543

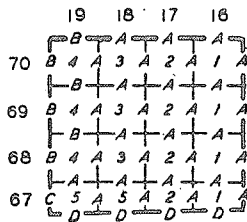
ADAMS COUNTY

A Twp. Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B Twp. Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
1 Subdivision	S. O. Woodworth	C. H. Booth	Aug. 15, 1849	D:135
2 Subdivision	W. A. Patterson	C. H. Booth	Sept. 29, 1849	D:171
3 Subdivision	H. C. Moorehead	Geo. B. Sargent	Sept. 1, 1851	E:34

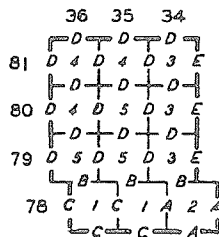
ALLAMAKEE COUNTY

A Twp. Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
A* Examination	John G. McDonald	C. H. Booth	May 29, 1849	D:79
B Twp. Lines	Guy H. Carleton	Geo. W. Jones	July 26, 1848	C:363.
B Twp. Lines	Guy H. Carleton	C. H. Booth	Aug. 29, 1849	D:150
B* Examination	John G. McDonald	C. H. Booth	May 29, 1849	D:79
C Twp. Lines	John Sheller		Apr. 1, 1852	Note
D Twp. Lines	John Ball	Geo. B. Sargent	Dec. 14, 1852	
E Twp. Lines	Ira Cook	Geo. B. Sargent	June —, 1852	E:391
F State Line	A. Talcott			Note
1 Subdivision	John Ball	Geo. W. Jones	July 27, 1848	C:365
2 Subdivision	J. G. McDonald	Caleb H. Booth	Mar. 26, 1849	D:66
3 Subdivision	Horatio Waldo	Caleb H. Booth	May 1, 1849	D:73
4 Subdivision	Guy H. Carleton	Caleb H. Booth	Aug. 29, 1849	D:150
5 Subdivision	Ira Cook	Geo. B. Sargent	June —, 1852	E:891

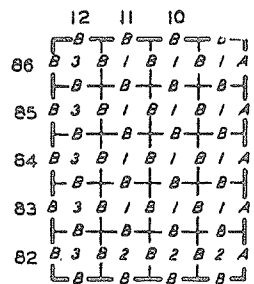
APPANOOSE



AUDUBON



BENTON



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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APPANOOSE COUNTY

A	Twp. Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
B	Twp. Lines	Orson Lyon	Geo. B. Sargent	July 14, 1845	B:338
C	Twp. Lines	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378
D	State Line	Wm. Dewey (Ia.)		1848	
E	Connecting	John W. Williams	Geo. B. Sargent	Apr. 1, 1853	E:598
1	Subdivision	Louis V. Davis	James Wilson	Nov. 6, 1844	B:285
2	Subdivision	Orson Lyon	James Wilson	Nov. 12, 1844	B:290
3	Subdivision	Enos Lowe	Geo. W. Jones	July 15, 1845	B:339
4	Subdivision	John W. Ellis	Geo. W. Jones	Oct. 13, 1846	C:54
5	Subdivision	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378

AUDUBON COUNTY

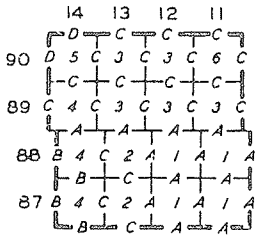
A	Twp. Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B	Twp. Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C	Twp. Lines	John F. Coakley	Geo. B. Sargent	May 8, 1851	D:416
D	Twp. Lines	Alex. Anderson	Geo. B. Sargent	Mar. 6, 1852	E:291
E	Twp. Lines	John W. Ellis	C. H. Booth	Aug. 13, 1849	D:147
1	Subdivision	W. H. Henderson	Geo. B. Sargent	Sept. 18, 1851	E:128
2	Subdivision	E. S. Norris	Geo. B. Sargent	Oct. 6, 1851	E:139
3	Subdivision	A. Carpenter	Geo. B. Sargent	Mar. 12, 1852	E:308
4	Subdivision	Street & Warden	Geo. B. Sargent	Oct. 22, 1852	E:495
5	Subdivision	Adam Perry	Geo. B. Sargent	Feb. 15, 1852	E:576

BENTON COUNTY

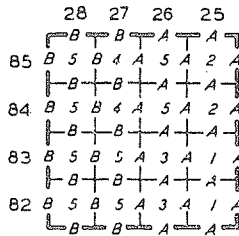
A	Twp. Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
B	Twp. Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
1	Subdivision	Isaac Higbee	James Wilson	Sept. 6, 1843	B:227
1	Subdivision	Isaac Higbee	James Wilson	Oct. 12, 1843	B:237
1	Subdivision	Isaac Higbee	James Wilson	Nov. 2, 1844	B:273
2	Subdivision	Alfred Brown	James Wilson	Nov. 2, 1844	B:275
3	Subdivision	James Fanning	Geo. W. Jones	Aug. 16, 1845	B:348

See page 205 for explanation of above material.

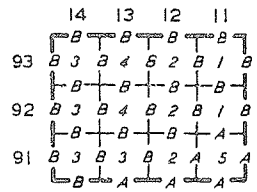
BLACK HAWK



BOONE



BREMER



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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BLACKHAWK COUNTY

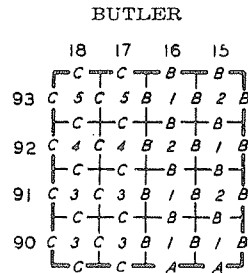
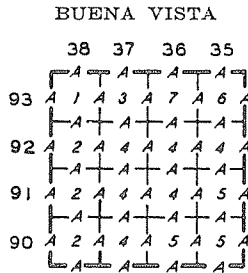
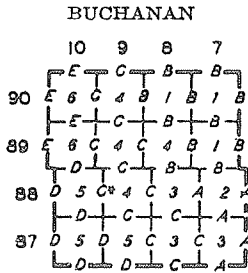
A Twp. Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
B Twp. Lines	James Marsh	Geo. W. Jones	Sept. 16, 1845	B:356
C Twp. Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
D Twp. Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
1 Subdivision	A. L. Haven	Geo. W. Jones	July 22, 1845	B:343
2 Subdivision	A. J. McLemore	Geo. W. Jones	Sept. 15, 1845	B:355
3 Subdivision	Alex Anderson	Geo. W. Jones	Oct. 6, 1846	C:44
4 Subdivision	Geo. McHenry	Geo. W. Jones	Oct. 10, 1846	C:50
5 Subdivision	Cyrus Sanders	Geo. W. Jones	Dec. 11, 1848	D:25
6 Subdivision	Thos. Hurley	Geo. W. Jones	Oct. 10, 1846	C:49

BOONE COUNTY

A Twp. Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B Twp. Lines	John Ball	C. H. Booth	July 16, 1849	D:114
1 Subdivision	Joseph Greene	Geo. W. Jones	Oct. 10, 1846	C:53
2 Subdivision	Thomas Hurley	Geo. W. Jones	Aug. 24, 1847	C:188
3 Subdivision	James Davis	Geo. W. Jones	Oct. 8, 1847	C:211
4 Subdivision	E. S. Norris	C. H. Booth	Sept. 22, 1849	D:164
5 Subdivision	J. J. E. Norman	C. H. Booth	Sept. 22, 1849	D:165

BREMER COUNTY

A Twp. Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
B Twp. Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
1 Subdivision	John Parker	Geo. W. Jones	Oct. 14, 1846	C:336
2 Subdivision	Pratt R. Skinner	Geo. W. Jones	Nov. 13, 1848	D:15
3 Subdivision	Cyrus Sanders	Geo. W. Jones	Dec. 11, 1848	D:25
4 Subdivision	A. K. Eaton	C. H. Booth	July 13, 1849	D:112
5 Subdivision	Thos. Hurley	Geo. W. Jones	Oct. 10, 1846	C:49



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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BUCHANAN COUNTY

A	Town Lines	Wm. A. Burt		1836	A:141
B	Town Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
C	Town Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
C*	Resurvey	Wm. P. Hull	Geo. W. Jones	June 19, 1841	B:125
D	Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
E	Town Lines	Isaac N. Higbee	Geo. W. Jones	July 14, 1845	B:338
1	Subdivision	James Videto	Robt. T. Lytle	July 28, 1837	A:217
2	Subdivision	Milo Jones	Robt. T. Lytle	Aug. 4, 1837	A:220
3	Subdivision	Moses Vilas	Geo. W. Jones	June 7, 1841	B:123
4	Subdivision	Wm. P. Hull	Geo. W. Jones	June 19, 1841	B:125
5	Subdivision	Alexander Calhoun	James Wilson	Nov. 2, 1844	B:278
6	Subdivision	Thomas Hurley	Geo. W. Jones	Oct. 10, 1846	C:49

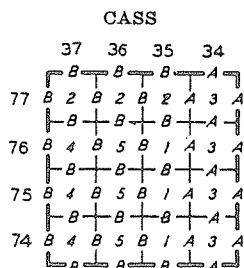
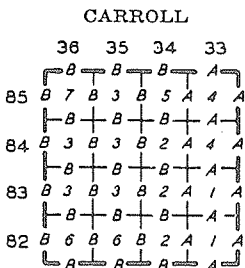
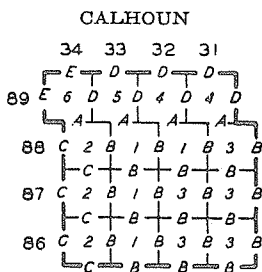
BUENA VISTA COUNTY

A	Town Lines	John Parker	Warner Lewis	Apr. 28, 1855	F:464
1	Subdivision	Geo. Temple	Warner Lewis	Sept. 8, 1854	F:296
2	Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855	F:460
3	Subdivision	J. Pierson	Warner Lewis	Sept. 20, 1855	F:462
4	Subdivision	W. W. Smith	Warner Lewis	June 2, 1855	F:600
5	Subdivision	J. T. Nowlin	Warner Lewis	June 2, 1855	F:600
6	Subdivision	Adams Sherrill	Warner Lewis	June 2, 1855	F:600
7	Subdivision	Wm. B. Yerby	Warner Lewis	July 27, 1859	G:253

BUTLER COUNTY

A	Town Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
B	Town Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
C	Town Lines	James M. Marsh	Caleb H. Booth	July 9, 1849	D:96
1	Subdivision	Geo. Berry	Not given	Jan. 24, 1849	D:42
2	Subdivision	Louis W. Davis	Caleb H. Booth	Aug. 7, 1849	D:132
3	Subdivision	Samuel C. Wiltse	Caleb H. Booth	Sept. 24, 1849	D:173
4	Subdivision	Alonzo Shaw	Geo. W. Sargent	May 16, 1851	D:506
5	Subdivision	L. B. Hodges	Geo. W. Sargent	Sept. 15, 1852	E:459

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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CALHOUN COUNTY

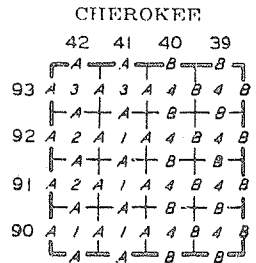
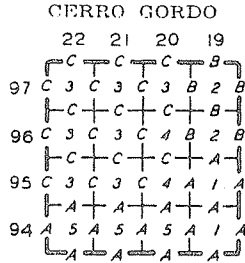
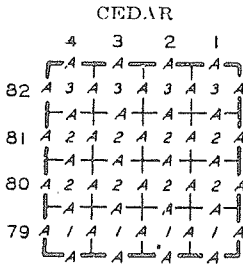
A	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D: 96
B	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
C	Town Lines	Alex. Anderson	George B. Sargent	Mar. 6, 1852	E:291
D	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F: 25
E	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1	Subdivision	H. C. Caldwell	George B. Sargent	Sept. 29, 1852	E:474
2	Subdivision	James Harlan	George B. Sargent	Oct. 1, 1852	E:481
3	Subdivision	J. T. & R. Jarrett	George B. Sargent		E:543
4	Subdivision	George Berry	Warner Lewis	May 3, 1854	F:232
5	Subdivision	R. O. C. Anderson	Warner Lewis	1854	F:308
6	Subdivision	J. T. Nowlin	Warner Lewis	1855	F:600

CARROLL COUNTY

A	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
B	Town Lines	Alex. Anderson	George B. Sargent	Mar. 6, 1852	E:291
1	Subdivision	Waldo-Maderia	George B. Sargent	Mar. 14, 1851	D:489
2	Subdivision	A. Carpenter	George B. Sargent		F:308
3	Subdivision	Ira Cook	George B. Sargent	June 3, 1852	E:375
4	Subdivision	H. C. Caldwell	George B. Sargent	Sept. 29, 1852	E:474
5	Subdivision	James Harlan	George B. Sargent	Oct. 1, 1852	E:481
6	Subdivision	J. D. Street	George B. Sargent	Oct. 22, 1852	E:495
7	Subdivision	Adam Sherrill	Warner Lewis	1855	F:600

CASS COUNTY

A	Town Lines	Anderson Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B	Town Lines	John F. Conkey	George B. Sargent	May 8, 1851	D:416
1	Subdivision	H. C. Moorehead	George B. Sargent	Sept. 1, 1851	E:34
2	Subdivision	S. M. Ballard	George B. Sargent	Aug. 22, 1851	E:28
3	Subdivision	E. S. Norris	George B. Sargent	Oct. 6, 1851	E:139
4	Subdivision	H. C. Moorehead	George B. Sargent	April 6, 1852	E:328
5	Subdivision	Hebard-Garsides	George B. Sargent	Jan. 27, 1853	E:564



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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CEDAR COUNTY

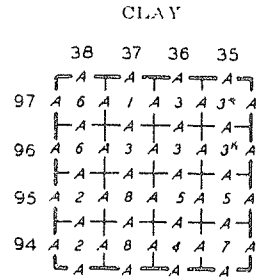
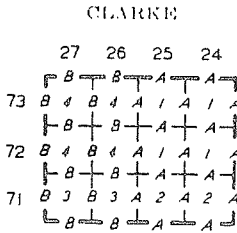
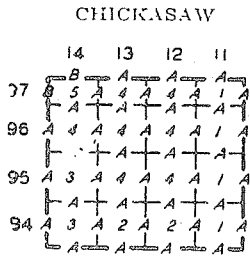
A	Town Lines	Wm. A. Burt		
1	Subdivision	W. R. Shoemaker	Robert T. Lytle	May 9, 1837 A:141
2	Subdivision	Geo. C. Van Zandt	Robert T. Lytle	June 8, 1837 A:176
3	Subdivision	Willard Barrows	Robert T. Lytle	Aug. 7, 1837 A:196
3	Subdivision	Willard Barrows	Robert T. Lytle	Oct. 19, 1837 A:224
3	Subdivision	Ira B. Brunson		Oct. 19, 1837 A:235
3	Subdivision	Willard Barrows	Robert T. Lytle	Oct. 19, 1837 A:236
3	Subdivision	Willard Barrows	Robert T. Lytle	Nov. 21, 1837 A:246
3	Subdivision	Willard Barrows	Robert T. Lytle	Dec. 5, 1837 A:250

CERRO GORDO COUNTY

A	Town Lines	James Marsh	C. H. Booth	July 9, 1849 D:96
B	Town Lines	John T. Everett	Warner Lewis	June 6, 1853 F:18
C	Town Lines	John T. Everett	Warner Lewis	Aug. 1, 1853 F:60
1	Subdivision	L. B. Hodges	George B. Sargent	Sept. 15, 1852 E:459
2	Subdivision	Wm. I. Anderson	Warner Lewis	1853 F:54
3	Subdivision	Shannon-Durham	Warner Lewis	1853 F:138
4	Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855 F:460
5	Subdivision	John T. Everett	Warner Lewis	1855 F:584

CHEROKEE COUNTY

A	Town Lines	Charles Lewis	Warner Lewis	July 16, 1853 F:50
B	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855 F:464
1	Subdivision	Henry Allen	Warner Lewis	Oct. 23, 1853 F:131
2	Subdivision	David Ferguson	Warner Lewis	Nov. 3, 1853 F:141
3	Subdivision	Seth Millington	Warner Lewis	July 11, 1855 F:436
4	Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855 F:460



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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CHICKASAW COUNTY

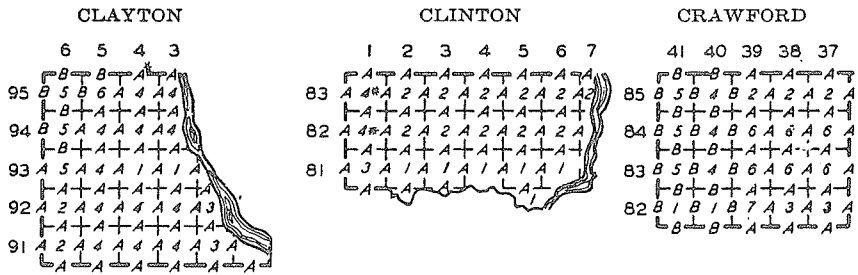
A	Town. Line	John Ball	Geo. W. Jones	July 27, 1848	C:365
B	Town. Line	John T. Everett	Warner Lewis	June 6, 1853	F:18
1	Subdivision	John Parker	G. W. Jones	Oct. 14, 1848	C:386
2	Subdivision	John T. Parker	C. H. Booth	July 19, 1849	D:121
3	Subdivision	Pratt R. Skinner	G. W. Jones	Nov. 13, 1848	D:15
4	Subdivision	George Berry	H. A. Wiltse, Ch. Clk	Jan. 24, 1849	D:42
5	Subdivision	A. K. Eaton	Caleb H. Booth	July 13, 1849	D:112
		H. & J. R. Nowlin	Warner Lewis	July 22, 1853	F:54

CLARK COUNTY

A	Town. Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:37
B	Town. Lines	James M. Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1	Subdivision	John J. Silman	Geo. W. Jones	Aug. 13, 1847	C:184
2	Subdivision	Wm. Bonnifield	Geo. W. Jones	Aug. 18, 1847	C:186
3	Subdivision	Ira Clafin	H. A. Wiltse, Ch. Clk.	Jan. 11, 1849	D:36
4	Subdivision	W. S. Townsend	Caleb H. Booth	Mar. 22, 1849	D:63

CLAY COUNTY

A	Town. Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1	Subdivision	Dennis Langton	Warner Lewis	Oct. 10, 1857	G:200
2	Subdivision	Geo. Hemple	Warner Lewis	Sept. 8, 1854	F:296
3	Subdivision	J. Pierson	Warner Lewis	Sept. 20, 1855	F:462
3*	Resurvey	M. P. McCoy	General L. Office	April 21, 1900	
4	Subdivision	J. Pierson	Warner Lewis	Sept. 20, 1855	F:462
5	Subdivision	J. W. Webber	Warner Lewis	Sept. 8, 1855	F:600
6	Subdivision	W. W. Smith	Warner Lewis	Feb. 12, 1856	F:600
7	Subdivision	Adam Sherrill	Warner Lewis	Aug. 30, 1856	F:600
8	Subdivision	Dennis Langton	Warner Lewis	April 10, 1857	F:600



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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CLAYTON COUNTY

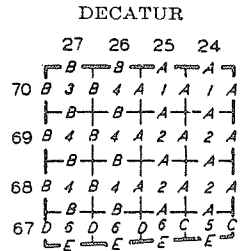
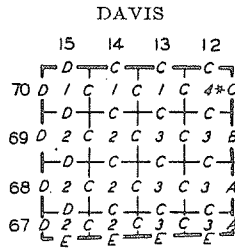
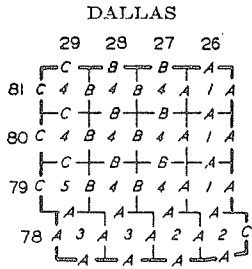
A	Town Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
A*	Examination	John G. McDonald	C. H. Booth	May 29, 1849	D:79
B	Town Lines	Guy H. Carleton	Geo. W. Jones	July 26, 1848	C:363
B	Twp. Lines	Guy H. Carleton	C. H. Booth	Aug. 29, 1849	D:150
1	Subdivision	Wm. Gordon	Robt. T. Lytle	July 22, 1837	A:213
2	Subdivision	James Videto	Robt. T. Lytle	July 28, 1837	A:217
3	Subdivision	Hervey Parke	Robt. T. Lytle	Aug. 3, 1837	A:218
4	Subdivision	Ira B. Brunson		Oct. 19, 1837	A:236
4	Subdivision	Andrew Porter	Robt. T. Lytle	July 26, 1837	A:216
5	Subdivision	John Fitzpatrick	Geo. W. Jones	Nov. 13, 1848	D:75
6	Subdivision	J. G. McDonald	Caleb H. Booth	Mar. 26, 1849	D:66

CLINTON COUNTY

A	Town Lines	Wm. A. Burt		1836	A:141
1	Subdivision	Wm. A. & Alvin Burt	Robt. T. Lytle	May 13, 1837	A:183
2	Subdivision	John Wharry	Robt. T. Lytle	May 30, 1837	A:193
3	Subdivision	Geo. C. Van Zandt	Robt. T. Lytle	June 8, 1837	A:196
4	Subdivision	Willard Barrows	Robt. T. Lytle	Aug. 7, 1837	A:224
4*	Subdivision	Willard Barrows	E. S. Haines	Aug. 18, 1838	A:283
4*	Subdivision	Ira B. Brunson	Robt. T. Lytle	Oct. 19, 1837	A:236
4*	Subdivision	Postmast., Davenport	Sam'l Williams, Ch. Clk.	Oct. 19, 1837	A:235
4*	Subdivision	Willard Barrows	Robt. T. Lytle	Nov. 21, 1837	A:246
4*	Subdivision	Willard Barrows	Robt. T. Lytle	Dec. 5, 1837	A:250

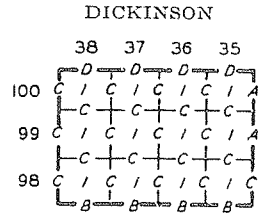
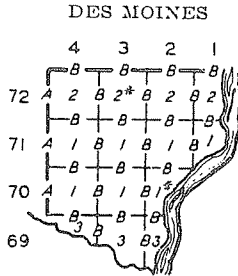
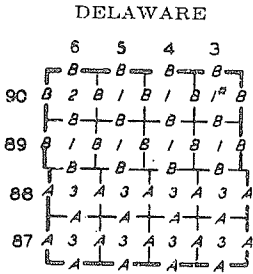
CRAWFORD COUNTY

A	Town Lines	Alex. Anderson	Geo. B. Sargent	Mar. 6, 1852	E:291
B	Town Lines	Alex. Anderson	Geo. B. Sargent	May 13, 1851	D:483
1	Subdivision	David Sales	Geo. B. Sargent	Sept. 27, 1852	E:471
2	Subdivision	John S. Sheller	Geo. B. Sargent	Oct. 14, 1852	E:400
3	Subdivision	Street-Warden	Geo. B. Sargent	Oct. 22, 1852	E:495
4	Subdivision	J. W. Williams	Geo. B. Sargent	April 1, 1853	E:598
5	Subdivision	Matt Cresswell	Warner Lewis	June 7, 1853	F:19
6	Subdivision	H. M. Shelby	Warner Lewis	June 27, 1853	F:37
7	Subdivision	Chas. McDonald	Warner Lewis	July 30, 1853	F:58



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER	
DALLAS COUNTY					
A	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
C	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
1	Subdivision	James Davis	Geo. W. Jones	Oct. 8, 1847	C:211
2	Subdivision	Thos. Baker	H. A. Wiltse	Jan. 11, 1849	D:34
3	Subdivision	John A. Pitzer	H. A. Wiltse Ch. Clk.	Jan. 11, 1849	D:35
4	Subdivision	Wm. Henderson	Caleb H. Booth	Sept. 22, 1849	D:166
4	Subdivision	Wm. Henderson	George B. Sargent	May 22, 1851	D:519
5	Subdivision	John T. Everett	Caleb H. Booth	May 30, 1850	D:274
DAVIS COUNTY					
A	Town Lines	Hervey Parke	Robt. T. Lewis	Nov. 12, 1836	A:142
A	Town Line Ext.	Perrin Kent	Robt. T. Lewis	June 27, 1837	A:199
B	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
C	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
D	Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
E	State Line	Wm. Dewey, Iowa		Dec. 1848	Note
		R. Walker, Mo.		June 2: 1851	Note
F	Connecting	John W. Williams			
1	Subdivision	Geo. Wilson	James Wilson	Sept. 13, 1843	B:233
2	Subdivision	S. L. Finley	James Wilson	Oct. 3, 1843	B:235
3	Subdivision	Wm. Dewey	James Wilson	Oct. 10, 1843	B:236
4	Subdivision	Willard Barrows	James Wilson	Sept. 4, 1843	B:227
4	Report	Willard Barrows	Geo. W. Jones	Nov. 12, 1845	B:380
4	Report	Isaac Higbee	Geo. W. Jones	Dec. 5, 1845	B:388
4*	Examination	Isaac Higbee	Geo. W. Jones	Nov. 12, 1845	B:380
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Dec. 22, 1846	C:93
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Jan. 5, 1847	C:99
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Feb. 27, 1847	C:118
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 21, 1846	B:413
4*	Resurvey	Isaac Higbee	Geo. W. Jones	Nov. 12, 1845	B:380
	(Des M. River)				
DECATUR COUNTY					
A	Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:87
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C	Town Lines	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378
D	Town Lines	Wm. Dunn	Geo. B. Sargent	April 19, 1852	E:383
E	Town Lines	Comm.			Note
1	Subdivision	Wm. Bonfield	Geo. W. Jones	Aug. 18, 1847	C:186
2	Subdivision	A. C. Dodge	Geo. W. Jones	Aug. 18, 1847	C:186
3	Subdivision	Ira Claffin	H. A. Wiltse, Clk.	Jan. 11, 1849	D:36
4	Subdivision	Finley-McKeogh	Geo. B. Sargent	May 8, 1851	D:405
5	Subdivision	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378
6	Subdivision	Wm. Dunn	Geo. B. Sargent	April 19, 1852	E:383

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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DELAWARE COUNTY

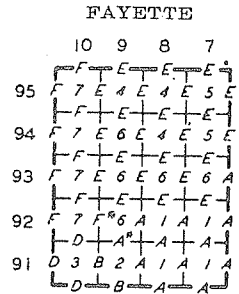
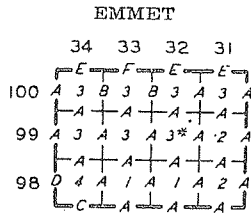
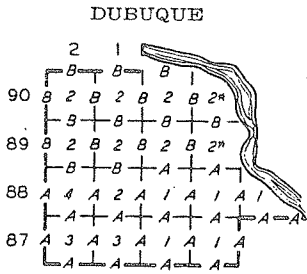
A	Town Lines	Wm. A. Burt		1836	A:141
B	Town Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
1	Subdivision	Andrew Porter	Caleb H. Booth	July 26, 1837	A:216
1*	Examination	Thomas McKean	Caleb H. Booth	April 9, 1850	D:249
1*	Examination	Thomas McKean	Caleb H. Booth	April 30, 1850	D:260
1*	Resurvey	Edwin James, Jr.	Geo. B. Sargent	April 12, 1852	E:338
1*	Resurvey	Edwin James, Jr.	Geo. B. Sargent	April 26, 1852	E:346
2	Subdivision	James Videto	Robt. T. Lytle	July 28, 1837	A:217
3	Subdivision	Milo Jones	Robt. T. Lytle	Aug. 4, 1837	A:220

DES MOINES COUNTY

A	Town Lines	Wm. A. Burt		1836	A:141
B	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:149
1	Subdivision	Chas. H. Fish	Robt. T. Lytle	May 3, 1837	A:171
1	Subdivision	Willard Barrows	E. S. Haines	Sept. 19, 1838	A:291
1*	Town Survey	Vliet & Harrison	Robt. T. Lytle	Oct. 9, 1836	A:144
1*	Town Survey	Carret Vliet	Robt. T. Lytle	Mar. 21, 1837	A:160
1*	Town Survey	Willard Barrows	E. S. Haines	July 11, 1838	A:273
1*	Town Survey	Corriell & McCarver	E. S. Haines	July 11, 1838	A:275
2	Subdivision	Basil Bentley	Robt. T. Lytle	May 9, 1837	A:181
2*	Resurvey	Samuel Goodnow	Robt. T. Lytle	Sept. 22, 1837	A:233
3	Subdivision	Perrin Kent	Robt. T. Lytle	May 13, 1837	A:187

DICKINSON COUNTY

A	Town Line	John W. Ellis	Warner Lewis	April 21, 1854	F:220
B	Town Line	John Parker	Warner Lewis	Oct. 1, 1855	F:464
C	Town Line	Wm. Yerby	Warner Lewis	July 27, 1859	G:253
D	Town Line	A. Talcott			Note
1	Subdivision	C. A. M. Estes	Warner Lewis	Aug. 23, 1859	G:258



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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DUBUQUE COUNTY

A	Town Lines	Wm. A. Burt	Robt. T. Lytle	1836	A:141
B	Town Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
1	Subdivision	Moses M. Strong	Robt. T. Lytle	May 9, 1837	A:178
2	Subdivision	Hervey Parke	Robt. T. Lytle	Aug. 3, 1837	A:218
2*	Town Survey	Vliet & Harrison	Robt. T. Lytle	Oct. 9, 1836	A:144
2*	Town Survey	Garret Vliet	Robt. T. Lytle	Mar. 21, 1837	A:160
2*	Town Survey	Willard Barrows	E. S. Haines	July 11, 1838	A:273
2*	Town Survey	Corriell & McCarver	E. S. Haines	July 11, 1838	A:275
3	Subdivision	Charles Legate	Robt. T. Lytle	Aug. 13, 1837	A:218
4	Subdivision	Milo Jones	Robt. T. Lytle	Aug. 4, 1837	A:220

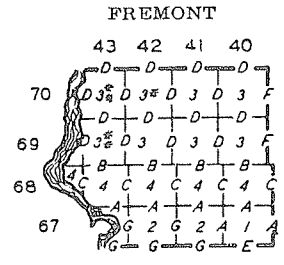
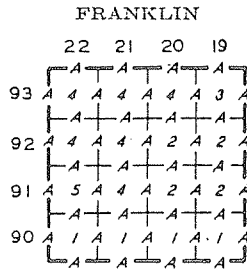
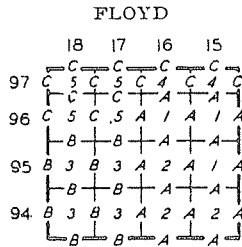
EMMET COUNTY

A	Town Lines	John W. Ellis	Warner Lewis	April 21, 1854	F:220
B	Town Lines	Phillip Harvey	Warner Lewis	April 8, 1855	F:442
C	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
D	Town Lines	Wm. Yerby	Warner Lewis	July 27, 1859	G:253
E	Town Lines	A. Talcott			Note
F	Boundary	John Sheller		April 1, 1852	Note
1	Subdivision	Jesse T. Jarrett	Warner Lewis	1853	F:8
2	Subdivision	John Haggard	Warner Lewis	1854	F:308
3	Subdivision	Phillip Harvey	Warner Lewis	April 8, 1855	F:442
3*	Resurvey	W. W. Utterback	Clay Tallman, Washington D. C.	Mar. 28, 1913	
4	Subdivision	C. A. M. Estes	Warner Lewis	Aug. 23, 1859	G:258

FAYETTE COUNTY

A	Town Lines	Orson Lyon	Robt. T. Lytle	Nov. 8, 1836	A:147
A*	Resurvey	W. P. Hull	Geo. W. Jones	June 19, 1841	B:125
B	Town Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
D	Town Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
E	Town Lines	Guy H. Carleton	Geo. W. Jones	July 26, 1848	C:363
F	Town Lines	John Ball	Geo. W. Jones	July 27, 1843	C:365
F*	Resurvey	John Ball	Warner Lewis	Oct. 10, 1854	F:314
1	Subdivision	James Videto	Robt. T. Lytle	July 28, 1837	A:217
2	Subdivision	Wm. P. Hull	Geo. W. Jones	June 19, 1841	B:125
3	Subdivision	Thos. Hurley	Geo. W. Jones	Oct. 10, 1846	C:49
4	Subdivision	Hugh Trenor	Geo. W. Jones	1848	B:15
5	Subdivision	John Fitzpatrick	Geo. W. Jones	1848	D:15
6	Subdivision	Wm. H. Merritt	Geo. W. Jones	1848	D:15
7	Subdivision	John Parker	Caleb H. Booth	July 24, 1849	D:121
7	Subdivision	John Parker	Geo. W. Jones	1846	C:386

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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FLOYD COUNTY

A	Town Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
B	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
C	Town Lines	John T. Everett	Warner Lewis	June 6, 1853	F:18
1	Subdivision	George Berry	H. A. Wiltse	Jan. 24, 1849	D:42
2	Subdivision	Louis W. Davis	Caleb H. Booth	Aug. 7, 1849	D:132
3	Subdivision	L. B. Hodges	Geo. B. Sargent	Sept. 15, 1852	E:459
4	Subdivision	H. & J. T. Nowlin	Warner Lewis	1853	F:54
5	Subdivision	Wm. I. Anderson	Warner Lewis	1853	F:54

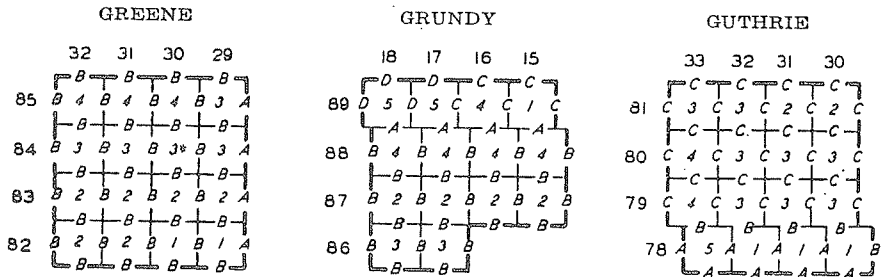
FRANKLIN COUNTY

A	Town Lines	James M. Marsh	Caleb H. Booth	July 9, 1849	D:96
1	Subdivision	J. G. McDonald	Caleb H. Booth	Sept. 25, 1849	D:174
2	Subdivision	Alonzo Shaw	Geo. B. Sargent	May 16, 1851	D:506
3	Subdivision	L. B. Hodges	Geo. B. Sargent	Sept. 15, 1852	E:459
4	Subdivision	John T. Everett	Geo. B. Sargent	1855	F:584
5	Subdivision	Charles Gilliam	Geo. B. Sargent	1852	E:543

FREMONT COUNTY

A	Town Lines	Geo. B. Sargent	Geo. W. Jones	Jan. 29, 1847	C:110
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C	Town Lines	John Sheller	Geo. B. Sargent	Sept. 6, 1851	E:100
D	Town Lines	Lewis V. Davis	Geo. B. Sargent	May 10, 1851	D:462
E	Boundary	Wm. Shield	Geo. B. Sargent	Mar. 25, 1852	E:380
F	Town Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
G	Boundary	Geo. B. Sargent	Geo. W. Jones	May 10, 1845	C:110
1	Subdivision	Warren Reed	Geo. B. Sargent	May 10, 1845	
2	Subdivision	Geo. B. Sargent	Geo. W. Jones	Jan. 29, 1847	C:110
3	Subdivision	J. Pierson	Geo. B. Sargent	Aug. 25, 1851	E:52
3*	Examination	Charles F. Legate	Warner Lewis	Aug. 30, 1854	F:287
3**	Rejected Survey	J. Pierson	Geo. B. Sargent	Mar. 29, 1853	E:596
4	Subdivision	John S. Sheller	Geo. B. Sargent	Sept. 6, 1851	E:100

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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GREENE COUNTY

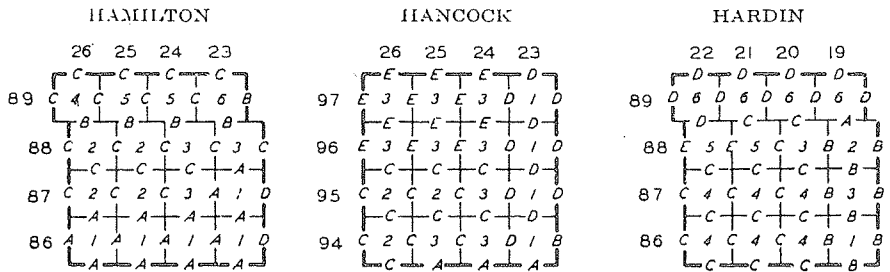
A	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
B	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
1	Subdivision	Wm. Henderson	Caleb H. Booth	May 22, 1851	D:519
2	Subdivision	Waldo-Maderia	Geo. B. Sargent	May 14, 1851	D:489
3	Subdivision	S. T. Caldwell	George B. Sargent	Oct. 14, 1852	E:491
3*	Examination	S. T. Caldwell	Warner Lewis	July 25, 1853	F:57
4	Subdivision	J. T. & R. Jarrett	George B. Sargent	Dec. 14, 1852	F:543

GRUNDY COUNTY

A	Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
B	Town Lines	James Marsh	Geo. W. Jones	Sept. 16, 1845	B:356
C	Town Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
D	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D: 96
1	Subdivision	Geo. McHenry	Geo. W. Jones	Oct. 10, 1846	C:50
2	Subdivision	Rufus Bean	Geo. W. Jones	April 16, 1847	C:135
3	Subdivision	Michael Karrick	Geo. W. Jones	May 21, 1847	C:154
4	Subdivision	M. M. Hayden	Geo. W. Jones	May 27, 1847	C:158
5	Subdivision	Sam C. Wiltse	Caleb H. Booth	Sept. 24, 1849	D:173

GUTHRIE COUNTY

A	Town Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
1	Subdivision	Thos. J. McKean	Caleb H. Booth	July 20, 1849	D:119
2	Subdivision	Wm. Henderson	Geo. B. Sargent	May 22, 1851	D:519
3	Subdivision	John T. Everett	Caleb H. Booth	May 30, 1850	D:274
4	Subdivision	Francis Maderia	Geo. B. Sargent	Sept. 30, 1851	D:667
5	Subdivision	S. Burleson	Geo. B. Sargent	Sept. 3, 1851	E:94



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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HAMILTON COUNTY

A	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
C	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
D	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
1	Subdivision	Lewis A. Thomas		1847	C:180
2	Subdivision	Wm. J. Neely	Caleb H. Booth	Sept. 24, 1849	D:167
3	Subdivision	James Jackson	Caleb H. Booth	Sept. 24, 1849	D:170
4	Subdivision	Chas. Gilliam	Geo. B. Sargent	July 5, 1851	D:567
5	Subdivision	Jos. Jennings		1852	E:543
6	Subdivision	Chas. Gilliam		1852	E:543

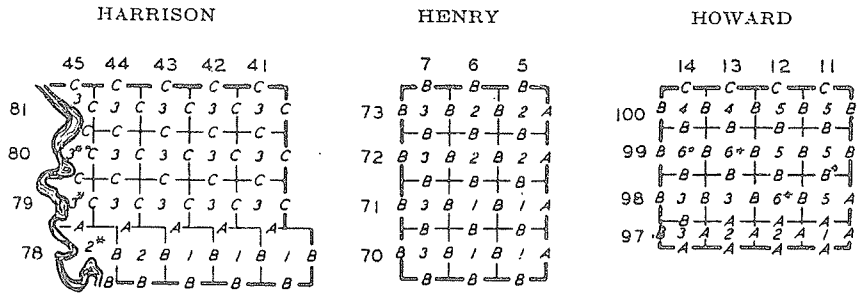
HANCOCK COUNTY

A	Town Lines	John Ball	Caleb H. Booth	July 16, 1848	D:114
B	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
C	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
D	Town Lines	John T. Everett	Warner Lewis	Aug. 1, 1853	F:60
E	Town Lines	John W. Ellis	Warner Lewis	April 21, 1854	F:220
1	Subdivision	S. W. Durham	Warner Lewis	1853	F:138
2	Subdivision	Thomas McCulloch	Warner Lewis	May 1, 1854	F:228
3	Subdivision	James W. Woods	Warner Lewis	May 9, 1855	F:412

HARDIN COUNTY

A	Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
B	Town Lines	James Marsh	Geo. W. Jones	Sept. 16, 1845	B:356
C	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
D	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
E	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
1	Subdivision	Guy H. Carleton	Geo. W. Jones	April 3, 1847	C:128
2	Subdivision	Rufus Bean	Geo. W. Jones	1847	C:135
3	Subdivision	Michael Karrick	Geo. W. Jones	May 21, 1847	C:154
4	Subdivision	John Ball	Geo. W. Jones	May 21, 1847	C:155
5	Subdivision	James Jackson	Caleb H. Booth	Sept. 24, 1849	D:170
6	Subdivision	J. G. McDonald	Caleb H. Booth	Sept. 25, 1849	D:174

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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HARRISON COUNTY

A	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B	Town Lines	Lewis V. Davis	Geo. B. Sargent	May 10, 1851	D:462
C	Town Lines	Alex. Anderson	Geo. B. Sargent	May 13, 1851	D:483
1	Subdivision	Clements & SeEVERS	Geo. B. Sargent	Oct. 15, 1851	E:160
2	Subdivision	W. Clement	Geo. B. Sargent	Oct. 15, 1851	E:160
2*	Examination	Charles F. Legate	Warner Lewis	Aug. 30, 1854	F:287
2*	Add. Survey	W. Clement		Oct. 15, 1851	
2*	Examination	Oscar F. Davis	Warner Lewis	Mar. 2, 1858	G:133
3	Subdivision	Alex. Anderson	Geo. B. Sargent	Aug. 30, 1851	E:171
3	Subdivision	Alex. Anderson	Geo. B. Sargent	Sept. 18, 1852	E:462
3*	Examination	Oscar F. Davis	Warner Lewis	Mar. 2, 1858	G:133
3**	Resurvey	Leo M. Peterson	U. S. Super Survey, Denver, Colo.	Oct. 28, 1930	

HENRY COUNTY

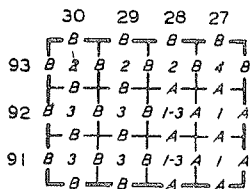
A	Town Lines	Wm. A. Burt		1833	A:141
B	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
1	Subdivision	Chas H. Fish	Robt. T. Lytle	May 3, 1837	A:171
1	Subdivision	Willard Barrows	E. S. Haines	Sept. 19, 1838	A:291
2	Subdivision	Basil Bentley	Robt. T. Lytle	May 9, 1837	A:181
3	Subdivision	E. F. Lucas	Robt. T. Lytle	May 22, 1837	A:192

HOWARD COUNTY

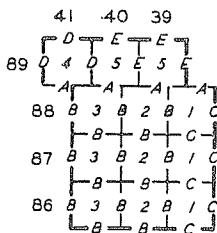
A	Town Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
A*	Resurvey	John T. Everett	Warner Lewis	June 6, 1853	F:18
B	Town Lines	John T. Everett	Warner Lewis	June 6, 1853	F:18
C	State Line	A. Talcott			Note
1	Subdivision	John Parker	C. H. Booth	July 24, 1849	D:121
2	Subdivision	A. K. Eaton	Caleb H. Booth	July 13, 1849	D:112
3	Subdivision	H. & J. T. Nowlin	Warner Lewis	1853	F:54
4	Subdivision	Michael Burke	Warner Lewis	Aug. 31, 1853	F:85
5	Subdivision	H. K. Averill, Jr	Warner Lewis	1855	F:138
6	Subdivision	Michael Burke	Warner Lewis	Aug. 31, 1853	F:85
6	Examination	Wm. J. Neely	Warner Lewis	June —, 1853	F:29
6*	Resurvey	Jesse T. Jarrett	Warner Lewis	May 5, 1855	F:413

See page 205 for explanation of above material.

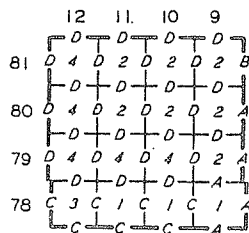
HUMBOLDT



IDA



IOWA



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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HUMBOLDT COUNTY

A	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
B	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
1	Subdivision	W. W. Smith	Geo. B. Sargent	Sept. 12, 1851	E:108
2	Subdivision	Leech—Bell	Warner Lewis	April 21, 1854	F:220
3	Subdivision	John W. Clark	Warner Lewis	April 21, 1854	F:220
4	Subdivision	Thos. McCulloch	Warner Lewis	May 1, 1854	F:228

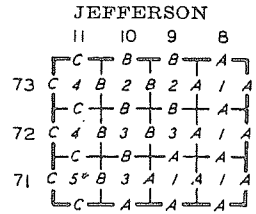
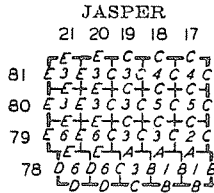
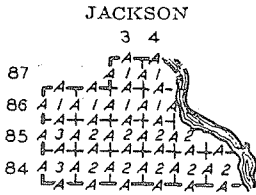
IDA COUNTY

A	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
B	Town Lines	Alexr. Anderson	Geo. B. Sargent	May 13, 1851	D:483
C	Town Lines	Alexr. Anderson	Geo. B. Sargent	Mar. 6, 1852	E:291
D	Town Lines	Charles Lewis	Warner Lewis	July 16, 1853	F:50
E	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1	Subdivision	John S. Sheller	Geo. B. Sargent	Oct. 14, 1852	E:490
2	Subdivision	John W. Williams	Geo. B. Sargent	April 1, 1853	E:598
3	Subdivision	Matthew Cresswell	Warner Lewis	June 7, 1853	F:19
4	Subdivision	Henry Allen	Warner Lewis	Oct. 23, 1853	F:131
5	Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855	F:460

IOWA COUNTY

A	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
B	Town Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
C	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
D	Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
1	Subdivision	Geo. W. Harris	James Wilson	Sept. 2, 1843	B:224
2	Subdivision	Jeremiah Whitcher	James Wilson	Sept. 9, 1843	B:229
2	Subdivision	Jeremiah E. Whitcher	James Wilson	Oct. 16, 1843	B:239
3	Subdivision	Henry A. Wiltse	James Wilson	Nov. 2, 1844	B:272
4	Subdivision	John Senter	James Wilson	Nov 2, 1844	B:276

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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JACKSON COUNTY

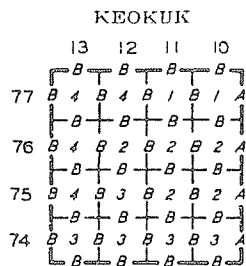
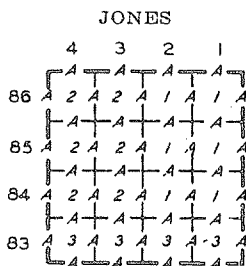
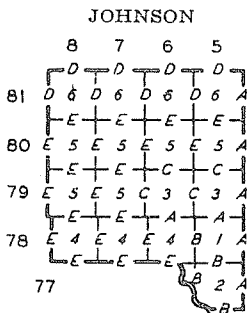
A	Town Lines	Wm. A. Burt		1836	A:141
1	Subdivision	Moses M. Strong	Robt. T. Lytle	May 9, 1837	A:178
1*	Town Survey	Vliet & Harrison	Robt. T. Lytle	Oct. 9', 1836	A:144
1*	Town Survey	Garret Vliet	Rob't. T. Lytle	Mar. 21, 1837	A:160
1*	Town Survey	Willard Barrows	E. S. Haines	July 11, 1838	A:273
1*	Town Survey	Coriell & McCarver	E. S. Haines	July 11, 1838	A:275
2	Subdivision	Thomas Cox	Robt. T. Lytle	May 9, 1837	A:180
3	Subdivision	Charles Legate	Robt. T. Lytle	Aug. 1, 1837	A:218

JASPER COUNTY

A	Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
B	Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
C	Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
D	Town Lines	John Ball	Geo. W. Jones	Oct. 6, 1846	C:45
E	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
1	Subdivision	James Grant	Geo. W. Jones	July 14, 1845	B:337
2	Subdivision	Orson Lyon	Geo. W. Jones	Oct. 9, 1846	C:48
3	Subdivision	John D. Evans	Geo. W. Jones	Oct. 13, 1846	C:55
4	Subdivision	Wm. G. Ross	Geo. W. Jones	Nov. 20, 1846	C:79
5	Subdivision	Sam'l Whitmore	Geo. W. Jones	April 10, 1847	C:131
6	Subdivision	Sam'l Jacobs	Geo. W. Jones	June 9, 1847	C:167

JEFFERSON COUNTY

A	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
B	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
C	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
1	Subdivision	E. F. Lucas	Robt. T. Lytle	May 22, 1837	A:192
2	Subdivision	Wiltse-Shannon	Geo. W. Jones	April 10, 1841	B:117
3	Subdivision	Hugill-Freeman	Geo. W. Jones	April 19, 1841	B:118
4	Subdivision	Alvin Burt	James Wilson	Oct. 3, 1843	B:235
5	Subdivision	Willard Barrows	James Wilson	Sept. 4, 1843	B:227
5*	Examination	Isaac Higbee	Geo. W. Jones	Nov. 12, 1845	B:380
5*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 21, 1846	B:413
5*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Dec. 22, 1846	C:93
5*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Jan. 5, 1847	C:99
5*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Feb. 27, 1847	C:118



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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JOHNSON COUNTY

A	Town Lines	Wm. A. Burt		1836	A:141
B	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
C	Town Lines	John Frierson	A. G. Ellis	July 13, 1839	B:37
D	Town Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
E	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
1	Subdivision	W. R. Shoemaker	Robt. T. Lytle	May 9, 1837	A:176
2	Subdivision	Thomas Brown	Robt. T. Lytle	May 16, 1837	A:186
3	Subdivision	John Frierson	A. G. Ellis	July 13, 1839	B:37
4	Subdivision	Foley-McDonald	Geo. W. Jones	April 28, 1841	B:119
5	Subdivision	Thos. C. Child	Geo. W. Jones	May 6, 1841	B:120
6	Subdivision	Garret Vliet	Geo. W. Jones	June 9, 1841	B:124

JONES COUNTY

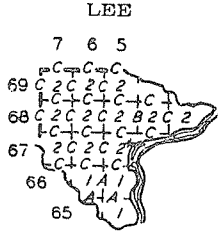
A	Town Lines	Wm. A. Burt		1836	A:141
1	Subdivision	Chas. Legate	Robt. T. Lytle	Aug. 1, 1837	A:218
2	Subdivision	John T. Haight	Robt. T. Lytle	Aug. 7, 1837	A:223
3	Subdivision	Willard Barrows	Robt. T. Lytle	Aug. 7, 1837	A:224

KEOKUK COUNTY

A	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
B	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
1	Subdivision	Geo. W. Harris	James Wilson	Sept. 2, 1843	B:224
2	Subdivision	S. W. Durham	James Wilson	Sept. 7, 1843	B:228
3	Subdivision	James E. Freeman	James Wilson	Sept. 13, 1843	B:230
4	Subdivision	H. A. Wiltse	James Wilson	Nov. 2, 1844	B:272
4	Subdivision	Samuel C. Wiltse	James Wilson	Nov. 2, 1844	B:277

See page 205 for explanation of above material.

KOSSUTH
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 82 B 5 B 5 B 5 B 5 A
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SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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KOSSUTH COUNTY

A	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
B	Town Lines	John W. Ellis	Warner Lewis	April 21, 1854	F:220
C	State Line	A. Talcott			Note
1	Subdivision	Leech & Bell	Warner Lewis	April 21, 1854	F:220
2	Subdivision	Thos. McCulloch	Warner Lewis	May 1, 1854	F:223
3	Subdivision	George Temple	Warner Lewis	Sept. 8, 1854	F:296
4	Subdivision	John Haggard	Warner Lewis	1854	F:308
5	Subdivision	Orson Lyon	Warner Lewis	1854	F:308
6	Subdivision	John Snook	Warner Lewis	Mar. 27, 1855	F:397
7	Subdivision	Harvey—McMichael	Warner Lewis	May 27, 1856	F:551
8	Subdivision	James W. Woods	Warner Lewis	May 9, 1855	F:412

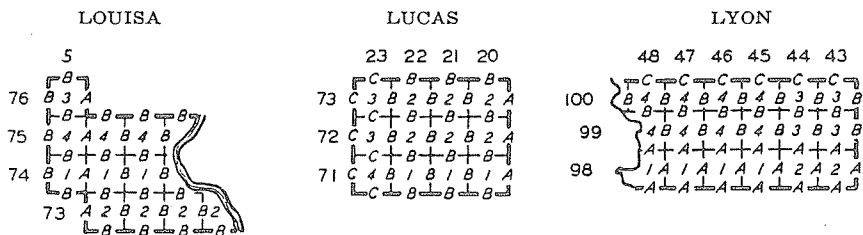
LEE COUNTY

A	Town Lines	Jenifer T. Sprigg			
B	Town Lines	Wm. A. Burt		1836	A:141
C	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
C	Town Lines	Hervey Parke	Robt. T. Lytle	1836	A:149
1	Subdivision	Jenifer T. Sprigg			
2	Subdivision	Perrin Kent	Robt. T. Lytle	May 18, 1837	A:187
2*	Town Survey	Vliet & Harrison	Robt. T. Lytle	Oct. 9, 1836	A:144
2*	Town Surveys	Garret Vliet	Rob't. T. Lytle	Mar. 21, 1837	A:160
2*	Town Surveys	Willard Barrows	E. S. Haines	July 11, 1838	A:273
2*	Town Surveys	Coriell & McCarver	E. S. Haines	July 11, 1838	A:275

LINN COUNTY

A	Town Lines	Wm. A. Burt		1836	A:141
B	Town Lines	Geo. Harrison	Geo. W. Jones	Oct. 16, 1840	B:91
1	Subdivision	John T. Haight	Robt. T. Lytle	Aug. 7, 1837	A:223
2	Subdivision	Moses Vilas	Geo. W. Jones	June 7, 1841	B:123
3	Subdivision	Thos. M. Weldon	Geo. W. Jones	June 4, 1841	B:123
4	Subdivision	Whiteside-Campbell	Geo. W. Jones	June 7, 1841	B:124
5	Subdivision	Garret Vliet	Geo. W. Jones	June 9, 1841	B:124

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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LOUISA COUNTY

A Town Lines	Wm. A. Burt		1836	A:141
B Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
B* Town Lines	Hervey Parke	Robt. T. Lytle	1836	A:149
1 Subdivision	Wm. L. D. Ewing	Robt. T. Lytle	May 9, 1837	A:174
2 Subdivision	Basil Bentley	Robt. T. Lytle	May 9, 1837	A:181
3 Subdivision	Thomas Brown	Robt. T. Lytle	May 16, 1837	A:186
4 Subdivision	Daniel Brewer	Robt. T. Lytle	Nov. 30, 1837	A:248

LUCAS COUNTY

A Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
B Town Lines	John Ball	Geo. W. Jones	Oct. 6, 1846	C:45
C Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:87
1 Subdivision	J. G. McDonald	Geo. W. Jones	April 10, 1847	C:133
2 Subdivision	John W. Webber	Geo. W. Jones	June 5, 1847	C:165
3 Subdivision	John J. Silman	Geo. W. Jones	Aug. 13, 1847	C:184
4 Subdivision	Wm. Bonnifield	Geo. W. Jones	Aug. 18, 1847	C:186

LYON COUNTY

A Town Lines	Alex Anderson	Warner Lewis	Aug. 28, 1855	F:600
B Town Lines	Wm. Yerby	Warner Lewis	July 27, 1859	G:253
C State Line	A. Talcott			Note
1 Subdivision	Wm. B. Yerby	Warner Lewis	Aug. 28, 1855	F:600
2 Subdivision	Jeremiah Rierdon	Warner Lewis	April 8, 1857	G:200
3 Subdivision	Thos. A. Smith	Warner Lewis	July 27, 1859	G:253
4 Subdivision	C. A. Estes	Warner Lewis	July 27, 1859	G:253

MADISON		MAHASKA		MARION	
29	28 27 26	17	16 15 14	21	20 19 18
77	B 2 B 2 B 1 B 1 A	77	B 4 B 4 B 6* A 3 A	77	C 4 C 4 B 5 A 2 A
76	B 4 B 2 B 2 B 1 B	76	B 5 B 6* B 6* A 3 A	76	C 4 C 4 B 5 A 2* A
75	B 4 B 3 B 3 B 3 A	75	B 5* B 1 B 1 A 3 A	75	C 3 C 3 B 5 A 2 A
74	B 5 B 3 B 3 B 3 A	74	B 2 B 2 B 1 A 1 A	74	C 3 C 3 B 5 A 1 A

MADISON COUNTY

SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER	
A	Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:87
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1	Subdivision	Thos. Baker	H. A. Wiltse, Ch. Clk.	Jan. 11, 1849	D:34
2	Subdivision	John A. Pitzer	H. A. Wiltse, Ch. Clk.	Jan. 11, 1849	D:35
3	Subdivision	E. W. Eastman	Caleb H. Booth	Feb. 9, 1849	D:56
4	Subdivision	Thos. J. McKean	Caleb H. Booth	July 20, 1849	D:119
5	Subdivision	Edwin James, Jr.	Caleb H. Booth	Aug. 29, 1849	D:136

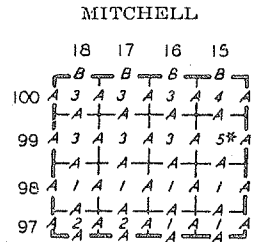
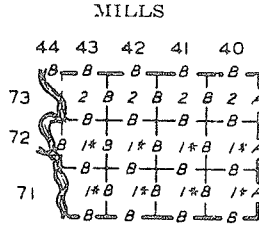
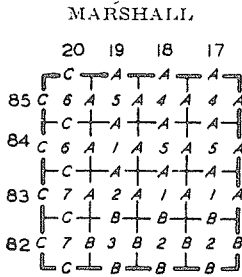
MAHASKA COUNTY

A	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
B	Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
1	Subdivision	Geo. Wilson	James Wilson	Nov. 2, 1844	B:282
2	Subdivision	Wm. Dewey	James Wilson	Nov. 9, 1844	B:288
3	Subdivision	Samuel C. Wiltse	James Wilson	Nov. 2, 1844	B:277
4	Subdivision	James Grant	Geo. W. Jones	July 14, 1845	B:337
5	Subdivision	W. L. D. Ewing	Geo. W. Jones	July 18, 1845	B:340
5*	Resurvey	Isaac N. Higbee	Geo. W. Jones	May 21, 1846	B:424
6	Subdivision	Willard Barrows	Geo. W. Jones	Nov. 16, 1844	
6*	Examination	Joseph Moorehead	Geo. W. Jones	April 23, 1846	B:415
6*	Examination	Joseph Moorehead	Geo. W. Jones	July 24, 1846	C:23
6*	Examination	Joseph Moorehead	Geo. W. Jones	Aug. 19, 1846	C:26
6*	Examination	Joseph Moorehead	Geo. W. Jones	Aug. 19, 1846	C:27
6*	Examination	Joseph Moorehead	Geo. W. Jones	Dec. 24, 1846	C:95
6*	Resurvey	S. S. Carpenter	Geo. W. Jones	July 20, 1847	C:178
6*	Resurvey	S. S. Carpenter	Geo. W. Jones	Dec. 15, 1847	C:269
6*	Resurvey	Dr. Enos Lowe	Geo. W. Jones	Dec. 29, 1846	C:97

MARION COUNTY

A	Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
B	Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
C	Town Lines	John Ball	Geo. W. Jones	Oct. 6, 1846	C:45
1	Subdivision	J. B. Watson	Geo. W. Jones	Aug. 12, 1845	B:347
2	Subdivision	W. L. D. Ewing	Geo. W. Jones	July 18, 1845	B:340
2*	Resurvey	Isaac N. Higbee	Geo. W. Jones	May 21, 1846	B:424
3	Subdivision	A. McMichael	Geo. W. Jones	June 5, 1847	C:165
4	Subdivision	Jesse Williams	Geo. W. Jones	June 9, 1847	C:167
5	Subdivision	Sam'l Jacobs	Geo. W. Jones	Oct. 7, 1847	C:47

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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MARSHALL COUNTY

A	Town Lines	James Marsh	Geo. W. Jones	Sept. 16, 1845	B:356
B	Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
C	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
1	Subdivision	S. W. Durham	Geo. W. Jones	Oct. 6, 1846	C:45
2	Subdivision	Joseph Greene	Geo. W. Jones	Oct. 10, 1846	C:53
3	Subdivision	Wm. G. Ross	Geo. W. Jones	Nov. 20, 1846	C:79
4	Subdivision	Guy H. Carleton	Geo. W. Jones	April 3, 1847	C:128
5	Subdivision	Guy Wells	Geo. W. Jones	April 5, 1847	C:129
6	Subdivision	Horatio Waldo	Geo. W. Jones	Aug. 17, 1847	C:185
7	Subdivision	John Parker	Geo. W. Jones	1847	

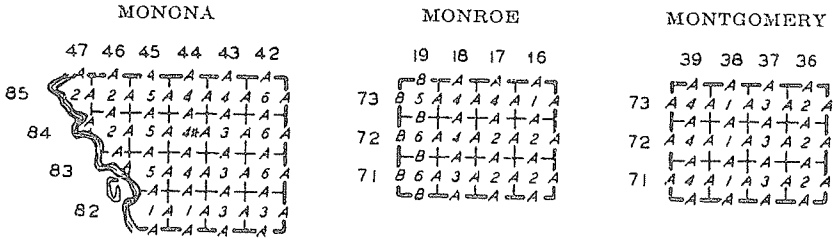
MILLS COUNTY

A	Town Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
B	Town Lines	Lewis V. Davis	Geo. B. Sargent	May 10, 1851	D:462
1	Subdivision	J. H. D. Street	Geo. B. Sargent	Sept. 1, 1851	E:76
1*	Examination	Chas. E. Legate	Warner Lewis	Aug. 30, 1854	F:287
2	Subdivision	Thos. Cassiday	Geo. B. Sargent	Sept. 21, 1851	E:122

MITCHELL COUNTY

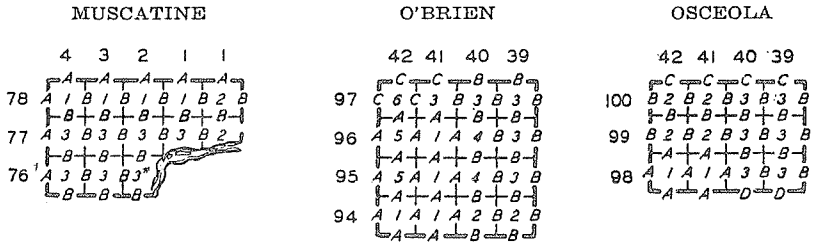
A	Town Lines	John T. Everett	Warner Lewis	June 6, 1853	F:18
B	State Line	A. Talcott			Note
1	Subdivision	H. & J. T. Nowlin	Warner Lewis	1853	F:54
2	Subdivision	Wm. I. Anderson	Warner Lewis	1853	F:54
3	Subdivision	Brunius-Brockman	Warner Lewis	Aug. 22, 1853	F:77
4	Subdivision	Michael Burke	Warner Lewis	Aug. 31, 1853	F:85
5	Subdivision	Michael Burke	Warner Lewis	Aug. 31, 1853	F:85
5*	Resurvey	Jesse T. Jurrett	Warner Lewis	May 5, 1855	F:413
5*	Examination	Wm. J. Neely	Warner Lewis	June —, 1853	F:29

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER	
MONONA COUNTY					
A	Town Lines	Alex. Anderson	Geo. B. Sargent	May 13, 1851	D:483
1	Subdivision	Alex. Anderson	Geo. B. Sargent	Sept. 18, 1852	E:462
2	Subdivision	Alex. Anderson	Geo. B. Sargent	Sept. 18, 1852	E:462
3	Subdivision	David Sales	Geo. B. Sargent	Sept. 27, 1852	E:471
4	Subdivision	John W. Ross	Geo. B. Sargent	Oct. 9, 1852	E:488
4*	Correction	Andrew Hood	Warner Lewis	April 5, 1854	
5	Subdivision	Seevers & Sawyer	Geo. B. Sargent	1852	E:517
6	Subdivision	John P. Brown	Warner Lewis	July 11 1855	F:436
MONROE COUNTY					
A	Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
B	Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
1	Subdivision	Wm. Dewey	James Wilson	Nov. 7, 1844	B:288
2	Subdivision	Wm. Vandever	James Wilson	Nov. 7, 1844	B:287
3	Subdivision	Enos Lowe	Geo. W. Jones	July 15, 1845	B:339
4	Subdivision	J. B. Watson	Geo. W. Jones	Aug. 12, 1845	B:347
5	Subdivision	Sam'l Jacobs	Geo. W. Jones	Oct. 7, 1847	C:47
6	Subdivision	John W. Ellis	Geo. W. Jones	Oct. 13, 1846	C:54
MONTGOMERY COUNTY					
A	Town Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
1	Subdivision	Silas A. Hudson	Geo. B. Sargent	Aug. 25, 1851	E:40
2	Subdivision	John W. Ross	Geo. B. Sargent	Aug. 26, 1851	E:59
3	Subdivision	Peter Moriarty	Geo. B. Sargent	Sept. 2, 1851	E:88
4	Subdivision	Jacob Starr	Geo. B. Sargent	Sept. 2, 1851	E:82

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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MUSCATINE COUNTY

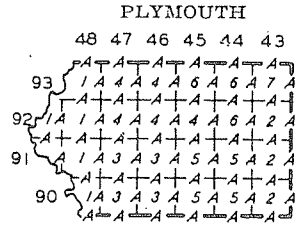
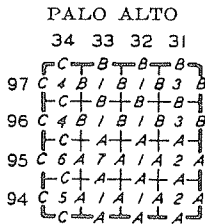
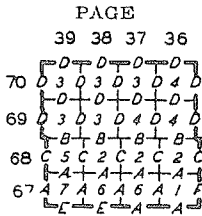
A Town Lines	Wm. A. Burt		1836	A:141
B Town Lines	Hervey Parke	Robt. T. Lytle	1836	A:149
1 Subdivision	W. R. Shoemaker	Robt. T. Lytle	May 9, 1837	A:176
2 Subdivision	Wm. A. & A. Burt	Robt. T. Lytle	May 13, 1837	A:183
3 Subdivision	Thos. Brown	Robt. T. Lytle	May 16, 1837	A:186
3* Island Survey	Geo. Bumgardner	Geo. B. Sargent	Jan. 22, 1852	E:263

O'BRIEN COUNTY

A Town Lines	Charles Lewis	Warner Lewis	July 16, 1853	F:50
B Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
C Town Lines	Alex. Anderson	Warner Lewis	Aug. 26, 1855	F:600
1 Subdivision	Seth Millington	Warner Lewis	July 11, 1855	F:436
2 Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855	F:460
3 Subdivision	W. W. Smith	Warner Lewis	Feb. 12, 1856	F:600
4 Subdivision	Dennis Langton	Warner Lewis	April 10, 1857	G:200
5 Subdivision	Dennis Langton	Warner Lewis	Sept. 10, 1857	G:200
6 Subdivision	Jeremiah Rierdon	Warner Lewis	April 8, 1857	G:200

OSCEOLA COUNTY

A Town Lines	Alex. Anderson	Warner Lewis	Aug. 28, 1855	F:600
B Town Lines	Wm. Yerby	Warner Lewis	July 27, 1859	G:253
C State Line	A. Talcott			Note
D Town Line	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1 Subdivision	Jeremiah Rierdon	Warner Lewis	April 8, 1857	G:200
2 Subdivision	Thos. A. Smith	Warner Lewis	July 27, 1859	G:253
3 Subdivision	C. A. M. Estes	Warner Lewis	Aug. 23, 1859	G:258



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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PAGE COUNTY

A	Town Line	Geo. B. Sargent	Geo. W. Jones	Jan. 29, 1847	C:110
B	Town Line	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C	Town Line	John S. Sheller	Geo. B. Sargent	Sept. 6, 1851	E:100
D	Town Line	John P. Conkey	Geo. B. Sargent	May 8, 1851	D:416
E	State Line	Wm. Shields	Geo. B. Sargent	Mar. 25, 1852	Note
F	Town Line	D. A. Spaulding	Geo. W. Jones	Nov. 24, 1846	C:81
1	Subdivision	Thos. Monroe	Geo. W. Jones	Nov. 24, 1846	C:81
2	Subdivision	Ambrose Carpenter	Geo. B. Sargent	Aug. 19, 1851	D:636
3	Subdivision	Thos. D. Evans	Geo. B. Sargent	Aug. 23, 1851	E:22
4	Subdivision	Wm. Dunn	Geo. B. Sargent	Aug. 25, 1851	E:46
5	Subdivision	John S. Sheller	Geo. B. Sargent	Sept. 6, 1851	E:100
6	Subdivision	Wm. Shields	Geo. B. Sargent	Mar. 5, 1852	E:380
7	Subdivision	Warren Reed	Geo. B. Sargent	May 10, 1845	

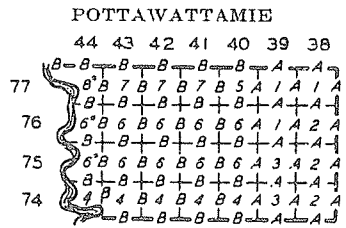
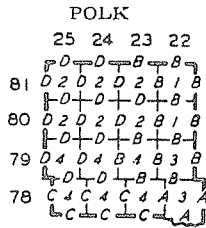
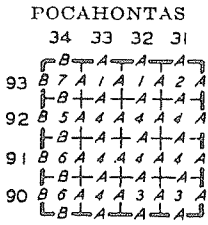
PALO ALTO COUNTY

A	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
B	Town Lines	John W. Ellis	Warner Lewis	April 21, 1854	F:220
C	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1	Subdivision	Jesse T. Jarrett	Warner Lewis	1853	F:3
2	Subdivision	Leech & Bell	Warner Lewis	April 20, 1854	F:220
3	Subdivision	John Haggard	Warner Lewis	1854	F:308
4	Subdivision	J. Pierson	Warner Lewis	Sept. 20, 1855	F:462
5	Subdivision	Adams Sherrill	Warner Lewis	1855	F:600
6	Subdivision	J. W. Webber	Warner Lewis	1855	F:600
7	Subdivision	C. A. M. Estes	Warner Lewis	Aug. 23, 1859	G:258

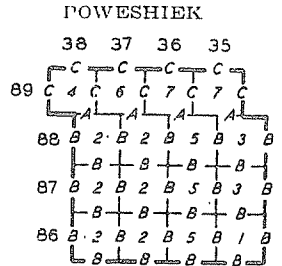
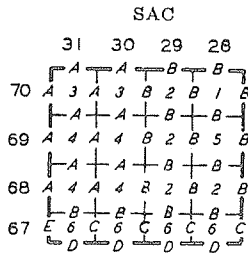
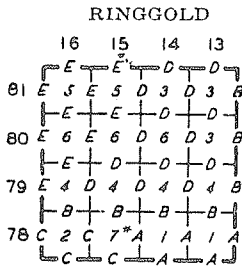
PLYMOUTH COUNTY

A	Town Lines	Charles Lewis	Warner Lewis	July 16, 1853	F:50
1	Subdivision	J. L. Sharp	Warner Lewis	Oct. 8, 1853	F:107
2	Subdivision	David Ferguson	Warner Lewis	Nov. 3, 1853	F:141
3	Subdivision	John K. Cook	Warner Lewis	Mar. 3, 1854	F:192
4	Subdivision	Waltman Trippitt	Warner Lewis	Sept. 9, 1854	F:297
5	Subdivision	Henry Allen	Warner Lewis	Sept. 18, 1854	F:300
6	Subdivision	W. W. Smith	Warner Lewis	Sept. 19, 1854	F:374
7	Subdivision	Geo. Stump	Warner Lewis	1855	F:445

See page 205 for explanation of above material.



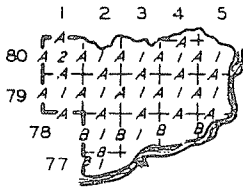
SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER	
POCAHONTAS COUNTY					
A	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
B	Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1	Subdivision	Jesse T. Jarrett	Warner Lewis	May 30, 1853	F:8
2	Subdivision	John W. Ellis	Warner Lewis	April 21, 1854	F:220
3	Subdivision	Geo. Berry	Warner Lewis	May 3, 1854	F:232
4	Subdivision	R. O. C. Anderson	Warner Lewis	Sept. 22, 1854	F:308
5	Subdivision	W. W. Smith	Warner Lewis	Feb. 12, 1856	F:600
6	Subdivision	J. T. Nowlin	Warner Lewis	May 17, 1855	F:600
7	Subdivision	Adams Sherrill	Warner Lewis	Aug. 30, 1855	F:600
POLK COUNTY					
A	Town Lines	John Ball	Geo. W. Jones	Oct. 6, 1846	C:45
B	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
C	Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:37
D	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1	Subdivision	John D. Evans	Geo. W. Jones	Oct. 13, 1846	C:55
2	Subdivision	Jos. Moorehead	Geo. W. Jones	June 5, 1847	C:164
3	Subdivision	Sam'l Jacobs	Geo. W. Jones	June 9, 1847	C:167
4	Subdivision	S. W. Durham	Geo. W. Jones	Oct. 6, 1847	C:210
POTTAWATTAMIE COUNTY					
A	Town Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
B	Town Lines	Lewis V. Davis	Geo. B. Sargent	May 10, 1851	D:462
1	Subdivision	S. M. Ballard	Geo. B. Sargent	Aug. 22, 1851	E:28
2	Subdivision	Silas A. Hudson	Geo. B. Sargent	Aug. 25, 1851	E:40
3	Subdivision	Jacob K. Starr	Geo. B. Sargent	Sept. 2, 1851	E:82
4	Subdivision	Thos. Cassidy	Geo. B. Sargent	Sept. 21, 1851	E:122
5	Subdivision	E. S. Norris	Geo. B. Sargent	Oct. 6, 1851	E:139
6	Subdivision	Geo. Bumgardner	Geo. B. Sargent	Oct. 6, 1851	E:145
6*	Examination	Oscar F. Davis	Warner Lewis	Mar. 2, 1858	G:133
7	Subdivision	Clements & Seevers	Geo. B. Sargent	Oct. 15, 1851	E:160
8	Subdivision	W. Clement	Geo. B. Sargent	Oct. 15, 1851	E:160
8*	Examination	Oscar F. Davis	Warner Lewis	Mar. 2, 1858	G:133



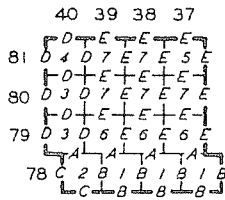
SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
POWESHIEK COUNTY				
A Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
B Town Lines	Jeremiah Whitcher	James Wilson	May 8, 1843	B:203
C Town Lines	Wm. A. Burt	James Wilson	May 25, 1843	B:214
D Town Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
E Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
1 Subdivision	H. A. Wiltse	James Wilson	Nov. 2, 1844	E:272
2 Subdivision	James Grant	Geo. W. Jones	July 14, 1845	B:337
3 Subdivision	S. W. Durham	Geo. W. Jones	Sept. 26, 1845	B:359
4 Subdivision	Orson Lyon	Geo. W. Jones	Oct. 9, 1846	C:48
5 Subdivision	Wm. G. Ross	Geo. W. Jones	Nov. 20, 1846	C:79
6 Subdivision	Sam'l Whitmore	Geo. W. Jones	April 10, 1847	C:131
7 Subdivision	Willard Barrows	Geo. W. Jones	Nov. 16, 1844	
7* Examination	Joseph Moorehead	Geo. W. Jones	April 23, 1846	B:415
7* Examination	Joseph Moorehead	Geo. W. Jones	July 24, 1846	C:22
7* Examination	Joseph Moorehead	Geo. W. Jones	Aug. 19, 1846	C:26
7* Examination	Joseph Moorehead	Geo. W. Jones	Aug. 19, 1846	C:25
7* Examination	Joseph Moorehead	Geo. W. Jones	Dec. 28, 1846	C:95
7* Resurvey	S. S. Carpenter	Geo. W. Jones	July 20, 1847	C:178
RINGGOLD COUNTY				
A Town Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
C Town Lines	Wm. Dunn	Geo. B. Sargent	April 19, 1852	E:383
D State Line	Wm. Dewey (Iowa)	Commissioners	Dec. —, 1848	Note
E Town Lines	Wm. Shields	Geo. B. Sargent	Mar. 25, 1852	E:380
1 Subdivision	Ira Clafin	H. A. Wiltse, Ch. Ck.	Jan. 11, 1849	D:36
2 Subdivision	Edwin James, Jr.	Caleb H. Booth	Aug. 29, 1849	D:136
2 Subdivision	Edwin James, Jr.	Geo. B. Sargent	May 8, 1851	D:51
3 Subdivision	Wm. Leffler	Caleb H. Booth	Sept. 27, 1849	D:169
4 Subdivision	John D. Evans	Caleb H. Booth	Sept. 24, 1849	D:172
5 Subdivision	Finley-McKeogh	Geo. B. Sargent	May 8, 1851	D:405
6 Subdivision	Wm. Dunn	Geo. B. Sargent	April 9, 1852	E:383
SAC COUNTY				
A Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
B Town Lines	Alex. Anderson	Geo. B. Sargent	Mar. 6, 1852	E:291
C Town Lines	John Parker	Warner Lewis	Oct. 1, 1855	F:464
1 Subdivision	Ira Cook	Geo. B. Sargent	June 3, 1852	E:375
2 Subdivision	John S. Sheller	Geo. B. Sargent	Sept. 27, 1852	E:400
3 Subdivision	James Harlan	Geo. B. Sargent	Oct. 1, 1852	E:481
4 Subdivision	S. W. Durham	Warner Lewis	Sept. —, 1855	F:460
5 Subdivision	Adam Sherrill	Warner Lewis	June 2, 1855	F:600
6 Subdivision	W. W. Smith	Warner Lewis	June 2, 1855	F:600
7 Subdivision	J. T. Nowlin	Warner Lewis	June 2, 1855	F:600

See page 205 for explanation of above material.

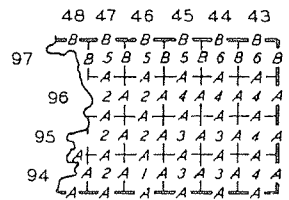
SCOTT



SHELBY



SIOUX



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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SCOTT COUNTY

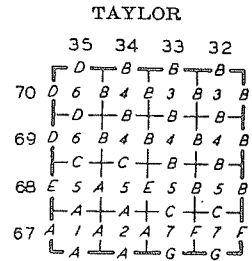
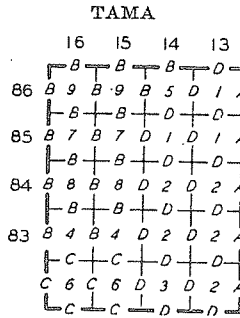
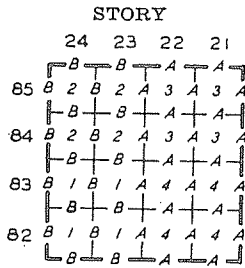
A	Town Lines	Wm. A. Burt	1836	A:141
B	Town Lines	Hervey Parke	1836	A:149
1	Subdivision	W. A. & A. Burt	May 13, 1837	A:183
1*	Island Survey	H. S. Finly	July 4, 1846	C:13
1*	Island Survey	James Moorehead	July 4, 1846	C:13
2	Subdivision	Geo. C. Van Zandt	June 8, 1837	A:196

SHELBY COUNTY

A	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B	Town Lines	John F. Conkey	Geo. W. Jones	May 8, 1851	D:416
C	Town Lines	Lewis V. Davis	Geo. B. Sargent	May 10, 1851	D:462
D	Town Lines	Alex. Anderson	Geo. B. Sargent	May 13, 1851	D:483
E	Town Lines	Alex. Anderson	Geo. B. Sargent	Mar. 6, 1852	E:291
1	Subdivision	W. H. Henderson	Geo. B. Sargent	Sept. 18, 1851	E:123
2	Subdivision	E. S. Norris	Geo. B. Sargent	Oct. 6, 1851	E:139
3	Subdivision	Alex. Anderson	Geo. B. Sargent	Aug. 30, 1851	E:171
4	Subdivision	David Sales	Geo. B. Sargent	Sept. 27, 1852	E:471
5	Subdivision	H. D. Street	Geo. B. Sargent	Oct. 22, 1852	E:495
6	Subdivision	Adam Perry	Geo. B. Sargent	Feb. 15, 1853	E:576
7	Subdivision	Chas. McDonald	Warner Lewis	July 30, 1853	F:58

SIOUX COUNTY

A	Town Lines	Charles Lewis	Warner Lewis	July 16, 1853	F:50
B	Town Lines	Alex. Anderson	Warner Lewis	Aug. 28, 1855	F:600
1	Subdivision	Waltman Trippitt	Warner Lewis	Sept. 9, 1854	F:297
2	Subdivision	James Hanks	Warner Lewis	Sept. 20, 1854	F:303
3	Subdivision	W. W. Smith	Warner Lewis	Jan. 29, 1854	F:374
4	Subdivision	Geo. Stump	Warner Lewis	Aug. 16, 1855	F:445
5	Subdivision	Wm. B. Yerby	Warner Lewis	July 10, 1855	F:600
6	Subdivision	Jeremiah Rierdon	Warner Lewis	April 8, 1857	G:200



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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STORY COUNTY

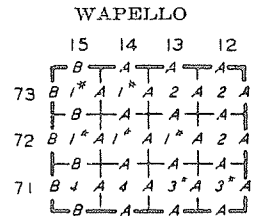
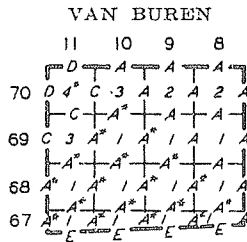
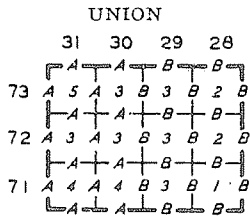
A	Town Lines	Isaac Higbee	Geo. W. Jones	Oct. 6, 1846	C:46
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1	Subdivision	Joseph Greene	Geo. W. Jones	Oct. 10, 1846	C:53
2	Subdivision	Thomas Hurley	Geo. W. Jones	1847	C:188
3	Subdivision	Horatio Waldo	Geo. W. Jones	Aug. 17, 1847	C:185
4	Subdivision	John Parker	Geo. W. Jones	1848	C:306

TAMA COUNTY

A	Town Lines	Jeremiah Whitche	James Wilson	May 8, 1843	B:203
B	Town Lines	James Marsh	Geo. W. Jones	Sept. 16, 1845	B:356
C	Town Lines	Orson Lyon	Geo. W. Jones	July 14, 1845	B:338
D	Town Lines	Isaac Higbee	Geo. W. Jones	July 14, 1845	B:338
1	Subdivision	A. J. McLemore	Geo. W. Jones	Sept. 15, 1845	B:355
2	Subdivision	A. L. Brown	Geo. W. Jones	Sept. 15, 1845	B:356
3	Subdivision	S. W. Durham	Geo. W. Jones	Sept. 26, 1845	B:359
4	Subdivision	S. W. Durham	Geo. W. Jones	Oct. 6, 1846	C:45
5	Subdivision	Geo. McHenry	Geo. W. Jones	Oct. 10, 1846	C:50
6	Subdivision	Joseph Greene	Geo. W. Jones	Oct. 10, 1846	C:53
7	Subdivision	Guy H. Carleton	Geo. W. Jones	April 3, 1847	C:128
8	Subdivision	Guy Wells	Geo. W. Jones	April 5, 1847	C:129
9	Subdivision	Michael Karrick	Geo. W. Jones	May 21, 1847	C:154

TAYLOR COUNTY

A	Town Lines	D. A. Spaulding	Geo. W. Jones	Nov. 24, 1846	C:81
B	Town Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
C	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
D	Town Lines	John F. Conkey	Geo. B. Sargent	May 8, 1851	D:416
E	Town Lines	John Sheller	Geo. B. Sargent	Sept. 6, 1851	E:100
F	Town Lines	Wm. Shields	Geo. B. Sargent	Mar. 25, 1852	E:380
G	Town Lines	Wm. Dewey (Iowa)	Commissioners	Dec. —, 1848	Note
1	Subdivision	Thos. Monroe	Geo. W. Jones	Nov. 24, 1846	C:81
2	Subdivision	L. Shepard	Geo. W. Jones	Nov. 24, 1846	C:82
3	Subdivision	Wm. Leffler	Caleb H. Booth	Sept. 27, 1849	D:169
4	Subdivision	John D. Evans	Caleb H. Booth	Sept. 24, 1849	D:172
5	Subdivision	A. Carpenter	Geo. B. Sargent	Aug. 19, 1851	D:636
6	Subdivision	Wm. Dunn	Geo. B. Sargent	Aug. 25, 1851	E:46
7	Subdivision	Wm. Shields	Geo. B. Sargent	Mar. 25, 1852	E:380



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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UNION COUNTY

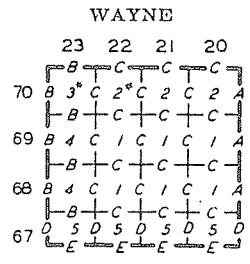
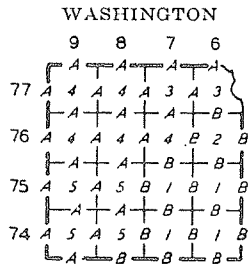
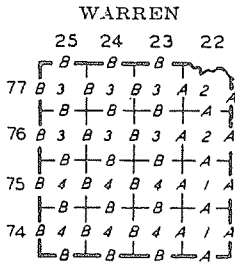
A	Town Lines	Andrew Leech	Geo. W. Jones	Aug. 3, 1848	C:370
B	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
1	Subdivision	Ira Claffin	H. A. Wiltse, Ch. Clk.	Jan. 11, 1849	D:36
2	Subdivision	W. S. Townsend	Caleb H. Booth	Mar. 22, 1849	D:63
3	Subdivision	Edwin James	Caleb H. Booth	Aug. 29, 1849	D:136
4	Subdivision	Wm. Lefler	Caleb H. Booth	Sept. 27, 1849	D:169
5	Subdivision	S. O. Woodworth	Caleb H. Booth	Aug. 15, 1849	D:135

VAN BUREN COUNTY

A	Town Lines	Hervey Parke	Robt. T. Lytle	Nov. 12, 1836	A:142
A*	Town Lines	Perrin Kent	Robt. T. Lytle	June 27, 1837	A:199
C	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
D	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
E	S. Boundary	Comm. decree Order,	Supreme U. S.		Note
F	Correction	John W. Williams	Warner Lewis	June 2, 1854	
1	Subdivision	Uriah Biggs	Robt. T. Lytle	May 23, 1837	A:190
2	Subdivision	E. F. Lucas	Robt. T. Lytle	May 22, 1837	A:192
3	Subdivision	Hugill-Freeman	Geo. W. Sargent	April 19, 1841	B:118
4	Subdivision	Willard Barrows		Sept. 4, 1843	
4*	Examination	Isaac Higbee	Geo. W. Jones	Nov. 12, 1845	B:380
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 21, 1846	B:413
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 22, 1846	C:93
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Jan. 5, 1847	C:99
4*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Feb. 27, 1847	C:118

WAPELLO COUNTY

A	Town Lines	Alvin Burt	James Wilson	May 8, 1843	B:202
B	Town Lines	Wm. A. Burt	James Wilson	May 24, 1843	B:214
1	Subdivision	Wm. Vandever		Sept. 5, 1843	
1*	Examination	Joseph Moorehead	Geo. W. Jones	April 23, 1846	B:415
1*	Examination	Joseph Moorehead	Geo. W. Jones	Mar. 5, 1847	C:122
1*	Resurvey	James Shields	Geo. W. Jones	Dec. 28, 1846	C:95
1*	Resurvey	Geo. Wilson	Geo. W. Jones	April 21, 1847	C:137
2	Town Lines	Alvin Burt	James Wilson	Oct. 3, 1843	B:235
3	Subdivision	Willard Barrows		Sept. 4, 1843	
3*	Examination	Isaac Higbee	Geo. W. Jones	Nov. 12, 1845	B:380
3*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 21, 1846	B:413
3*	Resurvey	Paul C. Jeffries	Geo. W. Jones	April 22, 1846	C:93
3*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Jan. 5, 1847	C:99
3*	Resurvey	Paul C. Jeffries	Geo. W. Jones	Feb. 27, 1847	C:118
4	Subdivision	Geo. Wilson	James Wilson	Sept. 30, 1843	B:233



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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WARREN COUNTY

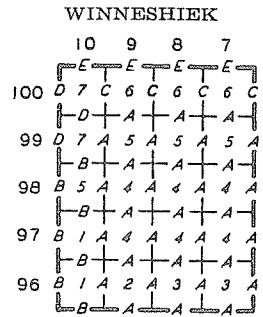
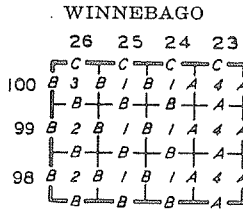
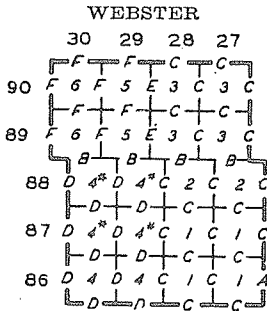
A	Town Line	John Ball	Geo. W. Jones	Oct. 6, 1846	C:45
B	Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:87
1	Subdivision	A. McMichael	Geo. W. Jones	June 5, 1847	C:165
2	Subdivision	Jesse Williams	Geo. W. Jones	June 9, 1847	C:167
3	Subdivision	A. L. Gregoire	Geo. W. Jones	1847	C:210
4	Subdivision	Michael O'Brien	Geo. W. Jones	1847	C:210

WASHINGTON COUNTY

A	Town Lines	Uriah Biggs	Geo. W. Jones	Nov. 6, 1840	B:101
B	Town Lines	Hervey Farke	Robt. T. Lytle	Nov. 12, 1836	A:142
1	Subdivision	Wm. L. D. Ewing	Robt. T. Lytle	May 9, 1837	A:174
2	Subdivision	Thomas Brown	Robt. T. Lytle	May 16, 1837	A:186
3	Subdivision	Foley-McDonald	Geo. W. Jones	April 28, 1841	B:119
4	Subdivision	Wm. L. D. Ewing	Geo. W. Jones	April 30, 1841	B:120
5	Subdivision	Wiltse-Shannon	Geo. W. Jones	April 10, 1841	B:117

WAYNE COUNTY

A	Town Lines	Orson Lyon	Geo. W. Jones	1845	B:338
B	Town Lines	Uriah Biggs	Geo. W. Jones	Dec. 8, 1846	C:87
C	Town Lines	John Ball	Geo. B. Sargent	1851	C:45
D	Town Lines	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378
E	Town Lines	Wm. Dewey (Iowa)		1848	Note
1	Subdivision	H. B. Hendershot	Geo. W. Jones	April 10, 1847	C:132
2	Subdivision	J. G. McDonald	Geo. W. Jones	April 10, 1847	C:133
2*	Examination	Samuel Jacobs	Geo. W. Jones	Jan. 25, 1848	C:231
2*	Examination	R. W. Young	Geo. W. Jones	Mar. 3, 1848	C:298
3	Subdivision	Wm. Bonniield	Geo. W. Jones	Aug. 18, 1847	C:186
3*	Examination	Samuel Jacobs	Geo. W. Jones	Jan. 25, 1848	C:231
3*	Examination	R. W. Young	Geo. W. Jones	Mar. 3, 1848	C:298
4	Subdivision	A. C. Dodge	Geo. W. Jones	Aug. 18, 1847	C:186
5	Subdivision	John G. Clark	Geo. B. Sargent	Mar. 16, 1852	E:378



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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WEBSTER COUNTY

A	Town Lines	James Marsh	Geo. W. Jones	Aug. 1, 1848	C:372
B	Town Lines	James Marsh	Caleb H. Booth	July 9, 1849	D:96
C	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
D	Town Lines	John W. Ellis	Caleb H. Booth	Aug. 13, 1849	D:147
E	Town Lines	Chas. Gilliam	Geo. B. Sargent	July 5, 1851	D:567
F	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
1	Subdivision	E. S. Norris	Caleb H. Booth	Sept. 22, 1849	D:164
2	Subdivision	Wm. J. Neely	Caleb H. Booth	Sept. 24, 1849	D:167
3	Subdivision	Chas. Gilliam	Geo. B. Sargent	July 5, 1851	D:567
4	Subdivision	J. T. & R. Jarrett	Geo. B. Sargent	Sept. 24, 1852	E:543
4*	Resurvey	J. T. & R. Jarrett	Warner Lewis	May 2, 1854	F:229
5	Subdivision	John W. Clark	Warner Lewis	April 21, 1854	F:220
6	Subdivision	Geo. Berry	Warner Lewis	May 3, 1854	F:232

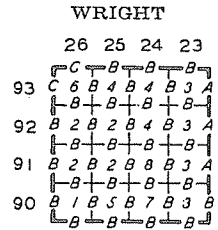
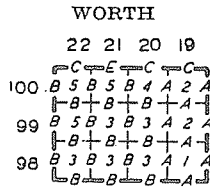
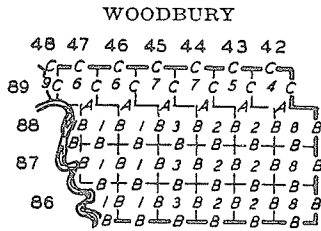
WINNEBAGO COUNTY

A	Town Lines	John T. Everett	Warner Lewis	Aug. 1, 1853	F:60
B	Town Lines	John W. Ellis	Warner Lewis	April 21, 1854	F:220
C	State Line	A. Talcott			Note
1	Subdivision	Horatio Waldo	Warner Lewis	1854	F:308
2	Subdivision	Orson Lyon	Warner Lewis	1854	F:308
3	Subdivision	John Snook	Warner Lewis	Mar. 27, 1855	F:397
4	Subdivision	John Snook	Warner Lewis	Mar. 27, 1855	F:397

WINNESHIEK COUNTY

A	Town Lines	Guy H. Carleton	Geo. W. Jones	July 26, 1848	C:363
B	Town Lines	John Ball	Geo. W. Jones	July 27, 1848	C:365
C	Town Lines	Ira Cook		June —, 1852	E:391
D	Town Lines	John T. Everett	Warner Lewis	June 6, 1853	F:18
E	State Line	A. Talcott			Note
1	Subdivision	John Parker	C. H. Booth	July 24, 1849	D:121
2	Subdivision	Guy H. Carleton	Geo. W. Jones	July 26, 1848	C:363
3	Subdivision	Hugh Trenor	Geo. W. Jones	1848	D:15
4	Subdivision	Jos. Moorehead	Caleb H. Booth	May 1, 1849	D:72
5	Subdivision	Horatio Waldo	Caleb H. Booth	May 1, 1849	D:73
6	Subdivision	Ira Cook	Geo. B. Sargent	June —, 1852	E:391
7	Subdivision	H. K. Averill, Jr.	Warner Lewis	1853	F:138

See page 205 for explanation of above material.



SURVEY	DEPUTY SURVEYOR	SURVEYOR GENERAL	DATE CONTRACT	LETTER
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WOODBURY COUNTY

A	Town Lines	James M. Marsh	Caleb H. Booth	July 9, 1849	D:96
B	Town Lines	Alex. Anderson	Geo. B. Sargent	May 13, 1851	D:483
C	Town Lines	Charles Lewis	Warner Lewis	July 16, 1853	F:50
1	Subdivision	Alex. Anderson	Geo. B. Sargent	Sept. 18, 1852	E:462
2	Subdivision	John W. Ross	Geo. B. Sargent	Oct. 9, 1852	E:488
3	Subdivision	Seevers & Sawyer	Warner Lewis	1852	E:517
4	Subdivision	Henry Allen	Warner Lewis	Oct. 23, 1853	F:131
5	Subdivision	David Ferguson	Warner Lewis	Nov. 3, 1853	F:141
6	Subdivision	John K. Cook	Warner Lewis	Mar. 3, 1854	F:192
7	Subdivision	Henry Allen	Warner Lewis	Sept. 18, 1854	F:300
8	Subdivision	John P. Brown	Warner Lewis	July 11, 1855	F:436
9	Subdivision	J. L. Sharp	Warner Lewis	Oct. 8, 1853	F:107

WORTH COUNTY

A	Town Lines	John T. Everett	Warner Lewis	June 6, 1853	F:18
B	Town Lines	John T. Everett	Warner Lewis	Aug. 1, 1853	F:60
C	Town Lines	A. Talcott		1853	Note
E	Boundary	James Marsh		April 1, 1853	
1	Subdivision	H. & J. T. Nowlin	Warner Lewis	1853	F:54
2	Subdivision	Brunius-Brockman	Warner Lewis	Aug. 22, 1853	F:77
3	Subdivision	Shannon, Geo. A.	Warner Lewis	1853	F:138
4	Subdivision	J. D. Pennylacker	Warner Lewis	1854	F:308
5	Subdivision	John Snook	Warner Lewis	Mar. 27, 1855	F:397

WRIGHT COUNTY

A	Town Lines	James M. Marsh	Caleb H. Booth	July 9, 1849	D:96
B	Town Lines	John Ball	Caleb H. Booth	July 16, 1849	D:114
C	Town Lines	John W. Ellis	Warner Lewis	June 14, 1853	F:25
1	Subdivision	Chas. Gilliam	Geo. B. Sargent	July 5, 1851	D:567
2	Subdivision	W. W. Smith	Geo. B. Sargent	Sept. 12, 1851	E:108
3	Subdivision	Chas. Gilliam	Geo. B. Sargent	1852	E:543
4	Subdivision	Jos. Jennings	Geo. B. Sargent	1852	E:543
5	Subdivision	Jos. Jennings	Geo. B. Sargent	1852	E:543
6	Subdivision	Thos. McCulloch	Warner Lewis	May 1, 1854	F:228
7	Subdivision	Phillip Harvey	Warner Lewis	Aug. 8, 1855	F:442
8	Subdivision	C. C. Carpenter	Warner Lewis	1858	G:200

See page 205 for explanation of above material.

LETTERS OF INSTRUCTION TO THE DEPUTY SURVEYORS

EXTERIOR TOWNSHIP LINES—LETTER BOOK A: 141, 1836

WILLIAM A. BURT:

[See pp. 245, 246]

You will commence at post and mound in prairie, on the Northern boundary of the Reservation for Sacs & Fox Half-Breeds, where it is intersected by the line between Ranges 4 & 5 West of the 5th principal Meridian in Town. 67; which point of intersection is represented on the plats to be *11 Chs. 44 lks.* north of corner of Secs. 1 & 12, T 67 North, R. 5 West. To enable you to find this corner the more readily, a copy of the Field notes of the N. boundary of the Half Breed reserve from the 168th Mile post to the Mississippi river, accompanies this.

From the corner referred to you will run a *Standard line due North* to the corner of townships 78 & 79. From thence run a *line of correction West* to the West boundary of the purchase, and East to the Mississippi river. On the correction line, it would be well to make about *two chains* excess of measure in each range, to compensate for the convergence at the next correction line.

You will then transmit to this Office copies of the field notes of this work, with such remarks about the country and the surveys, as you may judge useful to be known to the office.

The 5th principal Meridian is then to be continued up to Towns. 88 & 89, where a second correction line is to be run. At this corner you will make a very permanent and conspicuous one; and inform Mr. Orson Lyon at Cassville, by letter immediately of your arrival at the above corner with the 5th Meridian, and giving him such description of the corner, and directions how to find it, that he may have no difficulty in doing so. Also, give him the variation at that point, with any information or remarks that you may suppose will be useful to him in his part of the work. Mr. Lyon will run the second correction line between Towns. 88 & 89, and all the Town. lines North of it.

Indeed it would be very desirable, when you arrive with the 5th Meridian on the second correction line, if you would at once run in with that correction to the Mississippi river which may be about 10 or 12 miles distant, and perhaps not far below where the South Boundary of Wisconsin Ter. (the Base Line thereof,) intersects the river. However, if you should find that by continuing the *5th Meridian* up to the river, you could more readily communicate with Mr. Lyon (as the Mer. may strike not far from Cassville) you may do so. And indeed I think this the most advisable course. From the point where you reach the river with the Mer. you will make an *accurate* connection thereof with *some known point or corner* of the surveys east of the river.

You will then send copies of your notes again to this office.

Returning now, to your own correction line between Ts. 78 & 79, you will commence running the Town. lines in your own Contract. As the country East of the Mer. will be first wanted for subdivision, you will survey that part first. To make the surveys *East* of the 5th Mer. I recommend the following course:

Commence on the Mer. say at corner of Towns. 79 & 80, and run random town lines, East six miles. Then survey and mark the line between Ranges 1 & 2 T. 79, to temporary six mile post. Then from the point where your *random* East line would intersect the North line just run, continue random across Range 2. Then bring up the line between Ranges 2 & 3, to temporary six mile stake and from its intersection with your random East line, continue random line across range 3, and so on till you reach the Mississippi. Then run a *true line* West between Towns. 79 & 80, setting town corners at intersections thereof, with the range line previously run; and as you proceed west with this true line, run up your range lines through Twp. 80, to temporary six mile posts.

Then commence on the Mer., and run random line due East, between Towns. 80 & 81 to the river. Returning West on the *true* line between same towns, run up another tier of Range lines through town. 81 and proceed as before. This plan is suggested as the most convenient and best calculated to make *good work*. For you must bear in mind that the *South and East* sides of all the full townships are to be, as *near as practicable* at *right Angles*, as well as run by the *cardinal Points*.

In the execution of this work, particularly in running the *standard* lines, you are well aware, the *greatest accuracy* is required; and much is expected from your long experience and superior skill in the science.

A duplicate of your contract, with a plan, of the work and necessary plats accompanies this. You will at all convenient times transmit to this Office copies of your field notes, with diagrams of your lines, and you will say to what Post Office, you wish your letter sent.

All rivers and bayous which you judge navigable, are to have meander posts set on them.

Supplemental Instructions, for West of the Mer., will be furnished to you when the field notes of the West Boundary of the Cession are received from the General Land Office.

EXTERIOR TOWNSHIP LINES—LETTER BOOK A: 142, 1836

HERVEY PARKE:

After you shall have run out all the township lines in your district East of the standard Meridian between ranges 4 & 5 West, run by Mr. Burt, you will return to the south side of the work, to corner of Town. 67 and 68 Ranges 4 & 5 W. and commence the survey of the lines West of the Standard Meridian.

In doing this, the same plan will be pursued as that directed for the work east of the Standard Meridian. First, run due West, the line between town. 67 & 68, to town. corner on line between Ranges 7 & 8. As you proceed West, carry up the Range lines, six Miles, North to temporary posts; and also close the 3 fractional range lines *South* to the north boundary of the Half Breed tract, noting carefully where you intersect that boundary.

Then from the corner of T's. 68 and 69 Rs. 7 & 8 (which corner you will establish at six Miles) run a Random line East across the ranges for town. corner on the Standard Meridian, noting where you intersect that line, as also the range lines West of it, with the distance N or S of temporary posts. From the town. corner on the Standard Mer. return between towns. 68 & 69 on *true* line West, running up the range lines six miles farther to temporary posts as you proceed. Continue the true line across range 8, to town. corner (which may possibly cross the Des Moines river) and run up the range line thence, North, and establish cor. of town. 69 & 70, Rs. 8 & 9 West, and random East, as before. Returning on the true line, continue across range 9 to town. corner, which establish, and run up the range thence, as before etc.

In this manner continue with successive tiers of townships across the tract, until the whole are finished.

The measure of each of the ranges 5, 6, & 7, on the first town. line you run across thence, should be six miles 2 chs. 25 lks., diminishing that excess on ranges 8, 9, & 10, in proportion, to the northing of the first line run across them. It is possible you may reach the West boundary of the cession before you reach a town. corner, in running West between towns. 70 & 71, across Range 10. That line will, however, be continued out to the boundary, whether it cuts off the town. corner or not. You will likewise run out another town. line to the boundary of the cession—say between town. 74 & 75. This will show the western extent of the cession, as well as those town lines which will be entire; for you will observe that the fractional town. lines on the boundary (except the two before directed) are not to be run at this time.

Since making out your instructions relating to the *eastern* part of your district, authentic information is received of the cession to the United States of the *four hundred square miles reserve*, on the Iowa river. The Treaty by which this is ceded, will, in all probability be ratified next cession of Congress. It will be best, therefore, to *mark the lines and establish* the corners, within this reserve, in the usual manner, and you are accordingly to do so. And that part of the former Instructions which directs otherwise, is cancelled. You will, nevertheless, note your intersection of the lines of this reserve, as before instructed.

I enclose you herewith, a copy of the field notes of this reserve; and also so much of the Western boundary of the cession as adjoins this district.

You will append to your field notes, a description of the face of the country, soil, timber, mineral appearances, etc. for each township separately, as far as you can ascertain or judge correctly of the same.

SURVEYOR GENERAL'S OFFICE
Cincinnati, Nov. 12th, 1836

(Signed) ROBT T. LYTLE
Surveyor General

TOWN SURVEYS—LETTER BOOK A: 144, 1836

GARRET VLIET & GEORGE W. HARRISON:

For surveying the towns of Ft. Madison, Burlington, Belview, DuBuque, Peru, and Mineral Point, under the Act of July 2nd, 1836.

You have on the foregoing pages, a copy of the said Act, and of the letter of instructions from the Commissioner of the General Land Office, directing the survey.

The duties of the surveyors are so particularly defined in these documents, both with regard to the laying off the lots, and the classification of those already surveyed, that it would scarcely seem necessary to add anything to them. It appears that there have been surveys of lots, in some (perhaps all) of these towns heretofore made. But no field notes, or plats of such surveys have been filed in this office. As you are required by the Act to (have regard to the lots and Streets already surveyed), it will be necessary for you to obtain either the *original plats* of said surveys, or *authenticated* copies thereof. The foregoing letter from the Commissioner of the General Land Office, defines the extent to which you are to be governed by those previous surveys. Wherever the *plan* adopted in those surveys appears defective, such improvements in the plan as you may consider necessary and expedient are to be made by you, wherever it may be practicable; and especially where *new* Streets and lots are to be added to the original surveys.

It will be necessary for you to establish a *Base* at each of the towns to be surveyed to serve as a Standard, both for the course of the Streets and the measure of the lots &c.—

This Base will be formed thus: At the centre of intersection of two Streets, place a large square stone, at least three feet long and fifteen inches square, perpendicularly in the earth, the upper end at the depth of a few inches below the surface, which depth is to be noted in the field book. In the upper end of the stone drill a hole once inch in diameter and the same depth, which hole is to be exactly in the point of intersection of the center of two Streets. At the distance of two, three, or four squares from the monument thus fixed, and on one of these two Streets at the point of intersection of its centre with the centre of another Street, place in like manner another stone of the same description and dimensions. The *course* of a line drawn from one of these monuments to the other, is to be determined with the greatest accuracy, according to the true Meridian at the place; and the measure from one to the other, must be taken with the utmost exactness.

At another intersection of the centre of two Streets, on a line drawn through one of the Monuments thus set, and perpendicular to the Base, place a like monument and determine the exact distance thereof from the monument at the end of the Base.

Having no survey of the ground, nor description of the Site of any of these towns, the plan of laying them out, and the order and arrangement of the Streets, Town, and Out-lots, must be committed to your own sound discretion and judgment. The plan which accompanies this, is recommended to your consideration. The survey of lots heretofore made in these Towns and the degree of regard which you may find it necessary to have to those, surveys, may, however, make it expedient to carry out the plans of those surveys to the entire extent of the several Towns. Of this you are to judge. A sufficient number of squares, and out-lots, may be selected for public purposes, as also one or more market spaces.

The Stakes which you are to set at each corner of every lot, on the Streets, are to be made of durable wood, (cedar, black Locust, or Mulberry) at least 30 inches long, and squared to two by three inches, the flat side in line with the longest lines of the lots, on each side of which you will make with a marking iron, or brand burnt into the wood, the numbers respectively of the lots for which it is the corner. The stakes at the rear of the lots, (except the corners on the Streets), may be of the same length, two inches square, and without numbers.

A survey of the whole *boundary* of each Town is to be made, and notes thereof inserted in your field Books, distinct from the notes of the survey of the Lots. Your doings in relation to the establishment of *Monuments* at the intersections of the Streets, and the course and measure of the *Base Line* and the perpendicular line, are to be also separately described in your books.

The *width* of the Mississippi river in front of those towns situated thereon, is to be accurately determined, and the opposite bank as well as the channel of the river, and any Islands therein near the Towns, accurately laid down on the map of such towns. And in

your field books give particular topographical description of the site of each town, and the river bank and landing in front thereof.

At those towns on the river, where there have been public surveys made on the opposite side, you are to make an accurate connection between some given point in each town, to some known corner of the public surveys on the opposite side of the river.

The plats which you shall obtain of the original survey of the Towns, you are to return to this Office, with your returns of your own work. Fair and accurate plats of each town which you shall survey, to be drawn on thick good paper, on a uniform scale (say 200 feet to an inch) are with your field notes, to be returned to this office.

Under the 2nd section of the Act under which those surveys are to be made, it is made (the duty of the Surveyor General to class the lots *already surveyed*) in each town, (into three classes according to the relative value thereof, on account of situation and eligibility for business without regard to the improvements made thereon).

To enable the Surveyor General to make a just and proper classification of the lots, you are to make a true and impartial valuation of *each lot* which may be subject to entry, under the provisions of the said Act, prior to the public sale. You will enter those lots in a separate list, in your field book of each Town, with the valuation thereof, the nature of the improvements thereon and the names of the claimants, accompanied with a written report.

SURVEYOR GENERAL'S OFFICE
Cincinnati, Oct. 9th, 1836

(Signed) ROB'T. T. LYTLE
Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK A: 147, 1836

ORSON LYON:

Your district of Township lines, in the late Sac & Fox cession West of the Mississippi is that portion of the tract which lies *North* of (and including) the line dividing the 88th & 89th tiers of townships North of the Missouri Base Line; which township line will probably be found nearly on the same parallel of Latitude with the North boundary of Illinois.

Mr. Burt is to run up the 5th principal Meridian to the corner of towns. 88 & 89, where he will deliver it to you. He is, however, instructed to run in between towns. 88 & 89, to the Mississippi river, or else continue the 5th Mer. up to the said river; the latter course he will probably pursue, as the termination of the Meridian at the Mississippi river, will probably bring him into the neighborhood of Cassville, where he will expect to find you on his arrival there.

The line between towns. 88 & 89, is to be surveyed with particular care, as it forms a Secondary Base, or *Correction line*, on which the surveys south of it will close; without necessarily connecting at the same town corners.

In the survey of your district, observe the following orders:

From the intersection of the 5th Meridian with the 2nd line of correction, commence and run out, due West, that correction line, between townships 88 & 89, until you reach the last Town Corner towards the Western boundary of the Cession. As this is an important Standard line, and you have no parallel line by which to verify its course or measure, you must be well aware of the necessity of the utmost attention both to the *course* and *measurement* thereon; for an error or mistake in *either*, will be necessarily, more or less extended far into the remainder of the work, and mar its beauty and perplex your operations. Frequent observations for the variations of the compass must be made on this line, and with great accuracy, so as to run it a *true West* course. The *measure* for each range, on this line, will be six miles and two chains; which extra two chains is to compensate for the convergency of the range lines.

As you arrive at, and establish each twp. corner on the correction line, extend from thence the *range line* due north, through town. 89 to temporary town corner, at 6 miles, marking line, and establishing quarter sec. & sec. corners thereon. Having arrived at the last town corner toward the West boundary of the Cession, and run up the range line therefrom, six miles, and establish a town corner there-at; you will run *due East*, a *random* line between towns. 89 & 90 until you shall intersect the Meridian. As you proceed with the random line, you will note your intersection of each range line, and whether, north or south of the temporary post thereon, beginning your measure, anew, from each range line.

From the corner of township 89 & 90 on the Meridian, you will then run a *true line*, west between those townships on such course as will intersect at or near the greatest number of temporary town corner posts previously set, so as to make the twps. as near as may be, six miles in depth; and at the points of intersections of the true line thus run, with the range lines, there establish town corners.

As you proceed West, with the true line, run up the range lines from each township corner as you establish them, to temporary six mile posts, in manner before described. And having run up the range line from the last town cor. to the West, and establish the town corner at the end of six miles thereon; run a *random East* as before and proceed in like manner with the remaining tiers of townships across the district, until the whole be finished.

The small portion of work East of the Meridian, may be surveyed on the same plan.

You will continue the *correction* line out to the Western boundary of the purchase, and ascertain accurately the point at which you intersect it. You will make one other intersection to the *West* boundary, from the nearest town corner to the northern termination of it; and one or two intersections to each of the lines forming the northern boundary of the cession, noting particularly the points of intersection which points should be as near as may be to the angles where those boundary lines intersect each other. The fractional town lines terminating on the Mississippi river must be all closed out to it, and posts set thereon. And from each post where you intersect the river, where there are public surveys on the opposite side, you will give a connection therewith, by course and distance, to some known post on corner of such surveys.

Those navigable streams which may pass through your district, are to have meander posts set on them.

In running these town lines, the *greatest* accuracy is adjoined; both because, to make good subdivisions, the town lines must be well surveyed; and because the subdividing Surveyors will look to the township lines as *examples* for their imitation, and will not fail to find and report to this Office, any inaccuracies or defects which may be in them, particularly in the course and measure of the lines.

You will append to your field notes a description of the country, soil, timber, Mineral advantages etc., for each, separately, so far as you can ascertain the same.

Copies of your field notes must be returned to this Office frequently, with diagrams of the lines, and explanations where needed.

A copy of the field notes of the survey of the Cession, touching your district, is herewith sent. Field notes of the Northern Boundary were not furnished us.

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT T. LITTLE

Cincinnati, Nov. 8th, 1836

Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK A: 149, 1836

HERVEY PARKE:

Mr. Wm. A. Burt has to run up a Standard line between Ranges 4 & 5, through your whole district, which embraces all of the tract lying south of the 1st correction line between towns 78 & 79; which Standard line, it is presumed, will have been commenced by the time you are ready to get to work.

You will run the lines lying East of that Standard line first. Begin at cor. of Towns 67 & 68, Ranges 4 & 5 and run east between Towns 67 & 68 R 4, to the river. If you reach a twp. corner before you touch the river, establish it and continue on the river. But, if you reach the river short of six miles, you had better off-set on section lines (surveying them as you go) until you reach the range line; which run north to temporary twp. corner. Then run *random east* between towns. 68 & 69 to the Mississippi river and correct back. When this line is established or as you return west with it, run up the range line between Rs. 2 & 3, and 3 & 4 to temporary 6 mile posts. Run them a *random East* between Towns 69 & 70, to the river, and as you return on *true line*, run up the range lines as before to temporary 6 mile posts. Proceed in like manner with the remainder. In correcting back, you are to endeavour as much as practicable to preserve the rectilinear figure of the Township, as well as the legal measure of the six miles square, and the lines to coincide with the cardinal points of the compass.

From the termination of every line on the right bank of the Mississippi river, you will (by trigonometry or otherwise) ascertain the course and distance to a point on the

left bank, and from that point determine by running and measurement, the course and distance to the nearest known corner of the Illinois public surveys. This is to be specially attended to, by direction of the Commissioner of the General Land Office, to enable him to make an accurate connection of the surveys on each side of the river, copies of the fractional twp. plats on the Illinois side up to Rock river are herewith furnished to you for that purpose.

The field notes of Keokuks Reserve, and West boundary of the Cession, are not yet received from the General Land Office.

It is expected, I presume by the Commissioner that the Town lines should be run *through* this Reserve, which it is necessary to do to make good work. The field notes of this reserve, will be sent to you at whatever post office you may name for that purpose. Meantime, should you reach the reserve before the field notes come to hand, you will have to ascertain the lines in the best way you can. But it will be advisable to run through the reserve without *blazing* or marking, except making such marks at the Town corners as will enable you to find them at closing. Corners will, of course, be made by you wherever you intersect the Reserve Lines. You will take *notes* on the lines within the Reserve, as in other cases.

Those rivers and bayous which are navigable, you will set Meander posts on. In Running these twp. lines, the greatest accuracy is enjoined, both because it is necessary in making the subdivision, and because Subdividing Surveyors will look to the twp. lines as examples for their imitation; and will not fail to find and report any inaccuracy or defects in them, particularly in the course and measure of the lines.

Instructions for the survey of that part of your district lying west of the Standard line, will be sent with the field notes of the reserve and the west boundary of the Cession.

You will at all convenient opportunities send by mail to this Office, copies of your field notes with diagrams of your lines.

EXTERIOR TOWNSHIP LINES—LETTER BOOK A: 150, 1836

WILLIAM A. BURT:

After you shall have completed the survey of the exterior Township lines *East* of the 5th principal Meridian, you will return to the south side of your district, and extend the lines west of the Meridian. In executing this part of your work, the same method and order is to be observed as was directed for the survey of the Eastern division thereof; which need not be here repeated.

The *fractional* Town lines adjoining the western boundary of the cession are not now to be surveyed; as it is intended to subdivide no fractional Township on that boundary. It will, however, be well to run out to that boundary,—the 1st correction Line, and also the two West lines immediately North & South of the angle in the boundary line, where it intersects the Iowa (or Red Cedar) river. One other twp. line may be run out West of the boundary line—say somewhere about the lower crossing of the Wabesapineca river thereon. These intersections while they will enable you to determine what twp. lines are *entire*; will also enable us to lay down on our maps, the true place of the boundary, relative to our surveys.

You will remember that an *excess* of *two chains* is to be given to the width of each range, on the *Correction line*. And it will be necessary to allow a proportionate excess (corresponding to the natural convergency of North Lines) on the first twp. line run across each range north of Red Cedar river, and west of the meridian of the angle of the boundary line where it crosses that river.

At all these intersections of the boundary line you will be particular to ascertain the points of such intersections. To enable you the more readily to do this, a copy of the field notes of so much of the boundary line as bounds your district accompanies this.

At each intersection of your range lines with the 2nd Correction line, note the distance and course to the corresponding Town corner thereon.

To your field notes append a description of *each Township* separately, as it respects the surface, soil, timber, minerals, etc. as far as you may be able to ascertain or judge. Note, also, the supposed number of inhabitants settled in each Township—with any other information deemed useful or interesting concerning the country or the surveys.

SURVEYOR GENERAL'S OFFICE

Cincinnati, Nov. 16th, 1836

SPECIAL INSTRUCTIONS—LETTER BOOK A: 151, 1836

WILLIAM A. BURT, ESQ.
Davenport
Des Moines, County

Your letter of the 10th Ulto. with the field notes mentioned therein, have been received.

In case you should be driven in from the survey of Town lines by such severity of weather as to arrest your further progress; you are permitted to *subdivide* until you can safely resume the Town lines. If you should avail yourself of this permission, you will, of course, work on the North of the 1st Correction line in your own district of T. lines—unless you should prefer the tract South of that line and East of the 5th Meridian and should take the responsibility of satisfying Mr. Parke for encroaching on his district.

It must, however, be distinctly understood, that the permission here given is to be used only when it is *impracticable* to go on with the Town lines; for you are well aware of the importance of the early survey of these.

If you shall be driven in by the stress of weather, and go to subdividing, immediate notice must be given by you to this office designating the township you may wish to subdivide.

Very respectfully
Sir, Your Obt. Servt.

(Signed) ROB'T. T. LYTLE

SURVEYOR GENERAL'S OFFICE
Cincinnati, Dec. 14th, 1836

TOWN SURVEYS—LETTER BOOK A: 160, 1837

GARRET VLIET:

The Special Instructions given to yourself and C. E. Harrison on the 9th of Oct. last, of which the foregoing is a copy are hereby given to you and made obligatory on you in the execution of the survey of the Towns named in your Contract of the 16th of March, last.

Accompanying this, there are given you copies of the plats of the surveys of the towns of Dubuque & Peru, so far as the defective returns of those surveys filed in this office enable us to make. To these plats some additions are made and shown in red ink; which additions you will make to the survey, making any alterations therein, which, on inspection of the ground may be expediant, for the further improvement of the plans. And in doing this it would be well for you to consult with some of the most intelligent, discreet and disinterested inhabitants.

In the survey of the Town of Belview, Burlington & Ft. Madison, similar consultations should be had with the inhabitants thereof. At each place, lay off a sufficient number of both *In* and *Out lots*, to meet both the present and probable future wants thereof.

As these several Towns are likely to be places of considerable note and important commercial points; and as much depends on the judicious laying out, and accurate survey thereof, you must be well aware of the necessity of a *full, faithful* and *correct* execution of the trust now committed to you.

You will, before commencing the work, carefully and attentively peruse all your instructions, "*General*," as well as "*Special*," and store up everything in your memory so that you may be at no loss in executing *all your requirements* in a faithful and workmanlike manner.

You will make frequent reports of your doings and progress in the work; and likewise advise where to address you from time to time.

SURVEYOR GENERAL'S OFFICE
Cincinnati, March 21st, 1837

(Signed) ROB'T T. LYTLE

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 171, 1837

CHARLES H. FISH:

The district of surveys allotted to you comprises Township Nos. 70 & 71, Range Nos. 1, 2, 3, 4, 5; 6, West of the 5th Principal Meridian, situate in the late Sac & Fox purchase, West of the Mississippi river, in Wisconsin Territory.

These several Townships are to be subdivided into sections, in the Manner directed by the "General Instructions to Deputy Surveyors," a copy of which you have.

The accompanying plat, embraces the Townships composing your district. The lines thereon in red ink have not yet been run; or if run, the field notes thereof have not yet been received at this office. The remainder of the twp. lines have been returned, and from the field notes the length of each line and the variation of the compass by which it was run are laid down on the plat, and on the plat are shewn also the principal prairies, streams, &c.

Fractional township 70 in Range 2 West, will be commenced at cor. of sec. 31 & 32, on the south boundary, from which run the line north between these two secs. to cor. of 29, 30, 31 & 32 which establish. Then run random west between 30 & 31, and correct back. Continue then, north between 29 & 30, and then random between 19 & 30 and correct back as before. Continue in like manner with the Westerly tier of secs. until you finish it and intersect the north boundary of the Township.

Then commence on the south boundary of cor. of secs. 32 & 33, and carry up the second tier of secs., closing on the section corners set in running up the first tier. It is probable that this tier will clear the river. If it should not, you will run out due East to the river, where any section corner in the second tier is cut off.

As the south end of the *third* tier of section will be cut off by the river, it will be necessary for you to run east to the river from the sec. cor. on the second tier, until you get a section corner. From it you will then carry up the remainder of the tier to the north boundary as in the previous cases. The *Fourth* and remaining tiers will be surveyed in like manner.

In township 71 Range 1 West commence on the west boundary at cor. of secs. 30 & 31 and run the line east between these sections to the river, unless you get to cor. of secs. 29, 30, 31 & 32 before you reach the river, in which case you will run up the first tier to the north boundary from such corner.

If the line between secs. 30 & 31 strikes the river, then run the line due east between 19 & 30, on which you will probably reach a section corner. If not run east between 18 & 19. When you establish the 1st sec. cor. on the first tier, then continue that tier up to the north boundary, closing on the west boundary as in the previous cases.

Pursue a similar course in the survey of the remaining tiers in this township.

If the town of Burlington should be laid out and surveyed by the surveyor appointed for that purpose, before you subdivide the twp. in which part of it lies, you must be particularly careful to note your intersections with the boundary lines of the town, and establish posts thereon and measure each way to the first cors. or angles on these boundaries and note the course and distances of such measurements in your field book. Your meanders on the river will commence or close at the upper corners of the Town plat.

From the end of the township line, south boundary of T. 70, R. 2 W (which is in the town of Burlington) you will give by course and distance in the best way you can, an accurate *connection* with some known corner of the public surveys on the east side of the river. And you will also give like connections from at least three or four other points, along the river in your district; and always, if practicable, at the termination of a section line. You will likewise determine and note in your field books, the *width* of the Mississippi at as many points as you can; and also by intersections, (trigonometrically or otherwise) the exact position and size of all the Islands, with a description of them.

The entire township will be surveyed on the plan laid in the General Instructions.

When the field notes of the town. lines of the western part of your district are received, Special Instructions therefor will be sent to you, if needed, with description of section corners. Chacagua river will probably pass through it.

I think you took the measure of the standard chain from here. If not you will have to get it from Mr. Parke, who surveys the town. lines.

Standard paragraph Nos. 3a, 2a, 13a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati, May 3rd, 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 174, 1837

WM. L. D. EWING:

[See p. 260]

The district of Surveys assigned to you, comprise Townships 74 & 75 in Ranges 2, 3, 4, 5, 6, 7, West 5th Principal Meridian, in Wisconsin Territory.

In the subdivision of the fractional Townships in Range 2, on the river, you will make the sections the full measure on the West boundary of those Townships beginning the survey of them on the west sides and carrying the work eastwardly to the river.

The Mississippi river is to be meandered on the right bank, and also the Muscatine slue on both sides together, with any other navigable slues of the Mississippi in your district.

The Iowa and Red Cedar rivers are to be also meandered on both sides, with all Islands in them, which would be saleable or worth the expense of survey.

Standard paragraph Nos. 8a, 15a, 10a, 9a, 1a, 5a, 3a, 7a. [See p. 352]

In the foregoing part of this book of Instructions, you have the description of all the section corners on the twp. lines which have as yet been surveyed with the meander posts on the river, slues etc. The Township lines in red ink on the plat are probably not yet surveyed but doubtless will be before you shall have finished the others. So soon as the field notes of that portion of your Town. lines are received, copies of the notes of the corners thereon with plats and additional instructions, should any appear necessary, will be immediately transmitted to you.

SURVEYOR GENERAL'S OFFICE

Cincinnati, May 9th, 1837

(Signed) ROBT. T. LITTLE

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 176, 1837

W. R. SHOEMAKER :

The district assigned to you comprises Townships No. 78 & 79, in Ranges 1, 2, 3, & 4, and Township No. 78 R 5 West of the 5th Meridian in the Wisconsin Territory, west of the Mississippi river.

The Red Cedar river is to be meandered on both sides, through your district, as also all islands in the same, which you may consider of any value.

Standard paragraph Nos. 8a, 9a, 3a, 4a, 2a, 13a, 7a, 1a. [See p. 352]

The townships represented on the accompanying plat, which have not the variation and length marked on them, are probably surveyed, but the field notes have not been received at this Office yet. As soon as they are received, the description of corners, length of townships, lines, variation &c will be furnished you, together with such further instructions, as may appear to be necessary.

SURVEYOR GENERAL'S OFFICE

Cincinnati, May 9th, 1837

(Signed) ROBT. T. LITTLE

Sur. Gen.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 178, 1837

MOSES M. STRONG :

The district of surveys allotted to you comprises Townships 86, 87 & 88, Ranges 1, 2, 3, & 4 E, and Townships 86 & 87 in R5E of the 5th principal Meridian; situated in the late Sac and Fox purchase west of the Mississippi river in Wisconsin Territory.

Fractional township No. 86, in Range No. 5 East & Township No. 88 in Range No. 4 East, will be commenced at corner of Secs. 31 & 32 on the South boundary, from which run the line north between these two sections to cor. of 29, 30, 31, 32, which establish. Then run random West between 30 & 31, and correct back, then continue, north between 29, & 30, and then random between 19 & 30, and correct back as before. Continue in like manner with the westerly tier of sections until you intersect the Mississippi river.

Then commence on south boundary and cor. of Secs. 32, & 33, and carry up the second tier of secs. closing at the section corners set in running up the first tier. The third and subsequent tiers will be surveyed in like manner.

If the Town of Bellevue, should be laid out and surveyed by the surveyor appointed for that purpose, before you subdivide the Township in which it lies, you must be particularly careful to note your intersections with the boundary lines of the Town., and establish posts thereon, and measure each way to the first corners or angles on those boundaries, and note the course and distance of such measurements in your field books.

In your meander of the Mississippi river, you will note where you enter & when you leave the Town. plat.

As the north boundary of Township 88 is a Correction line, you will measure the north boundary of section 6, in those Townships in Ranges 1 & 2 E.

Standard paragraph Nos. 4a, 2a, 1a, 13a, 3a, 6a, 7a, 9a, 15a, 10a, 16a. [See p. 352]
 SURVEYOR GENERAL'S OFFICE
Cincinnati, May 9th, 1837
 ROBT. T. LYTLE, S. G.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 180, 1837

THOMAS COX:

The district assigned to you comprises Townships Nos. 84 in Ranges 2, 3, 4, 5, 6, 7, E and Townships 85 in Ranges 2, 3, 4, 5, 6, 7, East of the fifth Principal Meridian in the Sac & Fox purchases, west of the Mississippi river in Wisconsin Ter.

In surveying the fractional Township 84 in R7E the entire sections of the west boundary will be made the legal measure as near as may be in closing—and the fractions thrown on the river.

Township 85 in Range 6 E. will be commenced at corner of sections 35 & 36 on the South Boundary, and the first and each successive tier of sections carried up to the river.

Township 85 Range 5 E will be surveyed in like manner, closing on the river and on the North boundary as the case may be.

The right bank of the Mississippi river is to be meandered together with any navigable "Slues" thereof within your district.

The Mequoquitois river is to be meandered on both sides from its mouth up to the line between ranges 2 & 3, which crosses the river just below the forks thereof. The surveyor of the exterior Township lines, however, set meander posts on the South Fork up to the Principal Meridian. If in your judgment it is a navigable stream or may be made so, you will continue the meanders of the South fork to the West boundary of your district, or so far up as you may judge it navigable.

Standard paragraph Nos. 8a, 9a, 15a, 10a, 3a, 4a, 2a, 13a, 1a, 6a, 7a. [See p. 352]
 SURVEYOR GENERAL'S OFFICE
Cincinnati, May 9th, 1837
 (Signed) ROBT. T. LYTLE, S. G.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 181, 1837

BASIL BENTLEY:

The district assigned to you comprises Townships Nos. 72 & 73 Ranges 1, 2, 3, 4, 5 & 6 and fractional Township 74 R1W of the 5th principal Meridian in the Sac & Fox purchase west of the Mississippi river, Wisconsin Ter.

The frac. Townships 72 & 73, in Range 1, will be subdivided by making entire section on the west side thereof, and carrying the work eastwardly to the Mississippi river:

The lines in red ink, have not been run; or if run the field notes thereof have not yet been received at this office.

You will meander the Mississippi in Fractional Townships 74 in Range 1 West, below the mouth of Iowa.

Plat and notes of the corners of the town lines not yet surveyed, will be transmitted to you at Burlington, as soon as the field notes of those shall be received; together with such additional instructions as may seem necessary.

Standard paragraph Nos. 3a, 4a, 2a, 13a, 1a, 6a, 7a, 21a, 12a, 9a, 15a, 10a, 16a. [See p. 352]

SURVEYOR GENERAL'S OFFICE
Cincinnati, May 9th, 1837

(Signed) ROBT. T. LYTLE, S. G.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 183, 1837

WILLIAM A. BURT & ALVIN BURT:

There is assigned to you, jointly, for subdivision into sections Township Nos. 77, 78, 79—in Range No. 1 E., Towns 77, 78, 79, 80, 81, in Range No. 2 E., Towns 77, 78, 79, 80, 81, in Range No. 3 E., Towns 78, 79, 80, 81, in Range No. 4 E., Towns 78, 79, 80, 81, in Range No. 5 E., Towns 80, 81, in Range No. 6 E., & Town 81 in Range No. 7 E.; in the Sac & Fox purchase west of the Mississippi river, as shewn on the accompanying diagram.

The notes of the corners of the Sections and meander posts on the lines run by Mr. Parke are annexed to these instructions.

Mr. Parke has not surveyed the line between ranges 4 & 5 E., Town 78, as he was told you had run it. As you have not returned notes of that line, this is presumed to be a mistake. You will please run that line, & return a copy of the notes thereof to this Office, the first thing you do when you come to the subdivision of your district.

In subdividing 78 in Ranges 4 & 5 E. it will be necessary to begin on the correction line and run *South* to the river. But as the township corners on that line do not coincide, you will have to set new section and quarter section corners on the correction line, for these two towns.

I recommend the following course: Set corners of secs. 5 & 6, T. 78, R. 4 E. at 80 chs. from N.W. corner of that town. Then run down the first tier of sections in that town, to the river, closing at the west boundary, and making full sections therein. Then set cor. of sections 4 & 5 on correction line, and run down the second tier; closing on the first. In like manner proceed till you run down the sixth tier, the north & south line of which you will make the *range line* which Mr. Parke omitted.

Township 78 in Range 5 E. will have to be surveyed in the same manner, beginning on the correction line and closing south on the river. Measure off 80 chains from the N.W. corner of this township and set corner of secs. 5 & 6, and run down the first tier of sections, closing at the corners on West boundary & making full sections thereon. Then pursue a like course with the remaining tiers until finished; and measure from the last section corner on the correction line, to the river.

In the survey of T. 78, R. 3, after running up the three westerly tiers, run a *random* line from cor. of secs. 21, 22, 27, 28, east for cor. of sections 24 & 25 on the range line and correct back from that corner, dividing the measure equally between each of the three miles of that line. From this line finish the remainder of the Township south to the river and north to the correction line.

The townships 77 in Ranges 1, 2, & 3 will be run south from the north boundary to the river.

In closing West, to the 5th Meridian in Towns 77 & 78 Range 1 E. you must close by *true* lines, establishing in the corners on the Meridian when you intersect it; as there is a jog of nearly 12 chains in the Town corners on the Mer. between these two towns and the corresponding towns in Range 1 West.

Town 81 Range 6, may be surveyed something like Town 78, R. 3.

Town 79 Range 5 E. will be commenced on the West side, making full sections thereon, and working east to the river.

The Wabispinie river on both sides, the Mississippi river on the right bank, and all its navigable slues or bayous, are to be meandered.

Standard paragraph Nos. 17a, 10a, 6a, 1a, 3a. [See p. 352]

You will receive, also, herewith, copies of the plat of the survey of two sections reserved for Antoine Le Clair, one opposite Rock Island and the other at the head of Rock Island Rapids. You will close your surveys round these reserves; and from each intersection of the lines thereof, measure thereon to the corners of the reserves, S.W.

SURVEYOR GENERAL'S OFFICE

May 13, 1837

(Signed by) ROBT. T. LYTLE, S. F.

SAML. WILLIAMS

Chf. Clk.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 186, 1837

THOMAS BROWN:

There is assigned to you for subdivision into secs. of Townships Nos. 76 in Ranges 1, 2, 3, 4, 5, & 6 and Township 77 in Ranges 1, 2, 3, 4, 5, all west of the 5th principal Meridian in the late Sac and Fox purchase in Wisconsin Territory, as shewn on the diagram hereto prefixed.

The accompanying book contains the descriptions of the section corners and meander posts on the Town lines, taken from the field notes thereof.

The Red Cedar and Iowa rivers, the Muscatine Slue and any other navigable slues in your district and the right bank of the Mississippi river are all to be meandered.

Standard paragraph Nos. 17a, 10a, 6a, 1a, 2a, 3a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

Cincinnati, May 16th, 1837

(Signed) ROBT. T. LYTLE, S. G.

by: SAML. WILLIAMS, Chf. Clk.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 187, 1837

PERRIN KENT:

The district assigned to you embraces Townships No. 68 & 69 Ranges 2 & 3 West-- and Townships Nos. 67, 68, & 69 in Ranges 4, 5, 6, & 7 West of the 5th Principal Meridian in the late Sac & Fox purchase West of the Mississippi river in Wisconsin Ter. which several Townships are to be subdivided into sections.

The accompanying diagram shews the length of the lines and variation of the compass thereon; with the streams, principal prairies etc. on the lines already surveyed. The lines shewing no length nor variation are probably before now surveyed, but the field notes thereof are not yet received. So as soon as they are, the notes of the corners with additional instructions will be sent to you at Madison, in your district, unless you should name some other Post Office more convenient to you.

Fractional Township 69 in Range 2 W, will be surveyed by making full Sections on the West boundary and carrying the work eastwardly to the river.

Fracl. Township 68 same R. will be surveyed in the same way, except that it is to run South from the North boundary thereof,

The fract. township 68 in Range 3 W, will be surveyed South from the North boundary closing South on the Mississippi river.

Fractional Townships No. 67 in Ranges 4, 5, 6 & 7, West will also be surveyed South from the North boundary closing on the North boundary of the Half breed tract; a copy of the field notes of so much of which as bounds your district is sent herewith.

In township 68 Range 4 W, Mr. Parke (who runs the town lines) had to survey the lines between sections 35 & 36 in order to get over to the Range line. You will therefor commence the first tier of sections at Mr. Parkes corner of sections 25, 26 35 & 36 where the bearings are, W Oak 10 S. 60½ W 31 & Do. 12 N 56 E 46. And leave two blank pages for the two lines run by Mr. Parke.

You will meander the Chicagua (or Skunk) river on both sides together with all the Islands therein which would be saleable or worth the purchase.

Standard paragraph Nos. 21a, 15a, 10a, 1a, 2a, 3a, 4a, 5a, 6a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

ROBT. T. LYTLE, S. G.

Cincinnati, May 18th, 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 190, 1837

URIAH BIGGS:

[See p. 255]

The district assigned to you, comprises twps. 67, 68 & 69 Range 8, twps. 67, 68 & 69, R. 9; twps. 67, 68, & 69, Range 10, twps. 67, & 68, Range 11—situate West of the 5th Principal Meridian in the Territory of Wisconsin.

The exterior Town lines of your district are most probably surveyed ere now, altho the field notes thereof are not yet received. They are, however daily expected. When received, the notes of the section corners and meander posts thereon, will be sent to you at Madison, which is in Mr. Kent's district, adjoining yours—unless you should name some other Post Office, more convenient to your work. It is not probable you will find many of the posts on the twp. lines removed—perhaps none. Should there be any, the bearings taken at the corners will be important for you to have to restore the posts to their proper places.

The fractional twps. 67 in Ranges 8, 9, 10 & 11 adjoining the north boundary of the State of Missouri, and the Sac and Fox Half-breed Tract, are to be run *South*, commencing on the township line between twps. 67 & 68. A plat of a portion of Missouri Surveys, adjoining the north boundary of that State accompanies this. But we have no field notes of that boundary line, or of the Missouri surveys. You will nevertheless be particular to note the points of intersection of the boundary line in reference to the Missouri Surveys, or the mile posts.

The Des Moines river is to be meandered on both sides, throughout your district; together with all islands therein which contain tillable lands, or may be worth the expense of the survey. You will give connections of the meanders of all such islands with the surveys on the main.

Standard paragraph Nos. 1a, 3a, 7a. [See p. 352]

I recommend an attentive and careful re-perusal of the "General Instructions to

Deputy Surveyors," and to make *everything* therein familiar to you, and treasure them up in your memory so as to be at no loss when occasion calls for a practicable observance of the requirements. For you will bear in mind that loose, inaccurate precipitate or defective work either as it respects the Surveys in the field, or the notes and returns thereof on paper (hand) *Will not be admitted.*

SURVEYOR GENERAL'S OFFICE

Cincinnati, May 23rd, 1837

(Signed) R. T. LYTLE, S. G.

By: SAML. WILLIAMS, *Chf. Clk.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 192, 1837

EBNER F. LUCAS:

[See p. 254]

The district assigned to you comprises twps. 70 & 71, 72 & 73, R 7, twps. 70, 71, 72, & 73, R 8, twps. 70 & 71 of R 9—all West of the 5th Principal Meridian in the late Sac & Fox purchase West of the Mississippi river in Wisconsin Territory.

The returns of the survey of the exterior boundaries of the twps. are not yet received, of the twps. in your district; but are new daily looked for. The section cors. on the twp. lines cannot therefor be furnished to you yet. When the field notes of these lines are received, the bearings for the corners will be sent to you at Madison, which is in Mr. Kent's district, unless you name some other Post Office more convenient to your work.

Should you commence the surveys before you receive from this office the notes of the cors. and plat of the lines, you will have to be careful to ascertain the exact course of the east boundary of the townships you work in and adjust your compass, so as to run parallel therewith.

The principal advantage that the plat of your district and the notes of the cors. on the twp. lines, would be to you, is to shew you the length of each line and the variation of the compass by which it is run; and to enable you from those notes to find the place of the posts, should any of them in the meantime be removed, as they sometimes are by the Indians or other ill-disposed persons.

It is probable that the Chicagua (Skunk) river will pass through your district. If Mr. Parke, Surveyor of Twp. lines should consider it navigable, he will set meander posts where the twp. lines cross. In that case, should you concur in that opinion, you will meander it on both sides, as high up as in your judgment, it may be considered navigable. And if it should happen that a bend of the Des Moines river passes through any of your Townships you will meander it on both sides. Special care is necessary in the meanders to avoid error.

All islands in streams that are meandered which contain tillable land, or are worth the cost, are to be meandered, giving a connection with some corner on the right or left bank of the river or with some definite point of the meanders of the river.

Standard paragraph Nos. 3a, 13a, 7a, 8a, 1a. [See p. 352]

SURVEYOR GENERAL'S OFFICE,

Cincinnati, May 22nd, 1837

ROBT. T. LYTLE, S. G.

By: SAML WILLIAMS, *Chf. Clk.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 193, 1837

JOHN WHARRY:

The district assigned to you comprises twps. 82 & 83 in Rs. 2, 3, 4, 5, 6, & 7 East of the 5th Principal Meridian, in the Wisconsin Territory, West of the Mississippi river.

In surveying the fractional twps. on the Mississippi in Range 7, you will make entire or full sections on the West boundary, carrying the excess of deficiency into the fractional sections on the river.

Standard paragraph Nos. 21a, 8a, 9a, 15a, 10a, 3a, 4a, 2a, 13a, 1a, 6a, 7a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

Cincinnati, May 30th, 1837

(Signed) ROBT. T. LYTLE, S. G.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 196, 1837

GEO. C. VAN ZANDT:

The district allotted to you comprises twps. 80 & 81 in R 1 E twps. 80 & 81 in R 1 W, twps. 80 & 81 in R 2 W, twps. 80 & 81 in R 3 W. Twps. 80 & 81 in R 4 W. Situate West of the Mississippi river in Wisconsin Territory.

The Wabisipinie and Red Cedar rivers are to be meandered on both sides throughout

In your district, together with any islands therein which may contain tillable land and be worth the expense of survey; taking care to give connections from such islands to the main.

The angle in the western boundary line of the Sac & Fox purchase is near the centre of the N.W. quarter of sec. 19 twp. 81 in R 4 W, whereby a small part of that section and a few acres in sec. 18, same twp. are cut off, as shewn by the diagram on the sheet containing the twp. lines of your district. You will close your surveys on these Indian boundary lines thus: When you run West between secs. 18 & 19 to the boundary lines which runs N 29°, 16 W estab. a corner thereon, and measure along southeasterly to the angle and northwesterly to the range line, giving the measure each way. You will close the meanders of the river at the posts set on the boundary line running N 28 E and measure from post on the left bank to the range line. It would be desirable to have the meanders on both sides up to the range line. But as that small portion is Indian land I cannot pay for doing it.

Should you find any settlers on your district, you will note their improvements and houses, shewing their exact situation, and the names of the settlers.

Standard paragraph Nos. 3a, 13a, 7a, 6a, 8a, 9a, 14a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LITTLE, S. G.

Cincinnati, June 8th, 1837

EXTENDING TOWNSHIP LINES—LETTER BOOK A: 199, 1837

PERRIN KENT:

For extending twp. lines on the Des Moines river, in Wisconsin Territory, left unfinished by H. Parke. [See p. 241]

The exterior twp. lines on and southwest of the Des Moines river were left unsurveyed by Mr. Parke; the instructions for that part of the work having failed to reach him by mail as it was late in the progress of the other work before the orders were received from the Government for surveying those twps.

As you are somewhat more experienced in this line of business than Mr. Biggs the Surveyor of these twp. lines is committed to you.

The lines on which the length and variation of the compass are laid down are those which Mr. Parke has surveyed, and the dotted lines are those which are to run now by you.

The following method is perhaps the most proper to survey these lines and is recommended to you.

Commence at the cor. twps. 69 & 70 Rs. 9 & 10, and run the range line through twp. 69 south six miles, setting the posts as you proceed. Then from the twp. cor. at the south end thereof, run a *random* line east across range 9 between twps. 68 & 69 and correct back. Next, run the range lines *south* thru' twp. 68—between ranges 8 & 9, and 9 & 10, to six mile posts, and estab. them. Then run *random east* between twps. 67 & 68, Rs. 8 & 9 and correct back on true line. From the twp. cors. last set, continue then the range lines through twp. 67, and between Rs. 8 & 9, and 9 & 10 until you intersect the north boundary line of the state of Missouri.

Having completed these lines, you will then, from corner of twps. 67 & 68, Rs. 9 & 10, run due west twp. lines across Rs. 10 & 11, marking as you proceed, and allow at the west end of each twp. line an excess of *two chains* over the six miles, to compensate for the convergency of the range lines when hereafter extended to the 1st Correction line.

After running the fractional range lines south through twp. 67 to the State line of Missouri, you will extend them *north* through twp. 68 and close by *random line east*, corrected back west, and lastly, run up north, the line between Rs. 10 & 11, Twp. 69, and from the twp. cor. at the end thereof, run *random east* across range 10 and correct back west.

You must be careful that the courses of these lines—the range lines especially, be run by the *true Meridian*: for which purpose very accurate observations must be made by you to determine the amount of the magnetic variation.

Meander posts are to be set on the Des Moines river; and at each intersection of the north boundary of the State of Missouri, you must measure and note the distance to the nearest mile post set thereon.

The northwest corner of twp. 68, R 11 may possibly be a short distance over the western boundary of the Cession. This you will be careful to ascertain, and if so, accurately note the points on the twp. line where it intersects them and set posts thereat.

And you will particularly note the distance of one at least of these intersections from the nearest *mile post* of said boundary. If this town. corner should fall *within* that boundary line, you will then run the twp. line out due west, until you intersect the boundary and establish post and measure to the nearest mile post thereon.

You will furnish to Mr. Biggs the bearings at the section corners, and meander posts on the twp. lines, so that if any of the posts should be removed, or their places altered, he can restore them. [See p. 255]

Your field notes of the twp. lines are to be kept in a separate book, and when you finish them transmit a copy thereof by mail to this office with a plat or diagram.

While you are engaged in this work, Mr. Biggs can subdivide one of *your* twps. in *lieu* of this work; as he will have but nine twps. in his own district, and the twp. lines will make upwards of 90 miles of addition to your work.

You will please survey these twp. lines the first work you do, as Mr. Biggs has but one twp. ready to subdivide. You will be allowed \$3.50 per mile for this work. And as it is in Mr. Parke's contract, your certificate at the end of your field notes thereof will state that those lines by you for Hervey Parke, D. S.

SURVEYOR GENERAL'S OFFICE
Cincinnati, June 27th, 1837

ROBT. T. LYTLE
Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 201, 1837

PERRIN KENT:

The foregoing are the notes of the corners of secs. on the twp. lines of that part of your subdivision district which lies west of the standard Meridian, between ranges 4 & 5 west of the 5th Meridian.

Skunk river will be meandered up to where it enters your district as there are a number of settlers on your district, and it may be that some evil disposed persons may remove the posts on the twp. lines, (as has been done already in some cases north of you), you will see that the posts are all *right* before you use them.

You will be attentive to note the improvements, both houses, enclosures etc. with their proper situation, and the names of the occupants or settlers; and lay them down neatly and accurately on your diagrams.

In closing south to the north boundary of the Half Breed tract, you will take and note the distance from every post you set thereon to the corresponding corner of the Half Breed tract; a corrected map of the north part which accompanies this.

Copies of the twp. plats of the fractional twps. on the *Illinois* side of the Mississippi river, and *opposite* to your district, accompany this also. These will assist you in making the connections with the surveys on that side of the river; which duty you will attend to without fail.

There will be sent hereafter, as soon as it can be made out, a copy of the field notes of the survey of the north boundary of the Half Breed tract.

SURVEYOR GENERAL'S OFFICE
Cincinnati, June 27, 1837

ROBT. T. LYTLE
Sur. Genl.

ADDITIONAL INSTRUCTIONS FOR SUBDIVIDING—LETTER BOOK A: 202, 1837

E. F. LUCAS:

The foregoing pages contain the description of the corners of Secs. and the Meander posts, on the exterior twp. lines. These by a little attention, you will readily understand.

Mr. Parke, who surveyed the Town. lines, set Meander posts on Skunk river at every crossing of the twp. lines. You will therefore meander it through your district. I again call your attention to the special care which is requisite in this kind of work.

Standard paragraph Nos. 6a, 3a. [See p. 352]

There does not appear to be anything else necessary to add, as your Instructions sent on the 22nd May, with the foregoing, contain all that you need.

Report your progress frequently to this office.

A plat of your twp. lines with their *length*, & the variation of the Compass is prefixed.

SURVEYOR GENERAL'S OFFICE
Cincinnati, June 27, 1837

ROBT. T. LYTLE
Sur. Genl.

ADDITIONAL INSTRUCTIONS FOR SUBDIVIDING—LETTER BOOK A: 203, 1837

URIAH BIGGS:

The Special Instructions sent to you, under date of the 23rd May, advised you that the return of the twp. lines had not been made to this office. Mr. Parke, the Deputy who was charged with that work, had lately come in with the field notes of his surveys; but he has not surveyed the Town lines on and south of the Des Moines river; the instructions for that part of the work having failed to reach him by mail. The few lines of his Surveys which are in or bounding your district are shewn on the accompanying diagram by black lines, on which the length, and variation of the compass are laid down. The *dotted* lines are those which are not yet surveyed.

As Mr. Kent has more experience in this kind of work, I have instructed him to extend those twp. lines in your district the first work he does, and to furnish you the bearings at the section corners, and meander posts, with the length and variation of the lines. [See p. 253]

It is found by Mr. Parke's returns, that the northwest part of *twp. 70 R 10 W*, is cut off by the Indian boundary. As the instructions of the Government *reserve* the fractional twps. on that boundary from subdivision, this twp. which is in your contract will have to be omitted. You will please, therefore, strike it from your contract.

To make up the loss of this twp., I have requested Mr. Kent to assign to you the Subdivision of one of his twps., while he is running your twp. lines; for which twp. payment will be made to you.

When you subdivide the fractional twp. 67 R 8 W you will set posts on the north boundary line of Missouri and the Half Breed Tract, where it strikes the right and left bank of the Des Moines river; and from thence, measure each way, along that boundary to the first section or town line post thereon for our surveys and note the distances in your field book.

You will note in your field books, on every line which crosses them, the bluffs or high lands in rear of the bottoms of the Des Moines river; and delineate or mark the course thereof accurately on your diagrams. And you will, in your meander make special note of the *Rapids* of that river; and in your field book give a particular description thereof.

Standard paragraph No. 4a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

Cincinnati, June 27th, 1837.

(Signed) ROBT. T. LYTLE, S. G.

by—SAML. WILLIAMS, *Chf. Clk.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 213, 1837

WILLIAM GORDON:

The district of survey allotted to you, consists of fractional twp. 93 in range 2 W—fractional twps. 93, 94 & 95 in R3W, twps. 92, 93, 94 & 95 in R4W, twps. 92, 93, & 94 in R 5W, situate north of the Base line and west of the 5th Principal Meridian, in the Territory of Wisconsin, and west of the Mississippi river. The accompanying diagram exhibits the survey of the exterior twps. lines with the length of each line in miles, chains & links, the variation of the compass by which they were run, and the principal streams, etc. You are also herewith furnished with the bearings at the several section corners and meander posts on the twp. lines, which will enable you to replace the posts in their proper positions, should any of them be removed.

Each of the fractional twps. 93 in R 2 and 94 & 95 R3, have the south boundaries thereof measured eastwardly to the river. You will, in each of these three fractional twps. commence the survey at the east sides thereof, making the sections on the west boundary full measure, throwing the closing lines on the river.

T. 93 in R. 3 will be commenced on the East side, and the measure carried west to the west boundary, as in entire townships; and the surveys are to be made in conformity to the "General Instructions to Deputy Surveyors."

The Mississippi river is to be meandered on its right bank, along the whole front of your district, and the Turkey river on both sides.

From at least two points in each fracl. Township on the river, (except T. 93 R. 3) you will give by course and distance, in the most approved method, *accurate connections* with some known corners on the Public Surveys in the opposite side (or left Bank) of the river, and always, if practicable, from the termination of your section lines. You will

likewise determine, and note in your field book, the *width* of the Mississippi river at as many other points as may be practicable.

There is a tract of 5760 acres (or 6808½ arpents) of land, on the west side of the Mississippi river, opposite to the village of Prairie du Chien, which was confirmed to Basil Gard under the Provision of an Act. of Congress; and now claimed by his heirs and legal representatives. A plat of this tract has been filed in this office by them, a copy of which is herewith furnished to you. By the plat, it seems that there has been once a survey made; but no field notes of any such survey have been produced. The tract, you will see, calls for a front of one mile and a half on the river, and extending back, due west, the same width, six miles. You will ascertain its location and boundaries. And make an *accurate resurvey* of the whole tract, in accordance with the copy of the plat, herewith sent. Your field notes of this survey are to be taken in a *separate book*, and returned with your field notes of the township in which it principally lies, supposed to be T. 95 R. 3 W.

Your subdivision lines around this tract, are to be closed on the boundary thereof, and corners established at each intersection. And from each corner of the claim, measure along the lines thereof to your nearest intersections of the section lines. The surveyor of the township lines has not noticed the lines of the claim. You will therefore measure from his nearest sec. corners on each side of the claim, to where his lines intersect the lines of the claim, and there establish corners, and note this in your field book.

You will receive herewith copies of the plats of the Public Surveys on the east side of the Mississippi river opposite to your work, and of the private claims at Prairie du Chien; to enable you more readily to make the connections hereinbefore required.

Standard paragraph Nos. 7a, 3a, 10a, 1a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati, July 22d, 1837

(P. S. You will note and represent on your diagram the bluffs in rear of the Mississippi bottoms)

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 216, 1837

ANDREW PORTER:

The district assigned to you consists of Towns 89, 90, 91, 92, in Range 3 West, Towns 89, 90, 91 in range No. 4 West. Towns 89, 90, 91 in range 5 W. and Town 89 in range 6 West, situated West of the fifth Principal Meridian in the Territory of Wisconsin.

And with this you will receive a little book, containing the bearings at the section Corners on the Township lines, by which you can find the exact place of, and replace any posts which may be removed from their proper place, or destroyed. You will always examine the Corners to ascertain that the posts are in the exact points where originally set by the surveyor of the Township lines: for they are *sometimes moved* by interested persons.

The Turkey river is to be meandered on both banks through your district: the notes of the meanders in each town to be with the field notes of the subdivisions thereof. Your *special care* is necessary on this part of the work; for it is in taking meanders, that errors are most frequently committed.

I would advise likewise that special attention be paid to that part of your General Instructions, which relates to establishing corners in prairies, to see that your *posts* are all of the required size, and your mounds of the prescribed dimensions and description.

Standard paragraph Nos. 8a, 1a, 6a, 13a, 3a, 7a, 9a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati July 26, 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 217, 1837

JAMES VIDETO:

The district allotted to you, comprises Towns 90, 91, 92, in Range 6, Towns 89, 90, 91, 92, in range 7. Towns 90, 91, 92, in Range 8, West of the Fifth Principal Meridian, Territory of Wisconsin.

The accompanying diagram of your district shews the length of each line, with the

variation of the compass thereon, and streams, prairies &c and the subsequent pages contain the bearings at the sec. Corners on the town lines.

Special attention must be paid to that part of the General Instructions which relates to establishing Corners in prairie; to see that your posts are all of the required size and length, and your mounds of the prescribed dimensions & description.

Standard paragraph Nos. 13a, 3a, 7a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati, July 28, 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 218, 1837

HERVEY PARKE:

The district allotted to you comprises Towns 89, 90, 91, in Range 1 East, Towns 89, 90, 91, in range 2 East Town 89, in Range 3 East, Towns 88, 89, 90, 91, in range 1 West, Towns 89, 90, 91, 92, in Range 2 West, situated north of the Base line, and East & West of the Fifth Principal Meridian, in the Territory of Wisconsin, West of the Mississippi river, as shewn on the accompanying diagrams.

The Mississippi river is to be meandered on the right Bank, and the Turkey river on both sides. You will also meander all the Islands in the Mississippi River opposite to your district, which would probably be worth the expense of surveying; and give connections of such Islands with the surveys on the right bank.

All navigable *Bayous* (or *Slues* as they are called) are also to be meandered.

From at least one or two points in each fract. Township on the river, from the termination of a section or town line, you will, give by course and distance, in the best way you can, accurate connections with some known corners of the public surveys on the *left* bank of the river, and particularly with the termination of the *Base line* (or boundary and Wisconsin Ter.)

Standard paragraph Nos. 10a, 1a, 6a, 3a. [See p. 352]

The towns of *Dubuque* and *Peru* will probably be surveyed shortly. You will be careful to note and establish posts at the intersections of the boundary lines of these towns, and from such intersections measure each way to the first corner or angles of those boundaries. And you will retrace the boundary lines of the towns, making notes thereof, and giving the courses and measurements thereof, and in your meanders of the Mississippi river you will note where you enter and leave the town limits.

From corner of sec. 5 and 6, on north boundary of T. 88 N R. 1 West, measure west on correction line to N. W. Corner of that township.

The Bearings at the sec. corners, and meander posts on the town lines of your district are sent herewith. You have also, herewith, copies of so much of the plats of the surveys on the left bank of the Mississippi river, as you may need in making your connections therewith.

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati Aug. 3, 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 218, 1837

CHARLES F. LEGATE:

The district allotted to you comprises Towns. 84, 85 in range 1 *East Fifth* principal Meridian Town. 84, 85, 86, 87 in Range 1 *West* said Meridian, and Towns. 84, 85, 86, 87 in range 2 West said Meridian in Wisconsin Territory.

Standard paragraph Nos. 7a, 9a, 14a, 3a, 19a. [See p. 352]

The Mequoquoetis river is to be meandered on both sides up to its most southerly crossing on the Meridian. And you will note in your field books, and mark on your diagrams, the bluffs in rear of the bottom lands on this and the other principal streams.

SURVEYOR GENERAL'S OFFICE

(Signed) ROBT. T. LYTLE

Cincinnati Aug. 1st 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 220, 1837

MIL0 JONES, D. S.:

The district allotted to you comprises Township 88, Range 2 West, Townships 87, 88, Range 3 West, Townships 87, 88, Range 4 West Townships 87, 88 Range 5 West, Townships 87, 88 Range 6 West Township 88, Range 7 West, situate north of the Base line,

and west of the Fifth Principal Meridian, in the Territory of Wisconsin—west of the Mississippi River.

Note in your field books, and accurately delineate on your diagrams, the bluffs in the rear of the bottom lands on the Mequoquitois and other principal streams.

From the corners of sections 5 & 6 established by you on the correction line, in each of the towns No 88, you will measure and note the distance west along the correction line, to the N.W. corner of each of those towns.

Standard paragraph Nos. 3a, 19a, 7a, 14a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

Signed ROBT. T. LYTLE

Cincinnati Aug. 4th 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 223, 1837

JOHN T. HAIGHT:

The district allotted to you comprises Townships 84, 85, 86 in range 3 west, Townships 84, 85, 86 in range 4 West, Towns. 84, 85, 86, in range 5 West, Town 86 in range 6 West.

Standard paragraph Nos. 20a, 7a, 18a, 6a, 14a, 11a, 3a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

ROBT. T. LYTLE

Cincinnati Aug 7 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 224,

MR. WILLARD BARROWS:

I herewith transmit to you a contract, in duplicate, for subdividing a district in Wisconsin Territory, West of the Mississippi river, which you will please sign on your part with two responsible securities to the bond, and return one of the duplicates by mail to this office without delay.

I transmit to you herewith, also, Special Instructions concerning your district, diagram, notes of Corners, deputation and a printed copy of the "General Instructions to Deputy Surveyor" with a manuscript supplement thereto.

SURVEYOR GENERAL'S OFFICE

ROBT. T. LYTLE

Cincinnati Aug. 4th 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 224, 1837

WILLARD BARROWS:

The District allotted to you comprises: Towns 82, 83 in Range 1 East; Towns 82, 83 in Range 1 West; Towns 82, 83 in Range 2 West; Towns 82, 83 in Range 3 West; Towns 82, 83 in Range 4 West.

Standard paragraph Nos. 20a, 7a, 18a, 6a, 14a, 11a, 3a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

ROBT. T. LYTLE

Cincinnati Aug. 7th 1837

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 225, 1837

JOHN T. HAIGHT:

The district allotted to you comprises Townships 84, 85, 86 in range 3 West, Townships 84, 85, 86 in range 4 West, Towns. 84, 85, 86 in range 5 West, Town. 86 in range 6 West.

Standard paragraph Nos. 20a, 7a, 18a, 6a, 14a, 11a, 3a. [See p. 352]

SURVEYOR GENERAL'S OFFICE

ROBT. T. LYTLE

Cincinnati Aug. 7, 1837

SPECIAL INSTRUCTIONS—LETTER BOOK A: 233, 1837

SAMUEL GOODNOW:

For finishing B. Bentley's District in Wisconsin Territory. [See p. 249]

The foregoing pages contain a copy of Mr. Bentley's field notes of the first four tiers of section lines in T. 72 N. R. 3 W., which tiers you have to resurvey in consequence of the excessive divergency in the first Tier. A diagram of this township accompanies this,

which shews the length of the lines. The *average* measure of the *five* most easterly tiers, is placed on the right hand of the diagram, and in resurveying, it will be your aim to make the tiers as nearly as practicable, about the width indicated thus in the margin of the diagram. It is expected that the E. & W. section *lines* need not be altered; but the post and mounds thereon moved the proper points. After running up the four tiers as directed, you will move the qr. sec. posts on the *fifth* tier to average distance between the new sec. corners on the east side of that tier, and the old ones on the West.

In doing this work you must destroy all the cancelled corners and marks; and you must take full notes of your work, as though it were an original Survey; noting however, the *old* corner posts as you pass them.

The corrections of other towns will be made according to the memorandums given you at the office.

These corrections you will make the first work you do, and send in the notes thereof, each township separately.

The Special Instructions given to Mr. Bentley you will consider as addressed to yourself.

You will keep this office advised of your progress in the work.

SURVEYOR GENERAL'S OFFICE

Cincinnati Sept. 22nd, 1837

(Signed) ROBT. T. LYTLE, S. G.

SAML. WILLIAMS

SPECIAL INSTRUCTIONS—LETTER BOOK A: 235, 1837

The POSTMASTER
Davenport

About the 7th or 8th of Aug. last, there was mailed here, for your office, a packet addressed to "Williard Barrows," the receipt of which he has not yet acknowledged, and which packet it is supposed, has either been lost in the mail, or has not been called for.— If it still remains in your office, be please to deliver it to the bearer.

I am sir your Obt. Servt

SURVEYOR GEN'L'S OFFICE

Cincinnati Oct 19 1837

(Signed) SAML. WILLIAMS

Chf. Clk.

SPECIAL INSTRUCTIONS—LETTER BOOK A: 236, 1837

IRA B. BRUNSON:

You have been appointed a Deputy Surveyor of public land under the direction of this office; and you will herewith receive a Deputation as such, with a printed Copy of the "General Instructions to Deputy Surveyors."

A district of ten Townships, to be subdivided into sections, was assigned early in Aug last, to Mr. Williard Barrows, of Davenport Wis. Ter, but nothing has since been heard of or from him.

Your father (Rev'd. A. Brunson) has been requested to call at the Post Office in Davenport, and enquire for a packet addressed to Mr. Barrows from this office, containing his Contract, Special Instructions, &c. If the packet should be found there still, you are hereby authorized to open it, and consider the Instructions therein as addressed to yourself; and you will in that event, proceed to execute the survey of the townships therein allotted to the said Barrows, and in the manner prescribed in the said instructions.

To provide for the contingency before mentioned and that no time may be lost, I here send you a contract for the same district, filled up with your names, to be signed by you as Mr. Barrows was directed to do in relation to his, and one duplicate returned to this office immediately.

I am, very respectfully

SURVEYOR GENERAL'S OFFICE

Cincinnati Oct 19, 1837

Sir your Obed. Servt

SPECIAL INSTRUCTIONS—LETTER BOOK A: 246, 1837

MR. WILLARD BARROWS

By some mistake, it appears your contract dated 29th of July last had been misplaced and put upon a packet addressed on the same day to another Deputy—John T.

Haight of Oak Creek, Wisconsin Ter. who has but lately received it by mail, and returned it to this office. And I presume his contract had been, by the same inadvertence put in your packet which the postmaster at Davenport informs has but lately arrived at his office, and which you have no doubt received—This packet however, contains, I expect your own proper instructions, plat, notes of corner &c. for the district intended for you.

I now enclose a contract bearing the date of this letter, which you will please sign on your part, with two good and sufficient securities on the bond, and return one of the duplicates by mail to this office without delay.

As there has been so much delay, by the circumstances above mentioned, in commencing the survey of your district, you will please lose no time in executing the work.

I am very respectfully

Sir, Your Obedt. Servt.

(Signed) ROBT. T. LYTLE

SURVEYOR GENERAL'S OFFICE

Cincinnati Nov 21st 1837

SPECIAL INSTRUCTIONS—LETTER BOOK A: 248, 1837

DANIEL BREWER:

From the terms in which your character and qualifications as a skilful, practical surveyor, are spoken of by Genl. Ewing of Vandalia, Ills. the Surveyor General has appointed you to be one of his Deputy Surveyors, and I herein enclose you a Deputation as such.

Genl. Ewing has, by consent of the Surveyor General, relinquished the surveying of five townships of his contract west of the Mississippi river; and learning that you reside adjacent to them, the Surveyor General has allotted those five to you, to subdivide. A contract in duplicate accompanies this, embracing those townships. You will please sign the contract and bond, with two responsible securities to the latter, with witnesses to each, and return one of the duplicates immediately by mail to this office.

Genl. Ewing is instructed to hand over his "General" and "Special" Instructions, and all the papers in relation to the surveys, which were furnished to him from this office. And you will be governed strictly by those instructions, in the execution of your work.

You will transmit to this office, by mail, *copies* of the field notes of each of the first three towns, which you shall survey; and when the whole is finished, return into this office the *original* notes of the whole.

Please inform us at what post office to address you.

I hope it is not necessary to remind you that a faithful and correct execution of this work, in all respects according to the instructions, is expected and *will be required* at your hands.

Very respectfully

Sir your Obt. Servt.

(Signed) ROBT. T. LYTLE, S. G.

by SAML. WILLIAMS

Chf. Clk.

SURVEYOR GENERAL'S OFFICE

Cincinnati Nov. 30 1837

SPECIAL INSTRUCTIONS—LETTER BOOK A: 250-1

MR. WILLARD BARROWS

Rockingham

Your letter of 10th ult. has been handed by Mr. Sullivan, together with the written contract, in duplicate made out and signed on your part.

The return of *your* contract by Mr. Haight (to whom, by the same inadvertence, it had been sent) led to the conclusion that his had been put up in your packet.

On the 21st ult. a new contract was made out, signed on the part of the Surveyor General, and forwarded to you at *Davenport*, where you will please apply for it, and sign it and return one of the duplicates to this office, as requested in the letter of that date.

Should the ground at any time be so hard frozen that you cannot raise mounds, in such case, I suppose, the marking of the mounds may be omitted until the frost is out of the earth in the prairies, in the spring. This must then be immediately attended to; and the fact of their erection be inserted in the field notes, at every corner where mounds

had been omitted. But this must be, in all such cases, attended to by yourself *in person*.

Very respectfully

Sir Yr. Obedt. Servt.

SURVEYOR GENERAL'S OFFICE
Cincinnati Dec. 5th 1837

(Signed) SAML. WILLIAMS

SPECIAL INSTRUCTIONS—LETTER BOOK A: 273, 1837

WILLARD BARROWS D. S.:

For closing the public surveys around the Towns of F. Madison, Burlington, Bellevue, Dubuque & Peru, in Iowa Ter.

At the time the surveys of the public lands adjoining these several Towns, were made, the Towns had not been laid out. It was therefore impracticable for the Deputies to connect their work with the boundary lines of these Towns.

This service is committed to you; and you are hereby authorized and instructed to execute this unfinished portion of the surveys, for which you will be allowed and paid, on the completion thereof and approval of the work, at the rate of three dollars per mile, and any additional allowance which may be authorized by the Commissioner of the General Land Office.

You will apply to the Commissioners for laying off these Towns, for authenticated Copies of the *field notes* and *plats* of the boundary lines of the several towns laid off and surveyed by them.

Having obtained these copies, you retrace these boundary lines, and close thereon all the sectional and township lines of the public surveys which may be intersected thereby; and at each such intersection, set posts, and take bearings, where there are any to be had, and also make conspicuous mounds of earth, covered with sod, and constructed with a view to their durability.

From each intersection of the lines of the public surveys with the boundary lines of the Towns aforesaid, you will measure along each of these sectional or township lines, to the nearest section or quarter section corners thereon, beyond the Town boundaries. And you will likewise measure the distance from each angle in the boundary line of each of the Towns, to the nearest intersections thereon of the lines of the Public Surveys. From the upper and lower corners of each of the Towns, on the Mississippi or other river, or bayou, you will take the meanders to the first meander post of the public surveys, above or below such corners.

You will take full and minute *field notes* of all the corners established by you and of all measurements made and meanders taken, in pursuance of the foregoing instructions; which field notes, together with the copies of the field notes and plats of the boundary lines of the several Towns which you may obtain, are to be returned to this Office, as early as practicable after completing the work, here assigned to you. For the execution of this work, and return of the field notes thereof, you are allowed until the 10th of Sept. next; but it is enjoined on you to make the surveys and returns in as much shorter time as may be practicable.

SURVEYOR GENERAL'S OFFICE
Cincinnati July 11 1838

(Signed) E. S. HAINES,
Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK A: 275, 1838

MESSRS WM. CORIELL
M. M. MCCARVER & GEO. CUBEAGE
Comrs for laying off. the Towns of
Ft. Madison &c. in Iowa Ter.

I have appointed Mr. Willard Barrows, the bearer hereof, to close and connect the lines of the public surveys on the boundary lines of the Towns of Ft. Madison, Burlington, Bellevue, Dubuque & Peru; and will thank you to furnish him with a copy of the field notes and plats of the boundary lines of the said Towns. as surveyed under your direction.

I am very respectfully

Gent. yr. Obedt. Servt.

SURVEYOR GENERAL'S OFFICE
Cincinnati July 11 1838

(Signed) E. S. HAINES

SPECIAL INSTRUCTIONS—LETTER BOOK A: 283, 1838

MR. WILLARD BARROWS
Rockingham

I annex a copy of a communication addressed to me by John Pope and others, alleging the existence of errors and omissions in the survey of Town 82 R. 1 E 5th Mer. in your late subdivision district.

After you shall have completed the closings of the surveys on the boundary lines of the towns, and transmitted the notes thereof, you will please examine into the matter set forth in the communication of these gentlemen, and make corrections of any errors or omissions which you may find to exist, and report them to this office.

I am, very respectfully

Sir your obedt. Servt.

SURVEYOR GENERAL'S OFFICE
Cincinnati Aug 18 1838

E. S. HAINES
Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK A: 291-2

MR. WILLARD BARROWS
Rockingham, Iowa Ter.

I have to acknowledge the receipt of your letter of 30th ult. with copies of field notes of the subdivisions of certain Townships in Chas. H. Fish's contract, to wit, Ts. 70 Rs. 1, 2, 3, 4 & Ts. 71 Rs. 1, 2, 3, 4, W. the copies of Ts. 70 Rs. 3. & 4 had been sent in some months ago, and also copies of Ts. 70 Rs. 5 & 6. The field notes of Ts. 71 Rs. 5 & 6 W. have never been received, and are now urgently wanted; and if not sent off before you receive this, you will please lose no time in forwarding the copies thereof, by mail, if no direct private conveyance is found. You will also seek an early opportunity of forwarding the *original* field notes of Mr. Fish's work, after procuring his certificate thereto, which is essential.

I thank you for your exertions and promptitude in the procurement and transmission of Mr. Fish's work. His order in your favour has been accepted, and passed to your credit, and will be payable to you so soon as his work is platted and his acct. ready for settlement.

The unexpected delay in completing the surveys around the Towns, is much regretted. There was reason to hope that there would have been every practicable facility afforded you by the Commissioners, to bring this work to a close.

I rely confidently on your continued efforts to execute this work with all practicable dispatch; as the Townships in which the Towns are situated must of necessity be kept back until the surveys of the towns are received.

The sum of one hundred dollars which you wish sent, by Draft on St. Louis, will be forwarded so soon as funds shall be received from the Government—having paid out all that had been furnished to me.

Very respectfully sir, your obedt. servt.

SURVEYOR GENERAL'S OFFICE
Cincinnati Sept 19th 1838

E. S. HAINES
Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 37, 1839

JOHN FRIERSON:

To Survey and Subdivide into sections, Townships 79 Ranges 5 & 6 West of the 5th. Principal Meridian, Iowa Territory.

In compliance with instructions from the Comr. Genl. Land Office, dated June 15th 1839, to have said townships immediately surveyed, have selected you for the faithful and accurate performance of the same.

Attached to these instructions you will find a diagram of the two townships now to be surveyed, on which are drawn in *black ink* the lines, adjoining your district, as already run, with the lengths & variation thereof, also on it are drawn in *red ink* the lines which you are now to run; at the close of these instructions you will find the description of the corners established upon the south and East boundaries of your district

For the execution of your work in the field, you will repair to the corner of Townships 79 Ranges 6 & 7 West, upon the 1st, correction line, thence run due north, the East

boundary of T. 79 R. 7 West, (having previously determined the true variation of the needle), establishing all the corners as you proceed, and at the end of six miles, set a temporary post for corner to Ts. 79 & 80 Rs. 6 & 7 W.—Thence repair to the corner, to Ts. 79 Rs. 5 & 6 W. and in the same manner run up the East boundary of Township 79 Range 6 West, to temporary six mile post.—from thence repair to the corner to Ts. 79 & 80 Rs. 4 & 5 W., thence run due west, the south boundary of T. 80 R. 5 W. making the south sides of sections 36, 35, 34, 33, & 32, each 80 chains in length, & the *east half* of section 31, 40 chains, and at the *intersection* of the Range line, before run between Rs. 5 & 6 W., you will establish the corner for Ts. 79 & 80 Rs. 5 & 6 W. noting accurately the *distances* from the point of intersection, to the temporary post, & whether north or south of the same; thence in the same manner proceed and establish the south boundary of Township 80 Range 6 West,—for a more particular description of running the exterior Township lines, see the printed code of General Instructions, which, and every part of said instructions, you are required *faithfully to observe*, and execute your work accordingly.

The field notes of the Township Lines are to be kept in a book by itself.

Wherever the section or township lines intersect Lakes, Streams of water, or Islands, which are to be meandered, posts are to be established on the margin or the banks thereof.

You will next proceed to the subdivision of Townships 79 of Ranges 5 & 6 West, in the manner pointed out in the General Instructions, which see, In prairie where you establish corners by mounds, the earth to form the same, must be taken from one place to form a *pit*, directly south for a section corner, and east for a quarter section corner, but when circumstances conflict with this arrangement, the earth to form the pit may be taken from any point where most convenient, but in all cases the *course and distance* to the *center* of the pit must be noted in your field book.

You are required to meander the Iowa river, through your district, on both sides, if the same is considered navigable, and to test the accuracy of your work in the camp, by platting, to enable you to correct any error, while in the field, and before making your returns to this office. At the close of the meanders within each section, you will give in the field book, the estimated elevation of the banks, the shores whether bold and deep or Shallow, the current whether quick or sluggish, the quality of the soil & kinds of timber.

The manner of keeping your field notes, is fully pointed out in the General Instructions.

The importance of having all the public surveys executed faithfully and accurately, and the proximity of these surveys to the location of the seat of *Government of Iowa*, and of the value to the same which will be thereby rendered, as well as the preserving of your *reputation as a good surveyor*, will I trust afford you the strongest inducement to exert yourself to the utmost of your ability to execute your contract to the entire approbation of this Office.

You will please return your field notes as soon as completed, and with them these special Instructions.

SURVEYOR GENERAL'S OFFICE
Dubuque, July 13, 1839

A. G. ELLIS, *Sur. Genl.*
by ELISHA DWELLE, *Chf. Clk.*

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 91, 1840

In the late Sac and Fox cession of Oct. 21st, 1837

GEO. W. HARRISON:

There is a part of Mr. Biggs district Represented on the South part of the accompanying diagram. You will commence on the South boundaries of township 81 N at the most westerly township Corner established thereon; thence you will Run due north to temporary Six mile post Establishing the quarter and Section posts as you proceed; then the next Easterly and so on till all the east boundaries to towns 81 are Run; then Run due west the South boundaries of townships 82 Establishing the Corners as you proceed & the township Corners at your intersections with the lines just Run; these lines and the balance North are to be Run and marked in the most faithful manner as prescribed in the printed general instructions.

You will establish meander posts on all rivers or Streams which you in your judgment deem navigable.

You will please send, to this office, your field notes as often as you fill your books,

by safe opportunities or Copies thereof; but the originals must at all events be Returned.
The South boundary of Township 37 N you must extend.

You will also extend the 2d correction line to the west boundary of the cession and establish a corner in the usual manner, the west half of Sections 31 must be 42 chains long. Standard paragraph Nos. 11b, 9b, 10b, 7b, 8b, 3b. [See p. 353]

The Township Corners upon the South boundaries of Townships 81 N you will obtain from Mr. W. Biggs.

You will be Required to Random South, the East boundaries of T. 83, N. R. 6 W.—T 85 N. R. 7 W.—T 87 N. R. 8 W.—T. 89 N. R. 9 W., and T. 91 N. R. 10 W. in order to close to the old corners and make good work.

SURVEYOR GENERAL'S OFFICE
DuBuque Oct. 16th, 1840

Signed, GEO. W. JONES
Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 101, 1840
In the late "Sac & Fox Cession" of October 21, 1837

URIAH BIGGS:

You will please commence upon the South boundary of township No. 79 (1st correction line) at the corner to Ranges 6 & 7 West, thence run west and establish the quarter section and section posts as you proceed, but the west half of sections 31 upon the correction line, you will make each 42 Chains in length, thence you will continue across Ranges 7 & 8 West, and thence to the West boundary of the Cession & establish corner, noting the course & distance to the nearest post or mound, designating the same. You will next run up to a temporary six mile post, the East boundary of township 79 N. Range 9 West, thence the East boundary of township 79 N. Range 8 West, to a temporary six-mile post, on both lines you will establish in the most faithfull manner the quarter & section corners. You will now run due West the South boundaries of townships 80 N. Ranges 7 & 8 West, establishing the township corners at the intersections of the East boundaries just run, in the manner prescribed in the printed General Instructions.

The East boundaries of townships 80 N. Ranges 6, 7, 8, & 9 West, and the south boundaries of townships 81 N. Ranges 5, 6, 7 & 8, West, are now to be run in strict conformity to the same General Instructions. You will now please furnish Geo. W. Harrison with a copy of the township corners established upon the south boundaries of townships 81 N. to enable him to commence his work north of your district. You will now repair to the corner to townships 68 & 69 N. Ranges 11 & 12, West, thence proceed north following strictly the General Instructions in all its requirements in running exterior township lines.

You will establish meander posts on the Iowa River to towns 77 & 78 N. but your judgment must be exercised with regard to the propriety of establishing meander posts in Towns 80 N. if you deem it navigable, you will do so, otherwise not. You will also exercise your judgment on Skunk River & other Streams.

You are required to note all Mineral appearances, upon your district, and give them their true location so far as they come to your knowledge.

You are to send into this Office the field notes of townships 79 & 80 N. as soon as completed, to enable me to have the same subdivided at an early day.

You will as soon as you complete your work, and fill your books send the same, if safe opportunity offers, or copies thereof to this office without delay.

Standard paragraph Nos. 9b, 10b, 7b, 8b, 11b. [See p. 353]

You will return these special Instructions with your final returns.

SURVEYOR GENERAL'S OFFICE
DuBuque, Nov. 6, 1840.

Signed GEO. W. JONES
Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 117, 1841

SAML. C. WILTSE & JOSEPH P. SHANNON:

Townships 73 N. of Ranges 9 & 10 W.

" 74 " " 8 & 9 "

" 75 " " 8 & 9 "

Standard paragraph Nos. 1b, 13b, 5b, 12b. [See pp. 353, 354]

When safe opportunity offers you will please return your field notes to this Office, as soon as you complete the surveys of a Township.

And upon the completion of the surveys, you will return these special Instructions with the diagram attached to it.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 10, 1841

GEO. W. JONES
Surr. Genl
by ELISHA DWELLE
Chf. Clk.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 118, 1841

THOMAS HUGILL & JAMES E. FREEMAN:

Township 72 N. Range 9 West
Townships 70, 71 & 72 N. Range 10 West
Township 69 N. Range 11 West

You will Meander the Des Moines River, in Section 31 & 32 Township 70 N. Range 10 West—on both the right & left banks.

Standard paragraph Nos. 13b, 5b, 4b, 12b, 1b. [See p. 353]

SURVEYOR GENERAL'S OFFICE
Dubuque, April 19, 1841

GEO. W. JONES, *Surr. General*
(Signed) by ELISHA DWELLE—*Chief Clerk*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 119, 1841

JOHN FOLEY & JOHN G. McDONALD:

Townships No. 77 N. of Ranges 6 & 7 west; 78 North of Ranges 6, 7 & 8 west.

Standard paragraph Nos. 12b, 1b, 13b, 2b, 3b, 4b. [See p. 353]

You will meander the Iowa river, upon the Right & Left banks through Townships 77 & 78, Range 6 West, with the utmost care.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 28, 1841

GEO. W. JONES, *Surr. Genl.*
by ELISHA DWELLE, *Chief Clerk*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 120, 1841

WM. L. D. EWING:

Townships No. 76 N. of Ranges 7, 8 & 9 West
" " 77 " " 8 & 9 "

Standard paragraph Nos. 1b, 13b, 5b, 3b, 4b, 12b. [See p. 353]

SURVEYOR GENERAL'S OFFICE
Dubuque, April 30, 1841

(Signed) GEO. W. JONES
Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 120, 1841

THOMAS C. CHILD:

Townships No. 79 N. of Ranges 7 & 8 West
" " 80 " " 5, 6, 7 & 8 West

The Iowa River, passing through Township 80 N. Range 6 West, is not to be meandered. Swan lake in Sections 4 & 5 of Township 80 N. Range 7 West you are required to meander. [See p. 267, Vliet]

Standard paragraph Nos. 13b, 2b, 3b, 4b, 12b, 1b. [See p. 353]

SURVEYOR GENERAL'S OFFICE
Dubuque, May 6, 1841

GEO. W. JONES
Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 123, 1841

MOSES VILAS:

The district assigned to you, embraces Townships No. 86 & 87 N. of Ranges No. 7 & 8 West, of the 5th Principal Meridian, and Township N. 88 north of Range 8 West.

The Wapsipinicon River is not to be meandered in your district.

Standard paragraph Nos. 14b, 5b, 3b, 6b. [See p. 353]

SURVEYOR GENERAL'S OFFICE
Dubuque, June 7, 1841

GEO. W. JONES
Surr. General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 123, 1841

THOMAS M. WELDON:

The District assigned to you, embraces Townships N. 84 North, of Ranges 6, 7 & 8 West, and Township No. 85 North, of Ranges 6, 7 & 8 West, all of the 5th. Principal Meridian.

You are required to meander both sides of the Red Cedar River, and also both sides of the Wapisipinacon River, which courses through your district; and in meandering, the utmost care must be taken by you, to avoid any trouble to the office in platting the same, as well as further trouble to yourself hereafter in making corrections.

Standard paragraph Nos. 14b, 2b, 3b, 6b. [See pp. 353, 354]

If safe opportunity offers, you will send to this office, the field notes of your Surveys as fast as completed, to enable me to have your work platting and approved at an early day.

SURVEYOR GENERAL'S OFFICE

Dubuque, June 4, 1841

(Signed) GEO. W. JONES

Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 124, 1841

H. E. WHITESIDE & JAS. B. CAMPBELL:

The district assigned to you embraces Townships 82 North, of Ranges 5 & 6 West, & Townships 83 North, of Ranges 5, 6, 7 & 8 West, all from the 5th Principal Meridian.

You are required to meander the Red Cedar River on both sides, which courses through your district; and in meandering, the utmost care must be taken by you, to avoid trouble to this Office in platting the same, as well as further trouble to yourselves hereafter in making corrections.

Standard paragraph Nos. 14b, 2b, 3b, 6b. [See pp. 353, 354]

SURVEYOR GENERAL'S OFFICE

Dubuque June 7, 1841

(Signed) GEO. W. JONES

Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 124, 1841

GARRET VLIET:

The district assigned to you embraces Townships 81 North, of Ranges 5, 6, 7 & 8 West, and Townships 82 North, of Ranges 7 & 8 West, all from the 5th. Principal Meridian.

You are required to meander the Red Cedar River on both Sides in Township 81 North, of Range 5 West & Township 82 North, of Range 7 West, also Swan lake in Section 32 & 33 T. 81 N. R. 7 W. and in meandering the same, you must use the utmost care, to avoid trouble to this Office in platting the same as well as further trouble to yourself hereafter in making corrections.

The Iowa River is not to be meandered.

Standard paragraph Nos. 14b, 2b, 3b, 6b. [See pp. 353, 354]

SURVEYOR GENERAL'S OFFICE

Dubuque June 9, 1841

(Signed) GEO. W. JONES

Surr. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 125, 1841

WM. P. HULL:

The district assigned to you embraces Township 89 North, of Range 8 West, and Townships 88, 89, 90, & 91 North, of Range 9 West of the 5th Prin. Meridian.

You are required to correct the East boundary of T. 88 N. R. 10 W. also the South boundary of T. 92 N. R. 9 W.—The former line has been run at a variation too low by one degree & the latter line at a variation too low by two degrees: Therefore you will correct the East boundary of T. 88 N. R. 10 W. by leveling the old mounds & filling their pits with the soil & sods thereof, and establishing new mounds or corners farther west, as follows—the $\frac{1}{4}$ post to Sec. 36, 70 lks West, the post to Secs. 25 & 36 140 $\frac{1}{2}$ lks west—the $\frac{1}{4}$ post to Sec. 25, 210 $\frac{1}{2}$ lks west—the post to Secs. 24 & 25, 280 $\frac{1}{2}$ lks. west—the $\frac{1}{4}$ post to Sec. 24, 351 lks. west, the post to Secs. 13 & 24, 421 lks. west, the $\frac{1}{4}$ post to Sec. 13, 491 $\frac{1}{2}$ lks west,—the post to Secs. 12 & 13, 561 $\frac{1}{2}$ lks. west, the $\frac{1}{4}$ post to Sec. 12, 631 $\frac{1}{2}$ lks west—the post to Secs. 1 & 12, 701 $\frac{3}{4}$ lks. west, the $\frac{1}{4}$ post Sec. 1, 772 lks. west—

and the corner to Ts. 88 N, Rs. 9 & 10 W. 800 lks. west, as is marked in red upon the diagram of T. 88 N. R. 9 W.

In correcting the south boundary of T. 92 N. R. 9 W. you are required to run west from the corner to Townships 91 & 92 N, Rs. 8 & 9 West, at a variation two degrees higher than what you may find the old line run at (it is reported as being run at 7°. 45; but it is best to retrace a part of the old line & determine its course to a certainty) in doing so you will keep full notes & establish the $\frac{1}{4}$ & Section posts as you proceed, & at the intersection of the Range line, note the intersection to the township corner already established; which notes of Resurveys are to be taken upon a Separate piece of paper—after establishing the line, you will return on the old line & obliterate all the marks & corners thereon.

The Wapsipicon river is not to be meandered in your district.

Standard paragraph Nos. 14b, 5b, 3b, 6b. [See pp. 353, 354]

SURVEYOR GENERAL'S OFFICE

Dubuque, June 19, 1841

(Signed) GEO. W. JONES

Sur. Genl.

ADDITIONAL SPECIAL INSTRUCTIONS—LETTER BOOK B: 134, 1841

GARRET VLIET:

You are now required to meander the Iowa River upon both sides, through Township 80 N. Range 6 West 5th., Mer. after receiving further Instructions from this Office, which will be made as soon as the field notes of the Survey is returned by Mr. Child;—Also, its entire length through your district.

Upon the subsequent pages you will find the distances to the River—and also the meander posts set thereon.

You are also required to set meander posts & take bearings upon the South boundary of Township 81 N. Range 6 West, of your district, at its intersection with the Iowa River.

SURVEYOR GENERAL'S OFFICE

Dubuque, July 17, 1841

ELISHA DWELLE

Chf. Clerk

ISLAND SURVEYS IN MISSISSIPPI RIVER—LETTER BOOK B: 176, 1842

J. E. WHITCHER:

for the survey of the valuable islands in the Mississippi River, not heretofore surveyed, having regard to the timber or quality & location of soil, and those only which are embraced in this surveying district.

You are required to commence your examination in Township 3 N, Range 6 West 4th. Pr. Meridian and to continue the examination, down stream, to the south boundary of the Territory of Iowa.

The division line between Iowa and Wisconsin & Illinois, is the main channel of the Mississippi River in a low stage of water, therefore you will be particular to connect your surveys of the islands with the Townships to which they may properly belong, and in doing so, should any island which you may find worth the expense of surveying &c. be situated within any one section or fractional section, so as not to be intersected by any regular sectional line, then you will determine with the greatest accuracy, trigonometrically, the true course & distance to some point on such island or islands as may be so situated, from which you will commence the meanders, and if any section or township lines, *would cross* such or any islands which you may survey, in the regular course of survey, (as required by the United States,) then you will run & mark the same & establish all necessary corners.

You are herewith furnished with diagrams of the Townships bordering upon the Mississippi River, upon which is represented the witness trees at the meander posts, the length of lines closing on the same, also the variation at which the townships have been run.

Your attention is especially called to an island called Benjamin F. Forbes, opposite the lower part of the town of Cassville; also to an island situated half a mile below Davenport, Iowa Side of River; the survey of which has been called for, through the General Land Office, by James Hall of Davenport.

If, during the progress of your surveys, there should happen a large rise of water, then you will cease your operations, particularly on such islands whose margins are low

and much subject to overflow, until a fit time may arrive for the completion of your contract.

You are also required to give a particular description of all islands you may survey, setting forth the kind and quality of timber and its fitness for cultivation or for grazing &c.

SURVEYOR GENERAL'S OFFICE
Dubuque, May 26, 1842

JAMES WILSON
Sur. General

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 202, 1843

ALVIN BURT:

for Surveying and marking the following lines.

The East boundaries of Townships No. 78 North, of Range No. 10 West.—Ts. 74, 75, 76, 77 & 78 N. R. 11 W.—Ts. 70, 71, 72, 73, 74, 75, 76, 77 & 78 N-R. 12 W.—& Ts. 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77 & 78 N. Rs. 13, 14 & 15 W. also the South boundaries of Townships No. 75, 76, 77 & 78 N. R. 10 W.—Ts. 71, 72, 73, 74, 75, 76, 77 & 78 N. R. 11 W.—& Ts. 68, 69, 70, 71, 72, 73, 74, 75, 76, 77 & 78 N. Rs. 12, 13 & 14 West. All West of the 5th Principal Meridian, Iowa Territory.

You will commence your survey at the South East corner of Township No. 68 N. of Range 12 West, thence due west 6 miles & 3 chains, carrying the excess of 3 Chains, over the 6 miles, upon the West half of the South Side of Section 31 of Said Township, after establishing the township corner. You will then run due South from said corner to the North boundary of the State of Missouri, in doing so you will make full sections upon the North Side of Towns 67 & throw the fractions upon the said State boundary. Then commence the South boundary of T. 68 N. R. 13 W. & run it and the East boundary of T. 67 N. R. 14 W. also the South boundary of T. 68 N. R. 14 W. and the East boundary of T. 67 N. R. 15 W. as first described.

By the 8th article of the treaty one section of land to include the Indian Agency house, the enclosures around and near it, and the graves of Wa-pel-lo a chief, and General Joseph M. Street late Agent, is reserved for the widow of the latter Mrs. Eliza M. Street, for which the United States have agreed to grant to said Eliza one or more patents, said land to be selected in such legal subdivisions as will include the said burial ground, agency house and improvements around and near it, in good convenient form, you will therefore take the necessary observations and notes (where near your lines) to enable this office to have these improvements correctly designated upon the official township plats.

Therefore in the selection of these townships for subdivisions, I must avail myself of the information to be derived from you, as to the land which from their quality and relative position will most readily sell when brought into market: upon this Subject you are particularly required to report.

Standard paragraph Nos. 10c, 8c, 7c, 2c, 21c, 11c, 1c. [See pp. 354, 355]

Below you will find the description of trees &c as witness for township &c, corners.
SURVEYOR GENERAL'S OFFICE
Dubuque, May 8, 1843

JAMES WILSON
Surr. General

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 203, 1843

JEREMIAH E. WHITCHER:

Sac & Fox cession of 1842. to wit:

The East boundaries of Townships No. 79, 80, 81, 82, 83, 84, 85, 86 & 87 North, of Range No. 10 West, Ts. 79, 80, 81, 82, 83, 84, 85, 86, 87 & 88 N. Rs. 11, 12 & 13 W.—South boundaries of Townships No. 80, 81, 82, 83, 84, 85, 86 & 87 N. of R. 9 W.—and Ts. 80, 81, 82, 83, 84, 85, 86, 87 & 88 N. of Rs. 10, 11 & 12 W.—also the first correction line through the following Ranges, to wit: No. 9, 10, 11, 12, 13, 14, 15, 16, 17 &c to the "division line" of said cession.—Also the second correction line through the following Ranges, to wit: No. 10, 11, 12, 13, 14, 15, 16, 17 &c—to the said "division line." All of which are West of the 5th. Principal Meridian, Iowa Territory.

You will commence your Surveys at 4 miles 61 chains & 97 links west of the South East corner of Township No. 79 N. Range No. 9 West; on the 1st. correction line, and extend it due west to 6 mile & 2 chains, making the West half of the South Side of Section 31 forty two chains thence continue due west, said 1st. correction line, through

Ranges 10, 11, 12, 13, 14, 15, 16 & 17 and thence to the "Division line" of said treaty, if the same should be run at the time you reach that point of your survey, but if not Mr. Burt will be instructed to extend said correction line through R. 18 to said "Division line."—The South boundaries of all the Ranges, of Township No. 79 N. except Range No. 9 West, are to be made 6 miles & 3 chains, by making the west half of every Section 31 of said tier of townships, forty three chains.

The East boundaries of T. 88 N. of Ranges 11, 12, & 13 are to be extended due North to a temporary six mile post, before running the 2nd. correction line, which is to be extended due west through Ranges 10, 11, 12, 13, 14, 15, 16, 17 & c to the said "Division line" or of the South side of the "Neutral Ground" the South boundaries of Townships 89 are to be 6 miles & 3 chains, as described for running the 1st. correction line. The beginning of 2nd correction is 1 mile 6 chains & 33 links West of the South East corner to Townships 89 N. R. 10 West. There are 15 townships, between the 1st. & 2nd cor. section lines to be subdivided.

Standard paragraph Nos. 14c, 10c, 7c, 2c, 8c, 21c, 11c, 1c. [See pp. 354, 355]

On the Subsequent pages you will find the description of trees &c as witness for township corners adjoining your district.

SURVEYOR GENERAL'S OFFICE

Dubuque, May 8, 1843

JAMES WILSON

Surr. General

SPECIAL INSTRUCTIONS TO DEPUTY SURVEYOR—LETTER BOOK B: 214, 1843

WM. A. BURT:

Sac & Fox Cession of 1842, to wit:

The East Boundaries of townships No. 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, & 78 N. of Ranges No. 16, 17, 18 & 19 West.—The South Boundaries of Townships No. 68, 69, 70, 71, 72, 73, 74, 75, 76, 77 & 78 North of Ranges No. 15, 16, 17 & 18 West—Also the South Boundary of Townships No. 68 North of Ranges 18 &c West to intersect the "Division line" of said cession: All west of the 5th. Principal Meridian, Iowa Territory.

You will commence your surveys at the South East corner of Township No. 68 North of Range No. 15 West thence due west 6 miles and 3 chains carrying the excess of 3 chains over the 6 miles, upon the W. half of the south side of section 31 of said township:—after establishing the township corner, you will run due South from said corner to the North Boundary of the State of Missouri, in doing so you will make full sections upon the North Side of township No. 67 North, and throw the fractions upon said state Boundary: Then commence the South Boundary of township No. 68 N. of Range No. 16 West, next the East Boundary of township No. 67 N. Range No. 17, West as before instructed, and thus continue until you intersect the "division line" of said cession—

Jeremiah E. Whitcher Dep. Sur. has been instructed to run the 1st. correction line to the said "division line" but in the event should the said "division line" be not run at the time he reaches the West end of the South boundary of township No. 79 N. of Range No. 17. West, then in that case he might leave the balance of said correction line, as you would be instructed to extend it to the said "division line"—Therefore if on your arrival at the 1st. correction line, you should find that Mr. Whitcher has not carried said line through to the said "division line," you are hereby instructed to extend the same from the corner where said Whitcher leaves it; The South boundaries of Townships No. 79 North are to be 6 miles and 3 chains, as described for the survey of South Boundary of townships No. 68, North—for the surveying and marking of which you will be allowed the price contracted for by the said Whitcher (\$3.50 Per Mile).

Standard paragraph Nos. 10c, 8c, 7c, 21c, 11c, 14c, 1c, 2c. [See pp. 354, 355]

Also the corner trees cannot now be furnished you. However, it is presumed that you will find no difficulty in finding the corners as they will be principally newly established.

SURVEYOR GENERAL'S OFFICE

Dubuque May 25, 1843

JAMES WILSON

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 224, 1843

GEO. W. HARRIS:

Townships No. 77 North of Ranges No. 10 and 11 West

Townships No. 78 North of Ranges No. 9, 10 and 11 West

Standard paragraph Nos. 13c, 12c, 5c, 9c, 26c, 22c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque, September 2, 1843 *Sur. Genl.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 227. 1843

WILLARD BARROWS:
 Townships No. 70 North of Ranges No. 11 and 12 West
 Townships No. 71 North of Ranges No. 11, 12 and 13 West
 The right and left banks of the Des Moines River are to be carefully meandered.
 Standard paragraph Nos. 24c, 16c, 12c, 5c, 9c, 26c, 22c, 15c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE (Signed) JAMES WILSON
Dubuque, September 4th. 1843 *Surveyor General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 227, 1843

ISAAC N. HIGBEE:
 Townships No. 83, 84 & 85 N. of Ranges No. 9 West and
 Townships No. 83 & 84 N. of Ranges No. 10 West of the 5th Prin. Mer. Iowa Ter-
 ritory.
 Making in all five townships.
 The right and left banks of the Red Cedar River, within your district, are to be
 meandered with the greatest care.
 Standard paragraph Nos. 6c, 5c, 9c, 26c, 23c, 15c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE (Signed) JAMES WILSON
Dubuque, Sept. 6th, 1843 *Surveyor General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 228. 1843

SAML. W. DURHAM:
 Township No. 75 N. Ranges No. 10 & 11 West & Townships No. 76 N Ranges No. 10,
 11. & 12 West of the 5th Principal Meridian Iowa Territory.
 Standard paragraph Nos. 15c, 4c, 5c, 9c, 26c, 22c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE (Signed) JAMES WILSON
Dubuque, September 7, 1843 *Sur. General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 229, 1843

JEREMIAH E. WHITCHER:
 For subdividing into sections and fractional sections the following described Town-
 ships, situated west of the 5th. Prl. Mer. Iowa Territory, to wit:
 Townships No. 79, 80 & 81 N. Range No. 9 West, and
 Townships No. 80 & 81 N. Range No. 10 West. —and making in all five townships.
 You are required to meander with the greatest care, the right and left banks of the
 Iowa River, within your district.
 Standard paragraph Nos. 4c, 5c, 27c, 26c, 15c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE (Signed) JAMES WILSON
Dubuque, September 9, 1843 *Surveyor General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 230, 1843

JAMES E. FREEMAN:
 Townships No. 74 N. Ranges 10, 11, 12 & 13 West and
 Township No. 75 N. Range 12 W. of the 5th. Principal Meridian, Iowa Territory.
 The Skunk River within your District, is not to be meandered.
 Standard paragraph Nos. 15c, 4c, 5c, 27c, 26c, 23c. [See pp. 354, 355]
 SURVEYOR GENERAL'S OFFICE (Signed) JAMES WILSON
Dubuque, September 13, 1843 *Surveyor General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 233, 1843

GEORGE WILSON:

for subdividing into Sections the following described Townships to wit: Townships No. 70 North, Ranges 13, 14 & 15 W. & Townships No. 71 N. Ranges 14 & 15 West, of the 5th. Principal Meridian, Iowa Territory.

Standard paragraph Nos. 15c, 6c, 5c, 9c, 26c. [See pp. 354, 355]

SURVEYOR GENERAL'S OFFICE

(Signed) JAMES WILSON

Dubuque, September 13, 1843

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 235, 1843

ALVIN BURT:

Townships No. 72 North, Ranges No. 11 & 12 West, & Townships No. 73 North, of Ranges No. 11, 12 & 13 West, of the 5th Principal Meridian, Iowa Territory.

Standard paragraph Nos. 15c, 24c, 16c, 4c, 23c, 3c. [See pp. 354, 355]

With regard to assistants you are to regard the instructions furnished on your late contract.

SURVEYOR GENERAL'S OFFICE

(Signed) ELISHA DWELLE

Dubuque, October 3, 1843

Chief Clerk

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 235, 1843

SYLVESTER L. FINLEY:

for subdividing into sections & fractional sections the following described Townships & fractional Townships, to wit:

Fractional Townships No. 67 North, of Ranges No. 14 & 15 West, and Townships No. 68 & 69 North, of Ranges No. 14 & 15 West, of the 5th Principal Meridian Iowa Territory.

Fractional Townships No. 67 N. of Ranges No. 14 & 15 West, are to be subdivided by running the Section lines South between Sections 1 & 2 thence random East between Sections 1 & 12 &c thereby making full sections on the north & East sides of those townships and throwing the fractions upon the South and West.

Standard paragraph Nos. 25c, 4c, 3c, 29c. [See pp. 354, 355, 356]

SURVEYOR GENERAL'S OFFICE

ELISHA DWELLE *Chf. Clk. for*

Dubuque, October 3, 1843

JAMES WILSON, *Surr. Genl.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 236, 1843

WILLIAM DEWEY:

For subdividing into sections & fractional sections the following described Townships & fractional Townships, to wit: Fractional Townships No. 67 North, of Ranges No. 12 & 13 West, Townships No. 68 North, of Ranges No. 12 & 13 West, also Townships No. 69 North, of Ranges No. 12 & 13 West, of the 5th Principal Meridian, Iowa Territory.

Fractional townships No. 67 North, of Ranges No. 12 & 13 West, are to be subdivided by running the section lines south between sections 1 & 2, thence random East between sections 1 & 12 &c, thereby making full sections on the North & East sides of those townships and throwing the fractions upon the South and West.

Standard paragraph Nos. 25c, 4c, 3c, 29c. [See pp. 354, 355, 356]

SURVEYOR GENERAL'S OFFICE

ELISHA DWELLE *Chf. Clk. for*

Dubuque, October 10, 1843

for JAMES WILSON, *Sur. General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 237, 1843

ISAAC N. HIGBEE:

Township No. 85 N. of Range 10 W. and
Townships No. 86 N. of Ranges 9 & 10 West of the 5th Prin. Meridian, Iowa Territory.

You are required to meander with care the right & left banks of the Red Cedar

River which courses through your present district, & under contract dated Oct. 12, 1843.
Standard paragraph Nos. 30c, 31c, 23c, 4c. [See pp. 351, 355, 356]

Upon the subsequent pages you will find the witness trees to the section & meander corners, also the length of lines to & over the river, (Red Cedar) also the variation at said corners.

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 12, 1843

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 239, 1843

JEREMIAH E. WHITCHER:

for the subdividing of the following townships into sections, to wit: Townships No. 80 & 81 N. of Range No. 11 West, of the 5th Principal Meridian, Iowa Territory.

Standard paragraph Nos. 30c, 31c, 4c. [See pp. 354, 356]

Upon the subsequent pages you will find the witness trees to the section corners (excepting their W. boundaries, which you have,) upon the township lines, also the variation at said corners. [See following letter]

SURVEYOR GENERAL'S OFFICE
Dubuque October 16, 1843

ELISHA DWELLE, *Chf. Clk.*
for JAMES WILSON, *Surr. General*

ADDITIONAL SPECIAL INSTRUCTIONS—LETTER BOOK B: 241, 1843

JEREMIAH E. WHITCHER:

for the subdivision, into sections, Townships No. 80 & 81 N. of Range No. 11 West, of the 5th Principal Meridian, instead of Townships No. 82 N. of Ranges No. 9 & 10 West; as required by my special instructions of the 16th instant (the record of which has been altered to conform to this change of Townships for survey, by you.)

You are required to meander the right and left banks of the Iowa River, which may course through your district.

You are also required to complete the field notes of the East boundary of Section 24 of Range 11 W. of Township No. 81—the same being a portion of said line on the West Side of the Iowa River, requiring the distance over the river, the meander & quarter section posts &c. to enable this Office to make your survey of said Township line complete that your field notes of your survey of said Township boundary may be corrected;—you will please take the necessary notes therefor on a separate piece of paper for said object.

Standard paragraph No. 7c. [See p. 354]

I also send you herewith diagrams of the two townships now contracted for by you, drawn to the scale of one inch to the mile, the township lines of which, represent the length and topography of the same.

SURVEYOR GENERAL'S OFFICE
Dubuque, October 27, 1843

JAMES WILSON
Sur. General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 272, 1844

HENRY A. WILTSE:

Townships No. 77, North of Range No. 12 & 13 West and Township No. 78 North of Range No. 12, 13, & 14 West, of the 5th Principal Meridian, Iowa Territory.

You are required to note the variation at which you run the *random lines, corrected lines*, and the *true lines*, in their proper places in your field notes.

Standard paragraph Nos. 5c, 28c, 20c, 3c, 23c, 19c, 6c. [See pp. 354, 355, 356]

SURVEYOR GENERAL'S OFFICE
Dubuque November 2d, 1844

JAMES WILSON
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 273, 1844

ISAAC N. HIGBEE:

Townships No. 83, 84, 85, & 86. North of Ranges No. 11 West of the 5th Principal Meridian Iowa Territory.

You are required to note the variation at which you run the *random lines, corrected lines*, and the *true lines*, in their proper places in your field notes.

Standard paragraph Nos. 5c, 28c, 20c, 3c, 23c, 19c, 6c. [See pp. 354, 355, 356]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque, November 2d, 1844 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 275, 1844

ALFRED L. BROWN:

Township No. 32 North of Range No. 9, West, Township No. 32 North of Range No. 10 West, and Township No. 32 North of Range No. 11 West of the 5th Principal Meridian, Iowa territory.

Standard paragraph Nos. 19c, 6c, 17c, 5c, 9c, 20c, 3c, 23c. [See pp. 354, 255]

You will also remeasure the North half of the East side of Section 1 of Township No. 31 North of Range No. 11 West, 5th. principal Meridian, and report accordingly.

SURVEYOR GENERAL'S OFFICE
Dubuque, Nov. 2. 1844

JAMES WILSON
 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 276, 1844

JOHN SENTER:

for subdividing into Sections the following described townships To Wit: Townships No. 79 North, of Ranges No. 10, 11, and 12 West, and Townships No. 80, and 81 North, of Range 12 West of the 5th Principal Meridian, Iowa Territory.

Standard paragraph Nos. 19c, 6c, 1-7c, 5c, 28c, 20c, 3c. [See pp. 354, 355, 356]

You are required to resurvey the West half of the South side of Section 32, and the South Side of Section 31, of Township No. 32 North of Range No. 12, West of the 5th. principal Meridian, by running a Random line West, to the corner of Township 81, and 82, of Ranges 12 and 13 West, and correct back, taking full notes of the same upon a separate piece of paper, to be placed in the proper field book, now in this Office, the compensation for this Resurvey, will be made by Jeremiah E. Whitcher, *who pretended to have done the same.*

SURVEYOR GENERAL'S OFFICE
Dubuque Novr. 2d. 1844

JAMES WILSON
 Surveyor General

* You will also remeasure the North half mile, on the East side of Section one of Township No. 81 North of Range No. 12 West 5th principal Meridian and report accordingly.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 277, 1844

SAMUEL C. WILTSE:

You Townships No. 75 & 76 North, of Range No. 13 West, and Townships No. 75, 76 & 77 North, of Range No. 14, West, 5th. principal Meridian, Iowa Territory.

Standard paragraph Nos. 19c, 17c, 5c, 28c, 6c, 3c, 20c, 23c. [See pp. 354, 355, 356]

SURVEYOR GENERAL'S OFFICE
Dubuque November 2. 1844

JAMES WILSON
 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 278, 1844

ALEXANDER CALHOUN:

Townships No. 87 North of Ranges No. 9 and 10 West, & Township No. 88 North, of Range No. 10 West, of the 5th. principal Meridian Iowa Territory.

Standard paragraph Nos. 19c, 17c, 5c, 28c, 6c, 3c, 20c. [See pp. 354, 355, 356]

You are required to meander with the greatest care, the left Bank of the Red Cedar River in section 31, Township No. 87 North of Range 10 W.

SURVEYOR GENERAL'S OFFICE
Dubuque November 2d, 1844

JAMES WILSON
 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 282, 1844

GEORGE W. WILSON:

Township No. 74 North of Ranges No. 14 & 15 West and Township No. 75 North of Ranges No. 15 & 16 West, of the 5th., principal Meridian, Iowa Territory

Standard paragraph Nos. 19c, 17c, 5c, 28c, 6c, 3c, 20c, 23c. [See pp. 354, 355, 356]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque November 2, 1844 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 285, 1844

LOUIS V. DAVIS:

Townships No. 68, 69, & 70 North, of Range No. 16 West, and fractional Township No. 67 North of Range No. 16 West, of the 5th., principal Meridian, Iowa Territory. In subdividing Townships No. 68, 69, & 70 North of Range No. 16 West, you are to be governed strictly by the printed General Instructions, with the following additions, but Fractional Township No. 67 North, Range No. 16 West, you are to commence upon the North boundary, at corner to sections No. 1 & 2 of said township, thence run due South, establishing your line by proper Marks, and the half mile post or corner, at proper distance, thence to the end of the mile, & establish a corner to secs. 1.2.11 & 12, thence random East, to the East boundary, and correct back, be particular to place the quarter section post, at average distance upon the corrected line, and so on until you intersect the north boundary of the State of Missouri, and establish a corner thereon for corner to sections No. 23 & 24, and so on for the other ranges of sections, until you come to the West Range of Sections:—You will bear in mind that all excess, or deficiency of measure over half a mile (the quarter post) is to be carried to the West boundary between every section, when closing thereon, through your entire district thereby throwing all fractions upon the South and West, boundaries of T. 67 N. R. 16 W. and in the other Townships upon the North and West.

Standard paragraph Nos. 17c, 5c, 28c, 6c, 18c, 20c, 23c. [See pp. 354, 355, 356]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque November 6, 1844 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 287, 1844

WILLIAM VANDEVER:

Township No. 71 North, Ranges 16, and 17 West, and
 Township No. 72 North, Ranges 16, and 17 West of the 5th., principal Meridian Iowa territory.

Standard paragraph Nos. 19c, 17c, 5c, 28c, 6c, 3c, 20c, 23c. [See pp. 354, 355, 356]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque November 7th., 1844 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 288, 1844

WILLIAM DEWEY:

for subdividing into sections, the following described townships, to wit: Township No. 73 North of Range No 16 West, and Townships No. 74 North, of Ranges No. 16 & 17 West 5th. Principal Meridian Iowa Territory.

The Des Moines River, which courses through your district, is to be meandered upon the right and left banks, with great accuracy and care.

Standard paragraph Nos. 17c, 5c, 28c, 6c, 18c, 20c, 19c. [See pp. 354, 355, 356]
 SURVEYOR GENERAL'S OFFICE JAMES WILSON
Dubuque November 9, 1844 Surveyor General.

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 290. 1844

ORSON LYON:

for subdividing into sections and fractional sections, the following described townships and fractional townships, situated West of the 5th. Principal Meridian, Iowa Territory. To Wit Fractional Township No. 67, North of Range No. 17 West, and Townships No. 68, 69, and 70 North of Range No. 17 West.

But fractional Township No. 67 North of Range No. 17 West, you are to commence upon the North Boundary, at corners to sections 1 & 2, thence South, to the corner of Sections 1, 2, 11 & 12, thence East to the East boundary and so on, to the Missouri boundary line, so that the fractional sections, will be thrown upon the South and West boundaries, of this fractional Township.

I must call your faithful attention, to the Chapter on *field notes*, see pages 20, 21, 22, 23, and 24 of the General Instructions, which accompanies this.

Standard paragraph Nos. 6c, 18c, 20c, 19c, 17c, 5c, 28c. [See pp. 354, 355, 356]
SURVEYOR GENERAL'S OFFICE

Dubuque November 12, 1844

JAMES WILSON

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 337, 1845

JAMES GRANT:

For subdividing into sections the following described Townships No 77 North of ranges No 16 & 17 west, and Township No 78 north of Ranges No 16, 17, & 18—west of the 5th principal meridian Iowa Territory.

Skunk river which courses through your district is not to be meandered.

Standard paragraph Nos. 2d, 3d, 1d, 4d. [See p. 356]

Your attention is particularly directed to the article of subdividing Townships into sections. See page 15 of the General Instructions.

SURVEYOR GENERAL'S OFFICE

Dubuque July 14th, 1845

GEORGE W. JONES

Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 333, 1845

ISAAC N. HIGBEE:

For surveying and marking the following described exterior Township lines. To Wit —The East Boundary of Township No. 79 north of Ranges No. 14, 15, & 16 west E. Boundaries of Townships No. 80, 81, 82, 83, 84, & 85 north of Ranges No. 14 & 15 west. East Boundaries of Townships No. 86, 87, & 88 north of Range 14 west, East Boundaries of Township No. 89, North of Ranges No. 11, 12, 13, 14, 15, 16, & 17 west and Township No. 90 north of Ranges No. 11, 12, 13, & 14, west. Also Township No. 91 north of Ranges No. 11, & 12, west.

The South Boundaries of Township No 80 North of Ranges No 13, 14, & 15 west, South boundaries of Townships No. 81, 82, 83, 84, 85, and 86 north, of Ranges No. 13 & 14 west. South boundaries of townships no. 87 & 88 north of Range no. 14 west. South boundaries of Township No. 90 North of Ranges no. 10, 11, 12, 13, 14, 15, & 16 west, South boundaries of Township No. 91 north of Ranges no. 10, 11, 12 & 13 west and South boundaries of Township No. 92 north, of Ranges No. 10 & 11 West of the 5th principal meridian Iowa Territory.

If the north west corner to Township 89 north of Range No 16 west, should fall into the Neutral ground, you will not in that case, run the north boundary of said Township; Otherwise you will extend the line between Ranges no. 16 & 17, west, to intersect the south boundary of said "Neutral ground" and establish a corner thereon.

With this you will receive a diagram of your district the lines which you are now required, to run and mark are represented thereon by red lines, the contiguous lines drawn with black ink are already surveyed, showing the lengths, and Topography of the same, and the variation of the Compass, at the Township corners as reported by the Township line surveyors.

Standard paragraph Nos. 3d, 4d. [See p. 356]

You will please furnish Mr. Lyon with a description of such corners, as he may call for, as established by you on the line of Lyons work.

SURVEYOR GENERAL'S OFFICE

Dubuque July 14th, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 339, 1845

ENOS LOWE:

For subdividing into Sections the following described Townships to wit: Townships No. 68, 69, 70 & 71 north of Ranges No. 18 west, of the 5th principal meridian Iowa Territory.

Standard paragraph Nos. 1d, 2d, 3d, 24d, 4d. [See pp. 356, 357]

SURVEYOR GENERAL'S OFFICE

Dubuque July 15, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK B: 340, 1845

WILLIAM L. D. EWING:

For subdividing into Section the following described Townships, To Wit:

Townships No. 75 and 76 north, of Range No 17 West, and Townships No 75, 76, & 77 north, of Range No 18 West, of the 5th Principal Meridian, Iowa Territory.

The Des Moines River which courses through your District is to be meandered with greatest care and accuracy, upon the Right and Left Banks.

Standard paragraph, Nos. 2d, 1d. [See p. 356]

Upon the following pages you will find a description of the Witness Trees and monuments, to the section and Meander posts on the Township lines of your district.

Your attention is particularly directed to the article "of subdividing Townships into sections", and the Article "of Meandering Rivers &c" of the General Instructions.

Said General Instructions should be frequently read by you, that you may strictly conform to the same, not deviating from the minutest requirement thereof. Skunk river is not to be meandered.

SURVEYOR GENERAL'S OFFICE

Dubuque July 18, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS, LETTER BOOK B: 343, 1845

AUGUSTUS L. HAVEN:

For subdividing into sections, the following townships to wit: Townships No. 87 & 88 north of Range No. 11 West, and Townships No. 87 & 88 north of Range No. 12 West of the 5th Principal Meridian Iowa Territory.

The Red Cedar which courses through your district is to be meandered with the greatest care and accuracy, upon the right and left banks thereon.

Standard paragraph Nos. 1d, 2d, 3d, 4d. [See p. 356]

Your attention is particularly directed to the article "subdivision of Townships into sections" and of "Meandering Rivers" in the General Instructions.

SURVEYOR GENERAL'S OFFICE

Dubuque July 22, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS, LETTER BOOK B: 347, 1845

JOHN B. WATSON:

For subdividing into secs. the following described Townships to wit:

Township No. 73 N. of Range No. 17 west and Townships No. 72, 73, & 74 N. of Range No. 18 west of the 5th principal meridian Iowa Territory.

Standard paragraph Nos. 1d, 2d, 3d, 24d, 4d. [See pp. 356, 357]

SURVEYOR GENERAL'S OFFICE

Dubuque August 12th, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS, LETTER BOOK B: 348, 1845

JAMES FANNING:

For Subdividing into Section, the following described Townships to wit:

Townships No. 82, 83, 84, 85 & 86 north of Range No. 12 west of the 5th principal meridian Iowa Territory.

Standard paragraph Nos. 1d, 2d, 3d, 25d. [See pp. 356, 357]

It is only necessary to say to you that if the requisitions therein contained are fully complied with this office will be satisfied.

SURVEYOR GENERAL'S OFFICE

Dubuque August 16th, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS, LETTER BOOK B: 355, 1845

ANDREW JACKSON McLEMORE:

For subdividing into Sections, the following described Townships to wit:

Townships No. 85, 86, 87 & 88 North of Range No. 13 West, and Township No. 85

north, of Range No. 14 West, all of the 5th Prin. Mer. Iowa Territory.

Standard paragraph Nos. 1d, 2d, 3d, 25c. [See pp. 356, 357]
SURVEYOR GENERAL'S OFFICE

Dubuque September 15th, 1845

GEO. W. JONES

Surveyor General

N.B.—You will meander the Red Cedar on the Right & left banks through the North East corner of Township No. 88 North, of Range No. 13 West, 5th Principal Meridian, Iowa Territory.

GEORGE W. JONES

Surveyor General

SUBDIVIDING INTO SECTION, LETTER BOOK B: 356, 1845

ALFRED L. BROWN.

For subdividing into Sections, the following described Townships to wit:

Townships No. 82, 83, & 84 North, of Range No. 13 West, and Townships No. 83 & 84 North of Range No. 14 West, all of the 5th Principal Meridian, Iowa Territory.

Standard paragraph Nos. 1d, 2d. [See p. 356]

Upon the following pages you will find a description of the Witness Trees and Monuments, to the Section Corners upon the Township Lines, of the Townships, now embraced in your Contract, dated Sep. 15, 1845.

Your attention is particularly directed to the faithful perusal of, and a strict compliance with, the General *Instructions* making the same your bible when in the field.

SURVEYOR GENERAL'S OFFICE

Dubuque Sept. 15, 1845

GEO. W. JONES

Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK B: 356, 1845

JAMES M. MARSH:

For surveying and marking, the following described Exterior Township Boundaries To Wit.

The East Boundaries of Townships No. 83, 84, & 85 North, of Ranges No. 16, 17, 18, 19, & 20 West, and Townships No. 86, 87, & 88 North, of Ranges No. 15, 16, 17, 18, 19, & 20 West, The South Boundaries of Townships No. 84, 85, & 86 North, of Ranges No. 15, 16, 17, 18, & 19 West, and Townships No. 87 & 88 North of Ranges No. 14, 15, 16, 17, 18 & 19 West, of the 5th Principal Meridian, Iowa Territory.

Standard paragraph Nos. 23d, 3d. [See pp. 356, 357]

With this you will receive a Diagram of your District, the Boundary lines which you are to run and mark are represented thereon by red lines, the contiguous lines drawn with Black ink are already run, excepting the South Boundaries of township No. 83 North of Ranges No. 15, 16, 17, 18 & 19 which is under Contract for survey by Mr. Orson Lyon, and from whom, you will obtain such necessary Corner Trees, or Monuments as you may require; said Diagram will represent the length, the Topography and the variation of the Compass as reported by the Township line Surveyors, of the East & North Boundaries of the District embraced in your Contract dated September 16th, 1845.

You are to run & to close your lines, noting your closing therewith on the 2d. Correction line.

SURVEYOR GENERAL'S OFFICE

Dubuque, September 16th, 1845

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS, LETTER BOOK B: 359, 1845

SAMUEL W. DURHAM:

For subdividing into Sections, the following described Townships, To Wit:

Townships No. 80 & 81 North, of Range No. 13 West, and Townships No. 81 & 82 North of Range No. 14 West of the 5th Principal Meridian Iowa Territory.

In subdividing the same, you are to be governed strictly by the printed General Instructions, which were furnished you by James Wilson, (late Surveyor General), on the 7th September 1843, and by the Appendix thereto, which is now furnished you.

Standard paragraph No. 2d. [See p. 356]

Upon the following pages, you will find a description of the Witness trees, and

Monuments to the Section Corners, upon the Town, lines of the Townships embraced in your present Contract, dated September 26th, 1845. Your attention is urgently directed to the faithful perusal of, and a strict compliance with said General Instructions & Appendix.

SURVEYOR GENERAL'S OFFICE
Dubuque September 26th, 1845

GEO. W. JONES
Surveyor General

RESURVEY OF DES MOINES RIVER

LETTER BOOK B: 380, 1845

ISAAC N. HIGBEE:

To resurvey the Des Moines river upon both sides, through Township No. 70 N Range No. 12 west of the 5th Prin. mer. :—

You are particularly required to note the location of the improvements and especially where the house of John Willsey stood in January 1845, you will also give the necessary connections with the Section corners, and make such other examinations, as will enable you to report the character of the work executed by Willard Barrows, the Deputy who surveyed this township.

You are furnished herewith, the field notes of said Barrows, as returned to this office, and executed in pursuance of a contract dated September 4, 1843 to Wit Townships No. 70 N. of Ranges No. 11 & 12 west of Townships No. 71 N. of Ranges No. 11, 12 & 13 west of the 5th prin. mer; which notes you are to return to this office upon the completion of this resurvey & examination.

You will also receive herewith a diagram of Sections No. 1, 2, 11 & 12 Town. 70 n. R. 12 w. 5th prin. mer., it being a copy from the original plat on file in this office, with the bearings of the Section, quarter Section and meander corners, upon the exterior Township lines of said diagram —

Likewise a copy of a communication from the General Land Office dated October 24th, 1845 the requisition as contained in said communication, so far as regards the resurvey and examination, you are to consider a part of these instructions. For the faithful performance of which, you will be allowed such compensation as is given for like services, with the approbation of the Commissioner of the Genl. Land office.

SURVEYOR GENERAL'S OFFICE
Dubuque, November 12, 1845

GEO. W. JONES
Surveyor General

SPECIAL INSTRUCTIONS, LETTER BOOK B: 380, 1845

WILLARD BARROWS ESQ.:

You will receive herewith a copy of a letter from the Commissioner of the General Land office, dated October 24th, 1845. Stating that satisfactory evidence had been furnished said office, that the meanders of the River Des Moines in Sec. 12 T. 70 N R. 12 W. 5th prin. mer. are erroneous; — It is found by replatting the said meanders by the field notes thereof, that the plat of said Township is in strict conformity to the same; — I shall therefore in compliance with the Commissioners instructions, immediately appoint and instruct a deputy in whose skill and fidelity I can place confidence, to make a resurvey of your work as instructed.

Very Respectfully Sir Your obt. sevt.

SURVEYOR GENERAL'S OFFICE
Dubuque November 12th, 1845

GEO. W. JONES
Surveyor General

EXAMINATION OF SUBDIVISION—LETTER BOOK B: 388-9, 1845

HON. JAMES SHIELDS:
Comm. Genl. Land Office
Washington, D. C.

In compliance with your letter of the 24th of October, and my instructions, to him of the 12th ultimo, Isaac N. Higbee, an experienced and faithful Deputy Surveyor, has made an examination of the field work of Willard Barrows as executed under a contract with my predecessor, dated September the 4th, 1843 & has returned to this office his report of that examination and resurvey, a copy of which, including a plat of so much thereof as represents the true position of the Des Moines river in T. 70 N. R 12 W., is

herewith enclosed; together with his account of charges for the same, accompanied by the usual certificates.

Mr. Higbee request that a draft, made payable at the Dubuque Land office, may be sent him at this place.

The re-survey and examination of the said work of Mr. Barrows, as executed by Mr. Higbee, in addition to his verbal Statements as well as the testimony relative thereto as furnished by the Register and Receiver at Fairfield, leave no doubt in my mind, of the necessity of a resurvey of the whole district assigned Mr. Barrows, under his said contract, and the propriety of instituting suit against him and his securities.

The expenditure of the whole or nearly all of the funds apportioned to this office for Surveys during the present year, together with your instructions dated the 18th of April last, requiring me not to "contract for a greater amount of surveying than will be covered by your (my) apportionment" in connection with the doubt which exists in my mind as to the propriety of the step, have induced me not to contract for the resurvey of this work, but to submit the matter to you, for such directions as you see proper to give.

Another consideration operating to induce the postponement of a resurvey of the work of Mr. Barrows referred to above, is contained in a letter just received by the hand of Mr. Higbee from Bernhard Henn Register of the Land office at Fairfield calling my "attention the Survey made by William Vandever of Townships No. 72 of Ranges No. 13, 14 & 15 west & Township No. 73 of Ranges No. 14, & 15 W. and to suggest the propriety of having the work examined as to its general character".

I also enclose you a copy of the letter of Mr. Henn, and respectfully suggest the propriety of having an immediate examination made, and, if found necessary by the Deputy appointed for that purpose, of directing a thorough resurvey of the whole as has been done, within a few days past in the case of Mr. Boyd.

I am Sir very Respectfully your obt. Servt.

SURVEYOR GENERAL'S OFFICE

Dubuque Iowa T. December 5th, 1845

GEO. W. JONES

Surveyor General.

RESURVEY OF SUBDIVISION, LETTER BOOK B: 413, 1846

PAUL C. JEFFRIES:

For resurveying the field work executed by Willard Barrows, Deputy Surveyor under his contract dated Sept. 4th, 1843, for the subdivision into Sections of the following Townships: Viz: Township No. 70 N. Ranges No. 11 & 12 West, and Township No. 71 N. Ranges No. 11, 12, & 13 West of the 5th Prin. Mer. Iowa Territory.

Before entering upon the discharge of the duty assigned you above, you will carefully compare your compass with the one used by Uriah Biggs D. S. upon his recent contract of Township lines in Wisconsin, and if a disparity of variation exists, you will adjust your own so that it will exactly correspond with Mr. Biggs. You will also adjust your chain to a standard measure furnished Mr. Biggs prior to his entering upon that Survey, and which is now in his possession.

In the execution of this work you will proceed precisely as though no Survey thereof had been previously made, being guided strictly by the printed, *General Instructions*, and the appendix thereto attached, for the subdivision of a township into Sections, a copy of which is furnished you herewith.

You will obliterate all the lines and corners and evidence of corners established by Mr. Barrows, except those that can be re-established by you.

You will carefully meander the right and left banks of Des Moines River through your district.

Herewith you will receive diagrams representing the Township lines of your district, with their length, variation and topography marked thereupon: also a copy of Mr. Barrow's Special Instructions, which will guide you in the matter of a certain reservation, therein named.

SURVEYOR GENERAL'S OFFICE

Dubuque, April 21, 1846

GEO. W. JONES

Surveyor General

RESURVEY OF SUBDIVISION—LETTER BOOK B: 414, 1846

PAUL C. JEFFRIES:

I have assigned to you the re-survey of the townships embraced in a contract with Willard Barrows, dated September 4th. 1843, to wit:

Township No. 70 North, Ranges No. 11 & 12 West, and Township No. 71 North, Ranges No. 11, 12 & 13 West of the 5th Meridian in Iowa Territory.

With this you will receive a commission of Deputyship; a copy of the printed General Instructions to Deputies, with an appendix to which your attention is specially directed; my special instructions to you, together with an extract from the Special instructions to Willard Barrows, furnished him, prior to his execution of the said work.

You will also receive herewith a Contract and Bond in triplicate, which you are required to execute on your part severally and properly, before entering upon the execution of the aforesaid re-survey and return the same to this Office, without delay. The sufficiency of the sureties upon your Bond must be certified to, either by one of the Judges of the Supreme Court of Iowa Territory or by the U. S. Dist. Atty., for the same. In filling up the Bonds, the residence of the sureties must be stated.

Your Oath as U. S. Deputy Surveyor, and also the Oaths of your Assistants must accompany the said Bonds to this Office.

Accompanying the return of said Contracts & Bonds, you will please send your signature to the enclosed Blank, inserted over "Deputy Surveyor", to be used here in making out your account. You will state also at the same time where you desire to have your draft made payable.

When the said Contracts have received my signature one of them will be returned to you.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 21, 1846

GEORGE W. JONES
Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK B: 414, 1846

HON. JAMES SHIELDS
Comr. Genl. Land Office,
Washington,

Pursuant to your instructions, bearing date the 27th, of March 1846, I have assigned for re-survey, to a competent and faithful deputy, the work embraced in Willard Barrows' Contract with my predecessor of the 4th, of September 1843.

I have the honor to transmit, herewith a copy of my Special instructions to Paul C. Jeffries, of Otumwa, Wapello Co. Iowa, the Deputy aforesaid, together with a diagram of his district.

Triplicate Contracts & Bonds have been sent Mr. Jeffries for execution, a copy of which, will be sent you upon the return thereof.

Very respectfully, Sir, Your Obt. Servt.

SURVEYOR GENERAL'S OFFICE
Dubuque April 22, 1846

GEORGE W. JONES
Surveyor General

EXAMINATION OF SUBDIVISION SURVEY—LETTER BOOK B: 415, 1846

JOSEPH MOOREHEAD:

For examining and reporting the work executed by Willard Barrows under his contract of November 16, 1844 for the Survey and subdivision into Sections of the following Townships Viz: Townships No. 76, 77 & 78 North, Range No. 15 West of the 5th Prin. Mer. and of Township No. 76 North, Range No. 16 West of the 5th Principal Mer. in Iowa Territory; also of the work executed by William Vandever under his contract of Sept. 5th, 1843, for the Survey and subdivision into Sections, of the following Townships Viz: Township No. 72 North, Ranges No. 13, 14, & 15 West, and Townp. No. 73 North, Ranges No. 14, & 15 West of the 5th Prin. Mer. in Iowa Territory.

Before entering upon the discharge of the duties, assigned you above, you will carefully compare your compass with the one used by James Grant Dep. Sur. in his recent execution of a Contract for subdividing in Iowa Territory and if a disparity of Variation exists, you will adjust your own so that it will exactly correspond with Mr. Grant's. You will also adjust your chain to a standard measure furnished Mr. Grant at this office, prior to his execution of the work aforesaid.

In your examination of this work you will inform yourself, from Surveyors & others residing upon or in the vicinity of the said districts of the location of all frauds or errors complained of, and also of all, known or supposed to exist, all of which you are, separately and severally to examine and report.

Your other examinations should be chiefly confined to the last mile of each tier of

Sections, in other words, to the lines closing upon the North and West boundaries, as errors would be largest, and frauds be most likely to be perpetuated in the measure, variation or closing of such lines.

You will re-meander a portion of both banks of the Des Moines River which traverses your last mentioned district, that you may be able to report upon that part of the work also.

You will state, clearly, in your field notes, the point at which you commence, all corners with which you close or connect; the magnetic variation which you employ; the length of every line which you re-measure; how, and the point at which you terminate each and every examination—taking care, always, to specify the Township and Range thereof.

You are in no case to make any change or alteration of the work executed by either of the Contractors aforesaid, but simply to examine until you are fully informed of the character and condition of the same, which you will report to this office at the earliest practical day: which report must be accompanied by the field notes of your said examination.

Herewith you will receive a copy of the printed, General Instructions to Deputy Surs. for the subdivision of a township into Sections, together with the additional or Special Instructions, furnished each of the said Contractors, as their guide in the execution of the said Contract; also the original field notes of each of the said Surveys, as returned by said Barrows & Vandever, which you are to preserve with great care, and certainly return to this Office, along with the report and field notes of your examination.

In employing your assistants, and particularly your chain-carriers, you will be cautious to select men of skill and experience as such, in order to render your own work uniform and to avoid, as much as possible, frequent errors and discrepancies in measurement, arising from the carelessness or incapacity of chainmen. The following from the Commissioner of the General Land Office, in reference to this subject, will prepare you to meet with slight, but unavoidable discrepancies, while it will also materially aid you in deciding whether the work does or does not require resurvey and correction:

"In making these examinations, if the lines and corners are found to be clearly and distinctly marked, and the bearing trees properly given a slight discrepancy in measurement or error in bearings, Should not justify the expense of a resurvey. This suggestion grows out of the fact, well known to you, that two sets of Chain carriers will not and cannot report the same measurement exactly: and that deputies frequently differ slightly in arriving at the variation of the needle."

At the end of your field notes, you will insert an affidavit, properly subscribed and sworn to (see appendix to General Instructions) of the following form:

I, Joseph Moorehead, Deputy Surveyor, do solemnly affirm, that, in pursuance of Instructions from George W. Jones, Surveyor General of the Territories of Wisconsin & Iowa, dated April 23rd, 1846., and in strict conformity thereto, I have faithfully executed the remeasurements & examinations therein directed; and I do further solemnly affirm, that the foregoing are the true and Original field notes of the said re-measurements and examination, executed as aforesaid. [See following letter]

Standard paragraph No. 5d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque, April 23, 1846

GEORGE W. JONES
Surveyor General

EXAMINATION OF SUBDIVISION—LETTER BOOK B: 416, 1846

JOSEPH MOOREHEAD:

I have appointed you to the important and responsible duty of examining and reporting the work executed by Willard Barrows, Deputy Surveyor, under his contract of November 16, 1844 for the Survey and Subdivision into Sections, of Townships No. 76, 77 & 78 North, of Range No. 15 West, and of Township No. 76 North, of Range No. 16 West of the 5th Principal Meridian, in Iowa Territory, and of the work executed by William Vandever, Deputy Surveyor, under his contract of September 5, 1843, for the Survey and Subdivision into Sections of Townships No. 72 North, of Range No. 13, 14 & 15 West of the 5th Prin. Mer. and Townships No. 73 North of Ranges No. 14 & 15 West of the same Mer. in Iowa Territory.

Herewith enclosed, you will receive my special instructions to you, together with other data therein mentioned.

The special instructions to Willard Barrows, referred to in the said special instructions to yourself, have been omitted in consequence of their similarity with the "appendix" to the printed General Instructions, to which your attention is directed instead thereof. Accompanying the return of your report and field notes to this Office, you will send your Bill of Services and expense. Also your Oath as U. S. Dep. Sur. (see General Instructions) which you will execute prior to taking the field.

Your signature to the enclosed blank, inserted over Deputy Surveyor, to be used in making out your account, and the return of the same with the above papers, together with the name of the office at which you desire to have your draft, in payment of the said services and expenses made payable, will both be required before your account can be approved or transmitted.

I must again direct your attention to the importance of using great care and caution in preserving and returning the accompanying original field notes of Said Barrows and Vandever, as their loss would be followed by the most embarrassing consequences. [See pp. 285, 286, 290, 292, 293]

SURVEYOR GENERAL'S OFFICE
Dubuque, April 21, 1846

Very respectfully, Sir Your Obt. Servt.
GEORGE W. JONES—*Sur. Genl.*
By ELISHA DWELLE—*Ch. Clk.*

SPECIAL INSTRUCTIONS, LETTER BOOK B: 417, 1846

HON. JAMES SHIELDS,
Comr. Genl. Land Office
Washington, D. C.

I have the honor to inform you that, pursuant to your instructions of March 27, 1846, I have appointed a Deputy Surveyor to examine and report the work executed by Willard Barrows under his Contract of Nov. 16, 1844, and also of the work executed by William Vandever under his contract of September 5, 1843.

A copy of my special instructions to Joseph Moorehead of Davenport, Iowa, the Deputy above mentioned are herewith enclosed.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 23, 1846

Very Respectfully, Sir, Your Obt. Servt.
GEO. W. JONES
Surveyor General

SPECIAL INSTRUCTIONS, LETTER BOOK B: 422, 1846

HON. JAMES SHIELDS,
Comr. Genl. Land Office,
Washington, D. C.

By your letter of March 23, 1846, I was required to advise Mr. Isaac N. Higbee, Dep. Surveyor that his account for examining & Reporting the Surveys executed by Willard Barrows under his Contract of September 4th, 1843, was, on the said day "sent to the First Comptroller of the Treasury for decision & remittances". Your letter was received on the 16th, ultimo, making a Draft due—conformably to the time usually intervening the reception of a Notice & Draft—six days thereafter.

No Draft or Notice thereof to the Land Office at this place, has been received; leaving it extremely probable that both are lost.

SURVEYOR GENERAL'S OFFICE
Dubuque, May 16, 1846

Very Respectfully, Sir, Your Obt. Servt.
GEO. W. JONES
Surveyor General

RESURVEY OF SUBDIVISION, LETTER BOOK B: 424, 1846

ISAAC N. HIGBEE:

For the re-survey & correction of a part of the work executed by the late W. L. D. Ewing under contract therefor, of July 12, 1845, in Township No. 75 North, Range No. 17 West & in Township No. 76 N. Range No. 18 West of the 5th Prin. Meridian Iowa Territory.

The accompanying diagram exhibits the position & extent of the work you are to resurvey in each of the said townships.

The section & Marginal lines of the Des Moines river, drawn in black ink were correctly executed by the aforesaid Contractor; those in Red you are to Re-survey.

The East & West lines, crossing the river, as now established, are true lines, ran both from the East & West to the river & there closed; instead of having been, in obedience to the General Instructions, randomed & corrected precisely as though no river or other obstruction existed.

To remedy these defects you will resurvey & mark all the East & West lines represented upon the said diagram in red ink, by randoming East or West as the case may be, & in correcting back, establish your Quarter Section & Meander corners as directed by the printed, General Instructions now in your possession.

You will re-establish all the corners of the previous Survey, upon the lines which you are hereby required to correct, that you may find available, and carefully obliterate the remainder with all the evidences thereof.

You will also re-meander so much of the said river through each of the said Townships, as is represented upon the said diagram in marginal Lines of red ink.

Upon the following pages you will find a full description of the Witness trees or other monuments to the Section Corners within and adjoining the district you are to resurvey and correct, & also to the Meander corners both upon the township & section lines of the said district.

You are particularly required to enter upon & execute this work with as much despatch as is consistent with accuracy.

SURVEYOR GENERAL'S OFFICE

GEORGE W. JONES

Dubuque, May 21, 1846

Surveyor General

P. S.—You will also establish witness trees or other permanent evidence of the meander corners on the right bank of the said river between Sections 26 & 27 & also between Sections 32 & 33 in Township 75 N R. 17 W of aforesaid.

RESURVEY OF SUBDIVISION—LETTER BOOK C: 3, 1846

HON. JAMES SHIELDS

Comr. Genl. Land Office

Washington City D. C.

Pursuant to my letter to you of April 22, 1846, I have the honor to send you herewith, the Contract & Bond of Paul C. Jeffries, Dep. Sur., for the re-survey of the work executed & returned to this office by Willard Barrows, under his contract thereof of Sept. 4th 1843.

In his letter to me, accompanying the return of the said Contract & Bond, in triplicate, this day received, Mr. Jeffries states that he is progressing in the said re-survey.

Very respectfully, Your Obt. Servt.

SURVEYOR GENERAL'S OFFICE AT

GEORGE W. JONES

Dubuque, June 12th 1846

Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 3, 1846

PAUL C. JEFFRIES:

With this you will receive one copy of your triplicate Contract & Bond, received with your letter of the 25th ultimo, executed on my part & approved.

Very respectfully Your Obt. Servt.

SURVEYOR GENERAL'S OFFICE AT

GEORGE W. JONES

Dubuque, June 12, 1846

Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 8 & 9

HON. JAMES SHIELDS

Commr. Genl. L.O.

Washington City D. C.

It was my design to have finished at this time, my surveying account for the fiscal year just closed; but I have been contravened in this design by the following causes:

1st. The great amount of correcting and resurveying both of old & new work that has been required with the last eight months, rendering a vast amount of labor in this office abortive.

2nd. the ill health, inability & misconduct of my late Chief Clerk Elisha Dwelle, during my absence last winter.

The following is the condition of the unfinished part thereof, both in the field and office.

Frac. T. 21 N. R. 19 E. of the 4th P.M. W. T. embraced in a contract with John Banister, dated August 16, 1843 and surveyed & re-surveyed by him has not yet been executed in an admissible manner, Mr. Banister has been repeatedly written to upon this subject; but has, since Oct. 1845 made no reply. I shall immediately contract with another Deputy for the survey thereof.

James Fanning's, Theodore Conkey's, Andrew Burnside's and Albert G. Ellis' field notes, under contracts of 1845, are severally received. The two first are platted & partly copied, the third has been up to this day suspended and the last is undergoing its first examination.

The re-survey of Barrow's work by Mr. Jeffries, will be returned shortly. of the progress made by Mr. Moorhead, in his examination of Vandever's & Barrow's last work, I am unaware not having heard from him since he took the field, however I am expecting his returns daily.

The survey of the Porlier lot west side of Fox river W. T. will doubtless be received in a few days.

The work in the office will be put forward with all possible dispatch; and I entertain no fears of being ready for the new work, tho I sincerely regret the delay of the old.

Very Respectfully Your Obt. Servt.

SURVEYOR GENERAL'S OFFICE AT
Dubuque June 30th 1846

GEO. W. JONES
Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 13, 1846

JAMES MOOREHEAD:

The field notes returned by you to this office pursuant to your appointment of Feby. 12, 1846, of the survey of that part of Credit Island in T. 77 N. R 3 E. of the 5th pr. Mer. not included in original Survey are herewith returned to you, because of the incomplete and imperfect character of your said survey. You are therefor requested immediately to resurvey & correct the same, being guided therein by my special instructions therefor which accompany this.

This communication would have borne an earlier date but for the fact that you were known to be absent from Davenport.

SURVEYOR GENERAL'S OFFICE
Dubuque July 4th 1846

Your obt. Servt.
Very Respectfully
GEO. W. JONES,
Surveyor General

ISLANDS SURVEYS IN MISSISSIPPI RIVER—LETTER BOOK C: 13, 1846

H. S. FINLY:

For the survey of two Islands in the Mississippi River, upon the Iowa Side thereof and near the head of Credit Island therein, in Sections 3 & 4 Township No. 77 N. Range No. 3 East of the 5th pr. Mer. in Iowa Terry.

Before entering upon the said Survey you will adjust your compass & chain by those recently used by Jos. Moorehead upon a U. States Survey. Both you and your assistants will also take and subscribe and oath or affirmation, as per example of the General printed instructions furnished you herewith, which oaths must be returned to this office with the field notes of your said survey.

Commencing at meander post numbered 3 upon the accompanying diagram, you will continue the line between Sections 3 & 4 north across the "first Slough" to one of the Island aforesaid & there establish a meander corner, taking bearing trees therefrom if convenient otherwise raising a mound and describing the course and distance of the pit from which you obtained the same. Thence you will continue the line North across said Island to "2nd. Slough" & there establish a meander corner as before described.

Commencing at one of the meander posts established by you, you will then meander said Island closing with your other said meander post & stating the Section in which you start, when you leave it and what Section you enter upon leaving it.

Commencing at meander post No. 3 on said diagram you will meander the North West part of Credit Island until you arrive at a point in the same which approaches

nearest to the other Island you are to Survey. Thence you will run (by triangulation if necessary) due east across "third Slough" to last mentioned Island & there establish a prominent and durable Monument. From thence you will meander the Island starting from & closing with the said Monument

You will note the variation at which you run each of the aforesaid lines. In the appendix of the said printed General instructions you will find the general form of an affidavit which you are to append to your field note properly sworn to as therein-directed.

Herewith you are furnished a blank book in which you will take and return the field notes of your said survey—See pages 20, 21, 23, of Genl. instructions aforesaid.

Upon the 9 page hereof you will find, set opposite to numbers corresponding to numbers upon the said diagram a description of all corners which it will be necessary for you to visit.

SURVEYOR GENLS. OFFICE
Dubuque July 4th 1846

GEO. W. JONES
Surveyor General
of Wis. & Iowa

EXAMINATION OF SUBDIVISION—LETTER BOOK C: 22 & 23

JOSEPH MOOREHEAD:

On the 23rd of April last, I appointed you to examine and report the character of the Surveys executed by Willard Barrows under his contract of November 16 1844 and those of Wm. Vandever, under his Contract of Sept. 5th 1843 and furnished you with full instructions, and data therefor. Owing to the nature of this work and placing the most implicit reliance upon your promptitude and faithfulness, no precise limit was placed to the time within which you were to complete its execution, though there was no ground for believing that you could, consistently, occupy more than four weeks therein.

More than three months have expired since the date of the said appointment and instructions, during the last six weeks of which time I have been constantly and confidently expecting your return. I am astonished at this delay and still more astonished at your protracted and unaccountable silence.

You will please report to this office immediately, the progress made by you in the said examination, and explain at length the causes of its delay and of your remarkable silence thereupon; as I am responsible and shall be called upon to satisfy the Department at Washington, that you have acted in good faith in this matter and that your apparent neglect and misconduct have been unavoidable.

Very Respectfully Your obt Servt.

SURVEYOR GENERAL'S OFFICE AT
Dubuque July 24 1846

GEO. W. JONES
Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 25

HON. JAMES SHIELDS
Comms. Genl. L. O.
Washington D. C.

Pursuant to my instructions to him on April 23rd. 1846 Joseph Moorehead Deputy Surveyor has just reported to this office the character of the work executed by William Vandever under his contract of Sept. 5, 1843, and that executed by William Barrows under his contract of Nov. 16 1844 a copy of his report, upon each of which, I have the honor to enclose.

Mr. Moorehead's returns have been delayed considerably longer than was anticipated at the date of his instructions, owing, I am satisfied to the unusual care he has taken to be accurate, and a determination not to report until he was fully informed of the character of the work. His field notes show a great amount of labour performed in each Township of both the said districts, leaving no doubt of the precise character of the Surveys therein, nor the fact that his examination has been faithfully & promptly conducted.

The result of the examination of Vandever's work is to discover clearly that his survey was executed without reference to or care for his instructions any farther than was necessary to give to the work the general features of a Survey. The corners throughout the whole district are either missing altogether, or are so obscurely and imperfectly established as to render it impossible they should ever be recognized as corners any further

than by common consent of the Settlers. The lines appear to have been very loosely and hastily ran as there is very little accuracy or uniformity either in their length or variation. A greater error still, however, and one which in my opinion condemns the work, is the universal and often wide disparity between the work as it was executed and as it exists in the field and his (Vandever's) return thereof in this office I see no way in which the rights and interests, of the Settlers and the character of the public surveys can be sustained except in a complete re-survey of this district.

The character of the survey executed by Mr. Barrows under his contract aforesaid according to Mr. Moorehead's examination thereof is extremely defective. The length & variation of his lines appear to have been in most instances correctly reported although that fact cannot be ascertained with much certainty in consequences of a general absence of corners. His East & West lines appear never to have been ran at all, except in timber, and there but half way, or just far enough to establish the Quarter Section parts. The blazing where it has not been omitted altogether, is so obscure as to be traced with difficulty, scarcely a corner exists or was ever established in the prairie parts of his district, and his descriptions are in almost every instance totally wrong.

It is manifest that justice to the settler requires a more complete & perfect survey than the one above described. I would recommend an entire re-survey of the District as the surest means of obtaining an accurate survey at the least expense, a continuation or rather carrying—out of what is already done in that District, could only be done at the expense of a greatly increased amount of labor over the plan which I recommend instead.

I am very Respectfully Your Obt. Sevt.

SURVEYOR GENERAL'S OFFICE AT
Dubuque August 19, 1846

GEO. W. JONES
Surveyor Genl.

P. S. Enclosed you will also receive Mr. Moorehead's account for executing my said instructions, to the amount of which I have to request you to make a requisition upon the Treasury Department in his favor. He prefers a draft upon St. Louis Mo. if practicable otherwise upon Dubuque, Iowa Territory, sent to him through the Post office at Davenport Iowa Territory.

GEO. W. JONES
Surveyor Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 26

HON. JAMES SHIELDS
Comms. Gen. L. O.
Washington D C

In explanation of the accompanying account, I have the honor to state that no limit, can, in view of the nature of the work, be fixed as to the time within which an examination shall be made, nor of the amount of service, required thereto, Mr. Moorehead was instructed to examine untill he was fully informed and satisfied of the character of the work in each of the said districts and his field notes are evidence of a diligent and energetic execution of those instructions. Considering the great amount of work actually preformed by him and his expenses consequent upon its performance, I think his bill extremely reasonable.

I am very Respectfully Your Obt. Sevt.

SURVEYOR GENERAL'S OFFICE AT
Dubuque August 19, 1846

GEO. W. JONES
Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 43, 1846

URIAH BIGGS Esq.

Herewith you will receive my printed, general instructions to you for surveying and establishing the Township boundaries of a district illustrated upon an accompanying diagram, and described in a triplicate Contract and Bond which you will also receive herewith and which you are severally to execute on your part, with two sufficient sureties, and return to this Office before entering upon your said survey.

You will observe that the South boundary of your district is the South of boundary of township sixty eight (68) of Ranges twenty three, twenty four (23, 24) and twenty five (25) which you are to Survey and establish. You will run this line due west, establishing township corners at intervals of six miles and three chains, observing to throw

the said three chains upon the last half of the sixth mile within each of the said Ranges
The township corners and the length of the township lines bordering your district upon the North and East are embraced in Contracts now under survey, and cannot therefore be furnished you.

The Deputies surveying those lines, have been instructed to leave upon the posts at the respective township corners upon those lines, all requisite data.

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 5th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 44, 1846

ALEXANDER ANDERSON:

You are to meander both banks of so much of the Red Cedar river as lies within your district.

Standard paragraph Nos. 5d, 6d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 6th, 1846

GEO. W. JONES
Surveyor General

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 45, 1846

JOHN BALL:

You will observe that the South boundary of your district is the South boundary of township No. Sixty eight (68) North of Ranges No. Twenty (20) twenty one (21) and twenty two (22) West, which you are to survey and establish. You will run this line due West from the South East corner of township No. 68 North of Range No. 20 West, establishing township corners at intervals of six miles and three chains; observing to throw the said three chains upon the last half of the sixth mile within each of the said Ranges.

Herewith you are furnished a diagram representing the first Range line East of your district, with the length of and topography upon the same within each township.

You are to leave at the respective township corner post, established in the Western boundary of your district a full and distinct description of your closings thereat for the use of the deputy who is to survey a district of township lines adjoining and lying immediately West of your own.

SURVEYOR GENERAL'S OFFICE
Dubuque, Oct. 6th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 45, 1846

SAMUEL W. DURHAM:

Standard paragraph Nos. 5d, 6d, 8d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque, Oct. 6th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 46, 1846

ISAAC N. HIGBEE:

The first correction line which you are to survey and establish from the South East corner of township No. 79 North of Range No. 20 W. to the South West corner of the same township in Range No. 23 West forms the Southern boundary of your district.

You will run this line due West from the first mentioned township corner establishing township corners at intervals of six miles and three chains; observing to throw the said three chains upon the West end, or upon the last half of the Sixth mile within each of the several ranges through which that line passes.

The Second correction line which you are to survey and establish from the South East corner of township No. 89 North of Range No. 20 West to the South West corner of the same township & Range is to be surveyed precisely as directed above for the Survey of the first Correction line.

With this you are furnished a diagram representing the first Range line East of your district, describing the Township corners and the length of and topography upon the same within each township.

You are to mark or fix securely upon the respective posts established at the corner of townships in the Western boundary of your district, your closing thereat for the use of the Deputy who is immediately to survey a contract of township lines adjoining your own upon the West.

SURVEYOR GENERAL'S OFFICE
Dubuque, Oct. 6th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 47, 1846

SAMUEL JACOBS:

You are to meander both banks of the Des Moines river through your District.

Standard paragraph Nos. 5d, 6d, 8d, 9d, 10d, 11d. [See p. 356]

You will compare and adjust the length of your chain to a standard measure adjusted for Uriah Biggs, Esq. Deputy Surveyor at this office and now in his possession.

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 7th, 1847

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 48, 1846

ORSON LYON ESQ.:

Standard paragraph Nos. 5d, 6d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 9th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 49, 1846

THOMAS HURLEY ESQ.

Standard paragraph Nos. 5d, 6d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 10th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 50, 1846

GEORGE MCHENRY:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque, October 10th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 53, 1846

JOSEPH GREENE ESQ.:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 10th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 54, 1846

JOHN W. ELLIS ESQ.:

Standard paragraph Nos. 9d, 10d, 11d, 5d, 6d, 7d, 8d. [See p. 356]

You will compare and adjust the length of your chain to a standard measure adjusted for Uriah Biggs Esq. Deputy Surveyor at this office and now in his possession.

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 13th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 55, 1846

JOHN D. EVANS:

Standard paragraph Nos. 9d, 10d, 11d, 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 13th 1846

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 79, 1846

WILLIAM G. ROSS ESQ.:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]
 SURVEYOR GENERAL'S OFFICE
 Dubuque, Novr. 20th 1846

GEO. W. JONES
 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 81, 1846

DON ALONZO SPAULDING ESQ.:

Standard paragraph No. 18d. [See p. 357]
 About eight weeks following the date hereof, you will receive thro' the Post Office to which this is addressed a draft payable at St. Louis, Mo. for one hundred and two dollars and five cents, in full payment for your said surveys.
 SURVEYOR GENERAL'S OFFICE AT
 Dubuque, Nov. 24th 1846

I am very Respectfully
 Your Obt. Servt.
 GEO. W. JONES
 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 81, 1846

THOMAS MONROE ESQ.:

Varsailles, Morgan Co. Mo.)
 Standard paragraph No. 18d. [See p. 357]

About eight weeks following the date hereof, you will receive thro' the Post Office to which this is addressed, a draft payable at St. Louis Mo. for Three hundred & forty two dollars and Ninety nine cents in full payment for your said surveys.
 SURVEYOR GENERAL'S OFFICE AT
 Dubuque, Novr. 24th, 1846

GEO. W. JONES
 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 82, 1846

LYCURGUS SHEPARD ESQ.:

Platte City, Mo.
 Standard paragraph No. 18d. [See p. 357]

About eight weeks following the date hereof, you will receive thro' the Post Office to which this is addressed, a draft payable at St. Louis, Mo. for One hundred and Sixty eight dollars and seventy cents in full payment for your said Surveys.

SURVEYOR GENERAL'S OFFICE AT
 Dubuque, Nov. 24, 1846

Very Respectfully Your Obt. Servt.
 GEO. W. JONES
 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 87, 1846

URIAH BIGGS ESQ.:

Keosauqua, Van Buren Co. Iowa

With this you will receive one copy of your triplicate Contract and Bond of Oct. 17th 1846, executed on my part.

SURVEYOR GENERAL'S OFFICE AT
 Dubuque, Decr. 8th, 1846

Very Respectfully Your Obt. Servt.
 GEO. W. JONES
 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 93, 1846

PAUL C. JEFFRIES ESQ.:

Ottumwa, Wappelo Co. Iowa

The corrected field notes of your resurvey under Contract of the 21st of April last, together with all the papers mentioned in your letter of the 3d. instant, are received.

The earliest attention of the office will be directed to an examination of your said work, the result of which will be communicated to you.

The language of my letter to you of the 16th ultimo, which you have construed into

a reprimand, grew out of the following state of facts: the district of your resurvey had been "proclaimed" for sale before it was known that the original survey was fraudulent, which, added to the more important fact that portions of the same were extremely desirable both for the adjustments of their lines and the entry of their land, rendered it of the first importance that your resurvey thereof should be prosecuted with as great despatch as was consistent with accuracy. Under these circumstances a Contract was sent you, into which you entered without qualification or demur, fixing the time of the return of your field notes on the 15th of the following July. The time thus fixed, and agreed to deemed to be, and was amply sufficient for the purposes specified.

The said Contract was transmitted to you for execution on the 21st of April last, but delayed by you without assignable cause or even apology to the 19th of the following May—six days after which it was mailed for return without any expression of doubt as to your ability to perform the work within the time fixed upon. Upon the very day that your returns were due, your letter of the 28th of June, reached me, in which you stated that you might not be able to complete your job within the limits of your Contract. From that time your field notes were daily expected, up to the reception of your letter of the 2d. of Sept, in which you informed me, to my astonishment, that you were still in the field. It was mortifying to me to reflect that, out of the multiplicity of applicants for this work, I had selected one whose remissness could not but expose me to the reproach and just reproach, of the department. I had then the alternative, only, of declaring your Contract forfeited or of exercising a questionable indulgence towards you. I decided upon the latter course and waited in anxious expectancy of the return of your work till the reception thereof with your letter of the 6th ultimo. What could have surprised me more, after all this unprecedented and unexplained delay, than to find your returns deficient in the most important point and in complete disregard to your instructions.

Your work now comes into the office simultaneously with that put under Contract more than five months later, with the succession and despatch of which it must unavoidably and seriously interfere—causing me to be impugned by the Deputies here and censured by the Department.

These were the facts that prompted my letter to you of the 16th ultimo, which if you are pleased to construe into a reprimand, be pleased also to consider it deserved in the highest degree

SURVEYOR GENERAL'S OFFICE AT
Dubuque, December 22d, 1846

Very Respectfully Your Obt. Servt.
GEO. W. JONES
Surveyor General

RESURVEY OF SUBDIVISION—LETTER BOOK C: 95 & 96

HON. JAMES SHIELDS
Commissioner Genl. L. O.
Washington City, D. C.

By your letter of the 24th. of October last, I am authorized to contract for the resurvey of the survey by Willard Barrows under his contract of November 16th. 1844, and of that by William Vandever under his contract of September 5th, 1843; both of which were examined and reported upon by Joseph Moorehead, in compliance with my instructions to him of April 23d. 1846. The exercise of this authority involves difficulties which I beg to present to your considerations

In order to accomodate the price per mile to the character of the different surveys to be executed out of the last apportionment to this district, I had, prior to the reception of your said letter, placed it out of my power to pay more than two dollars and fifty cents per mile for subdividing in Iowa Territory—a compensation at which I am unable to engage the services of a competent Deputy upon the said re-survey, to a number of whom I have offered the work.

The greater portion of the district in question is prairie, rendering it impossible to establish any other corners than mounds of Earth. The difficulty in the way of constructing sizable or permanent mounds when the Earth is frozen to the consistency of rock for several feet beneath its surface, is so obviously great as to have decided me to let as few Contracts as possible during the winter season. These difficulties are more than doubled in a resurvey, in which new mounds are not only to be built but the old ones—now frozen to a solid mass and the pits, from which they were taken and into which they must be thrown, filled with ice—demolished.

The price per mile that is requisite to ensure an accurate, original survey, is quite insufficient to the execution of a resurvey, upon which it is not only important that all the lines and corners should be distinctly marked, but that all the Old ones should be as perfectly cancelled. This adds, vastly to the labor of an ordinary survey for, in order to be cancelled, they must be searched for and found. This has been found out to the severe cost of the Deputy who has just closed his resurvey of Barrows work, and who warmly petitions this Office for an increase of compensation in consequence thereof. If the Old and new lines coincided very nearly, the labor of cancelling would measure the difference of cost between an original and resurvey. But the disagreement, where the Original lines were actually run, will in most instances be very great, while, in cases when the same were not run, still more time will be required to establish that fact. Your instructions require that all the original work that can be used shall be adopted and carried to the credit of the Original surveyor. This judicious requisition is greatly in the way of contracting for the said resurvey; for all the work that is thus found available, lessens the compensation without lessening, to the slightest degree, the labor of the Deputy. It is my belief that the resurvey under consideration, cannot be executed properly, even at a favorable season of the year for a compensation less than four dollars per mile.

In view of the above facts I respectfully ask to be advised: 1st, whether the said survey can be deferred until spring, and 2d., whether the cost of the same is to come out of the aforesaid apportionment, and also whether the price per mile is to be regulated by the maximum for ordinary or original surveys.

SURVEYOR GENERAL'S OFFICE AT
Dubuque, December 28th, 1846

Very Respectfully Your Obt. Serv.
GEO. W. JONES

Surveyor General
P. S. Am I correct in understanding your said letter to mean that the work, passed to the credit of the original Contractor in consequence of its having been properly executed, cannot be charged for by the Deputy resurveying the same. I ask because of the fact that all the work thus adopted has actually to be resurveyed before its character can be known.

G. W. J.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 97

DR. ENOS LOWE:

In reply to your letter of the 23rd. instant I have to state, that the surveys by W. Barrows in T. 76 of Ranges 15 & 16 have been rejected, and that, unless otherwise advised by the Hon. Commissioner of the Genl. Land Office, those townships will not be resurveyed before early spring; in which event, returns of the same cannot be completed and ready for transmission to yours and the Genl. L. O. earlier than the middle of May or first of June next.

SURVEYOR GENERAL'S OFFICE AT
Dubuque, December 29, 1846

Very Respectfully Your Obt. Serv.
GEO. W. JONES
Sur. General.

RESURVEY OF SUBDIVISION—LETTER BOOK C: 99

PAUL C. JEFFRIES ESQ.
U. S. Dep. Sur. at
Ottumwa, Wappelo Co. I. T.

The minutes of your resurvey of Township No. 70 North of Ranges No. 11 & 12 and of townships No. 71 North of Ranges No. 11, 12, & 13 West of the Fifth Prin. Mer. Iowa, pursuant to your contract therefor of April 21st, 1846, require explanation and correction in the following respects:

1st. The variation at which your random and corrected lines were respectively run, do not appear to bear such a relation to each other as the distances of your intersections demand. You will please, therefore, furnish me with the process by which you arrived at the true variation of your closing lines.

You will also return to this Office a resurvey of the line between Secs. 28 & 33, 20 & 29 and 19 & 30 of T. 71 R. 12 and between Secs. 23 & 26 and 22 & 27 of T. 70 R. 11, showing the whole length of those lines precisely as though no obstacle existed to obstruct the survey thereof. You will observe by the tablets of the said survey, in your

possession, that the Section lines above named are only partially run—leaving it impossible to decide 1st. whether you meander corners upon the same are in line with the adjacent Sec. Corners upon the East & West, 2d. whether the $\frac{1}{4}$ sec. corners are in the centre of those lines and 3d the width of the river at the points where it is crossed by those lines.

The earliest possible return of the above is required that the progress of your work in my Office may not be delayed.

SURVEYOR GENERAL'S OFFICE AT
Dubuque, Jan'y. 5th, 1847

Very Respectfully Your Obt. Servt.
GEO. W. JONES
Surveyor General

P. S.—You will also remeasure that part of the line between Secs. 13 & 14 of T. 71 R. 13 between the last meander corner on the right bank of Des Moines river and the corner of Secs. 11, 12, 13 & 14 and make return of the same as above required.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 104 & 105

JOSEPH MOOREHEAD ESQ.

I have this day received, from the Acting Commissioner of the General Land Office, a communication (a Copy of which is enclosed.) advising me: for reasons given, that your account, for examining and reporting the surveys executed by Barrows & Vandever, respectively, is suspended in the Office of the First Comptroller of the Treasury.

With the view of obviating the objections of the Comptroller, it will be necessary for you to procure the Vouchers of your assistants and that these Vouchers should specify the amount of service rendered in the examination of each of said Contracts, and that you accompany the said Vouchers to this Office with your own, stating the whole time consumed by you in your examination of each of the said districts, the whole amount of work performed or number of miles examined with a detail of your incidental expenses upon *each*.

These several vouchers will be embodied in a new account, over your signature now in this Office, and transmitted to the General Land Office as directed by the Communication of the acting Commissioner.

SURVEYOR GENERAL'S OFFICE
DuBuque, January 22d. 1847

GEO. W. JONES
Surveyor Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 110, 1847

GEO. B. SARGENT ESQ.:
Davenport, Iowa

Your surveys under Contract with the Sur. Genl. of Ill. & Mo. dated May 10th, 1845, North of "Sullivans' line prolonged, together with your account therefor were this day transmitted to the Genl. L. O.

About one month following the date hereof you will receive, through the P. O. to which this is directed, a draft, payable at St. Louis, Mo., for \$828.48, in full payment for the said survey.

Your letter of the 25th. inst. was duly recd. and the corrections therein contained approved and adopted.

SURVEYOR GENERAL'S OFFICE
Dubuque, Jan'y. 29, 1847

Very Respectfully Your Obt. Servt.
GEO. W. JONES
Surveyor Genl.

RESURVEY OF SUBDIVISIONS—LETTER BOOK C: 118

COL. JAMES H. PIPER
Act Commr. of Genl. L. O.
Washington City D. C.

I have the honor to transmit herewith Copies of the original plats of five townships, showing the resurvey by Paul C Jeffries, Dep Sur. pursuant to his Contract therefor of April 21st 1846 of the work executed by Willard Barrows D. S. under his contract of Sept 4th 1843 viz:

Towns 70 North of Rs. 11 & 12 West of the 5th Prin Mer Iowa

Towns 71 North of Rs. 11, 12 & 13 W of the 5th Prin Mer Iowa

Also Mr Jeffries account, in full for the execution of the said resurvey, to the amount of which I have to request you to make a requisition in his favor. He desires a draft on the Receiver of Public moneys at Fairfield State of Iowa sent to him through the Post Office at Ottumwa, Wapello County, State of Iowa.

Owing to the extremely difficult and embarrassing nature of this work and the severe illness of the Contractor during a great portion of the summer season the field notes thereof were not returned until the 19th of Dec. last; since when corrections to a considerable extent have been found requisite, the field notes of which reached this office on the 18th instant.

I am very respectfully Your Obt Servt

SURVEYOR GENERAL'S OFFICE AT
Dubuque Febry 27th, 1847
P.S. Mr. Barrows and his sureties refuse to settle the said account of Jeffries.

GEO. W. JONES
Surveyor General

RESURVEY OF SUBDIVISION —LETTER BOOK C: 118

BERNHART HENN Esq.

With this you will receive Copies of the original plats of the resurvey of five townships, situated West of the 5th Prin Mer in the State of Iowa viz:

71 North of Ranges 11, 12 & 13 and of

70 North of Ranges 11 & 12

Please to acknowledge the receipt of the same.

I am very respectfully Your Obt Servt

SURVEYOR GENERAL'S OFFICE AT
Dubuque, Febry 27th 1847

GEO. W. JONES
Surveyor General

EXAMINATION OF SUBDIVISION—LETTER BOOK C: 122 & 123

COL. JAMES E. PIPER
Acting Commr. Genl. L. O.
Washington City D C

I have the honor in compliance with your communication of the 6th of January last, to forward, herewith, the account, of Joseph Moorehead for his examination of the surveys executed by William Vandever and Willard Barrows under their respective Contracts. This account is made to conform, as nearly as possible to the requirements of your said Communication, which were:

- 1st to furnish Vouchers of actual disbursements.
- 2d. that the work done should be started in detail and a reasonable appropriate charge made therefor.
- 3d. That the account specify the amount chargeable to the surveys of the surveys of the aforesaid Contractors, respectively—

The first requirement is fully complied with in his own and the vouchers of his assistants. The nature and location of the work rendered it necessary for him to live in camp and be provided with a team and to furnish himself and party with provisions and his team with food.

The second requirement is certainly complied with so far as the justness of the charge is concerned; for there is not a Deputy in my service, competent to the execution of work of this character whose services can be had at a less per diem pay, while the field notes of his examination are convincing proof that no time was squandered. The field notes of his examination of Vanevers work, testify to the actual resurvey so far as course and measurement go, of 87 miles, and those of Barrows to the actual resurvey of 81 miles. This alone at \$4. pr mile—a rate lower than it could have been contracted for—would exceed the amount of his account. But when it is remembered that in work of this character, a great portion of the surveyors time, is occupied in examining his own work in cases of great discrepancy between his own and the original lines and much time lost in searching for corners which may or may not exist, it appears to me that his account for his own services, cannot but be considered reasonable in the extreme.

In view of the above facts I have earnestly, but respectfully to request, that his account be released from suspension

He prefers a draft upon St. Louis, Mo. sent to him through the Post Office at Davenport, Iowa—

I am very respectfully Your Obt Servt
GEO. W. JONES
Surveyor General

SURVEYOR GENERAL'S OFFICE AT
Dubuque March 5th 1847

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 128, 1847

GUY H. CARLETON ESQ.:
Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque April 3rd 1847

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 129, 1847

GUY WELLS ESQ.:
Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque 5th April 1847

GEO. W. JONES
Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 131, 1847

SAMUEL WHITMORE ESQ.:
With this you will receive a Contract & Bond in triplicate for the subdivision into sections of T. 80 N. of Rs. 14, 15, 16, 17 & 18 W. of the 5th prin. Mer. Iowa.
Standard paragraph Nos. 12d, 13d, 10d, 14d, 5d, 6d, 7d, 8d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque April 10th, 1847

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 132, 1847

H. B. HENDERSHOT:
With this you will receive a Contract and bond in triplicate for the subdivision into sections of Townships 68 & 69 N. of Ranges 20, 21 & 22 West of the 5th Prin. Mer. Iowa.
Standard paragraph Nos. 12d, 13d, 10d, 14d, 5d, 8d. [See p. 356]
SURVEYOR GENERAL'S OFFICE
Dubuque April 10th 1847

GEO. W. JONES
Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 133, 1847

JOHN G. McDONALD:
Standard paragraph Nos. 5d, 8d. [See p. 356]
Dubuque, April 10th, 1847

GEO. W. JONES
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 135, 1847

RUFUS L. BEAN ESQ.:
Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

GEO. W. JONES
Sur. Genl.

RESURVEYING OF SUBDIVISION—LETTER BOOK C: 137, 1847

GEORGE WILSON, ESQ.
Herewith you will receive a Contract and Bond in triplicate for the resurvey into Sections of the District surveyed by William Vandever Dep. Sur. pursuant to his Contract with my predecessor dated Sept. 5th 1843 Comprising the following townships situated North of the Base line and West of the 5th principal Meridian in the State of Iowa viz:

Township No. 72 North of Ranges No. 13, 14, & 15
Township No. 73 North of Ranges No. 14 & 15

except so much of the said survey by said Vandever as you shall find to have been correctly executed and reported by him. It is understood further that you re-meander both banks of so much of the Des Moines river as traverses and lies within the aforesaid townships.

Standard paragraph Nos. 12d, 26d, 10d, 8d. [See pp. 356, 357]

It is believed that you have in your possession the measure of the Standard Chain of this Office, if not you are to procure it of some one of the U. S. Dep. Surs. in your vicinity who have executed Public land surveys under authority of this office.

Herewith you are furnished a copy of the printed General & Manuscript Special instructions given to Mr. Vandever as his guide in the execution of the said survey & by which you are to be strictly governed in resurveying the same except as hereinafter differently directed.

You will receive also herewith the original field notes of the said survey as taken and returned by said Vandever. These field notes you are to preserve with great care & certainly return to this office with the field notes of your resurvey.

In the execution of the work here assigned you, the same order of survey is to be observed that is pointed out in your instructions for the original subdivision of a township into sections; observing that the whole length of each section line which you establish, however obstructed, by actually measured upon the ground and entered in your field notes.

You are to introduce upon the proper pages in your field books the notes of all such lines as were correctly executed and reported by Mr. Vandever in his said field notes, whenever the adoption of the same does not seriously conflict with the accuracy & harmony of your own work. Of each & every line of the Original survey, with the exact location thereof, thus found available and adopted by you, an accurate account must be kept & returned to this office with your said field notes.

All corners of whatever description except those situated upon township boundaries & those upon Section lines which you adopt as above directed, are to be completely cancelled as you progress with your work, by defacing bearing & witness trees, demolishing mounds and filling up pits.

In your execution of this survey you are to use all diligence and expedition consistent with accuracy and the nature of the work frequently reporting the progress made by you therein and promptly advising me of any emergency that may prevent your completing and returning the same within the time specified in your said contract.

You will receive herewith diagrams representing each township of your said district, with the topography, variations & closings of each several boundary thereof noted thereon; Also a full description of all the section & meander corners upon the said boundaries with which you are to close.

SURVEYOR GENERAL'S OFFICE

Dubuque, April 21st 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTERS BOOK C: 154, 1847

MICHAEL G. KARRICK Esq.:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE

Dubuque May 21st 1847

GEO. W. JONES

Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 155, 1847

JOHN BALL Esq.:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE

Dubuque May 21st 1847

GEO. W. JONES

Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 158, 1847

MORTIMER M. HAYDEN Esq.:

Standard paragraph Nos. 5d, 6d, 7d, 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE

Dubuque May 27th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 164, 1847

JOSEPH. W. MOOREHEAD Esq.:

With this you will receive a contract and bond in triplicate for the subdivision into sections of Townships Nos. 80 & 81 North of Ranges 23, 24 & 25 West of the fifth principal meridian Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 8d. [See pp. 356, 357]

You are to meander so much of both banks of Des Moines river as lies within your district.

Herewith you are furnished a full description of all the section corners upon the exterior boundaries of each township of your district.

SURVEYOR GENERAL'S OFFICE

Dubuque June 5th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 165, 1847

JOHN W. WEBBER Esq.:

With this you will receive a contract & Bond in triplicate for the subdivision into sections of Townships No. 72 & 73 North Ranges 20, 21 & 22 West of the fifth prin. meridian Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 5d, 8d. [See pp. 356, 357]

SURVEYOR GENERAL'S OFFICE

Dubuque June 5th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 165, 1847

ARCHIBALD McMICHAEL Esq.:

With this you will receive a contract & bond in triplicate for the subdivision into sections of Townships No. 74 & 75 North Ranges 20, 21 & 22 West of the 5th prin. mer. Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 5d, 8d. [See pp. 356, 357]

SURVEYOR GENERAL'S OFFICE

Dubuque June 5th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 166, 1847

JOHN D. EVANS Esq.:

Herewith you will receive a contract & bond in triplicate for the subdivision into sections of Townships No. 80 & 81 N. Ranges 20, 21 & 22 West of the fifth principal meridian Iowa.

The said triplicate contract and bond are to be executed in the same manner as your last & returned to this office before entering upon your survey. The sufficiency of the sureties to your bond must, if not a matter of personal knowledge with me be certified to by a U. S. Judge or by a U. S. Atty.

Standard paragraph No. 8d. [See p. 356]

SURVEYOR GENERAL'S OFFICE

Dubuque June 9th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 167, 1847

JESSE WILLIAMS Esq.:

You are hereby instructed to meander both banks of so much of the Des Moines River as lies within your district.

Standard paragraph Nos. 8d, 14d, 17d. [See pp. 356, 357]

SURVEYOR GENERAL'S OFFICE

Dubuque June 9th 1847

GEO. W. JONES

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 167, 1847

SAMUEL JACOBS Esq.:

Herewith you will receive a contract & bond in triplicate for the subdivision into

Sections of Townships No. 78 & 79 North of Ranges 20, 21 & 22 West of the 5th principal meridian, Iowa.

The said triplicate contract & bond are to be executed in the same manner as your last & the responsibility of the sureties must be a matter of personal knowledge with me or be certified to by a Judge of the U. S. Court or by a U. S. Atty.

You are to meander so much of both banks of the Des Moines River as lies within your district, and as the first correction line lies within it, you are requested to be particularly careful in closing thereto.

You will execute your contract and bond & return them to this office before entering upon your survey.

SURVEYOR GENERAL'S OFFICE

GEO. W. JONES

Standard paragraph No. 8d. [See p. 356]

Dubuque June 9th 1847

Surveyor General

RESURVEY OF SUBDIVISIONS—LETTER BOOK C: 178, 1847

STILES S. CARPENTER ESQ.:

Herewith you will receive a Contract & Bond in triplicate for the re-survey into sections of the district surveyed by Willard Barrows, Dep. Sur. pursuant to his contract with my predecessor dated Novr. 16th 1844, comprising the following townships, situated North of the base line and West of the Fifth Prin. Mer. in the State of Iowa, viz:

Towns. No. 76, 77 & 78 of Ranges No. 15, and of

Towns. No. 76 Range No. 16

except so much of the said survey by said Barrows as you will find to have been correctly executed and reported by him.

Standard paragraph Nos. 12d, 26d, 10d, 11d. [See pp. 356, 357]

You are to procure & adjust your chain by the measure of the standard chain of this office, which you can doubtless obtain of some one of the U. S. Dep. Surs. who have executed public land surveys under authority of this office.

Herewith you are furnished a copy of the printed General and manuscript Special instructions given to Mr. Barrows as his guide in the execution of the said survey and by which you are to be strictly governed in resurveying the same.

You will receive also herewith the original field notes of the said survey as taken & returned by said Barrows. These minutes you are to preserve with great care & certainly return to this office with the field notes of your resurvey.

In the execution of this work and in the arrangement and order of the field notes thereof as well as the affidavit thereto you are to regard Mr. Barrows' instructions as your own observing that where any portion of the printed instructions are countermanded by the special instructions, the latter are to be complied with.

You are to introduce upon the proper pages in your field books the notes of all such lines as were correctly executed and reported by said Barrows, in his said field notes, whenever the adoption of the same does not conflict seriously with the accuracy & harmony of your own work. Of each and every line of the original survey with the exact location thereof, thus found available and adopted by you, an accurate account must be kept and returned to this office with your said field notes. All corners of whatever description, except those situated upon township boundaries and those upon section lines which you adopt as above directed, are to be completely cancelled as you progress with your work, by defacing bearing & witness trees, demolishing mounds & filling up pits.

In your execution of this work you are to use all the diligence and expedition consistent with accuracy and the nature of the work frequently reporting the progress made by you therein and promptly advising us of any emergency that may prevent your completing and returning the same within the time set forth in your contract.

You will receive herewith diagrams representing each township of your said district, with the topography, variations & closings of each several boundary noted thereon. Also a full description of all the section corners upon the same boundaries with which you are to close.

You are hereby required to make return of your field notes of the said resurvey in person. [See p. 299, Young]

SURVEYOR GENERAL'S OFFICE

GEO. W. JONES

Dubuque July 20th, 1847

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 184, 1847

JOHN J. SILMAN:

With this you will receive a contract and bond in triplicate for the subdivision into sections of Townships. 72 & 73 of Ranges 23, 24 & 25 West of the Fifth principal meridian Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 5d, 17d, 8d, 11d. [See pp. 356, 357]
 SURVEYOR GENERAL'S OFFICE GEO. W. JONES
Dubuque August 13th 1847 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 185, 1847

HON. R. M. YOUNG
 Commr. of the Genl. L Office
 Washington City
 D. C.

I have the honor to transmit herewith copies of the original plats of the following townships situated North of the base line and west of the fifth prin mer in the State of Iowa

viz Townships No. 84 & 85 of Ranges No. 20, 21 & 22—representing the surveys executed by Horatio Waldc Dep Sur under his contract of May 31st 1847.

Also his account in full for the execution of the same to the amount of which I have to request you to make a requisition in his favor. He desires a draft on the Receiver at Dubuque sent to him through the Post Office

I am very respectfully Your Obt Servt
 GEO. W. JONES
Sur Genl.

SURVEYOR GENERAL'S OFFICE
Dubuque August 17 1847

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 186, 1847

AUGUSTUS C. DODGE:

With this you will receive a Contract & bond in triplicate for the subdivisions into sections of townships 68 & 69 of Ranges 23, 24 & 25 West of the Fifth principal Meridian Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 5d, 17d, 8d. [See pp. 356, 357]
 SURVEYOR GENERAL'S OFFICE GEO. W. JONES
Dubuque, Aug. 18th 1847 Sur. General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 186, 1847

WILLIAM BONNIFIELD:

With this you will receive a contract and bond in triplicate for the subdivision into sections of Townships 70 & 71 of Ranges 23, 24 & 25 West of the Fifth principal Meridian Iowa.

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 5d, 17d, 8d. [See pp. 356, 357]
 SURVEYOR GENERAL'S OFFICE GEO. W. JONES
DuBuque. Aug. 18th 1847 Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK C: 188, 1847

HON. RICHARD M YOUNG
 Commissioner of the Genl. L. Office

I have the honor to transmit herewith copies of the original plats of the following townships situated North of the base line & West of the fifth principal mer. in the State of Iowa representing the surveys executed by Thomas Hurley Dep Sur under his contract of May 31st 1847, viz

Township no 84 & 85 of Ranges 23, 24 & 25

Also his account in full for the execution of the same to the amount of which I have to request you to make a requisition in his favor.

He desires a draft on the receiver at Dubuque sent to him through the Post Office
 I am very respectfully Your Obt. Servt
 SURVEYOR GENERAL'S OFFICE
 Dubuque August 24th 1847
 GEO. W. JONES
 Sur General

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 211, 1847

JAMES DAVIS Esq.:

With this you will receive a contract & bond in triplicate for the subdivision into sections of townships 79 to 83 inc. of Range no. 26 West of the fifth prin. mer. Iowa. Also a copy of my printed General Instructions to deputies which is to be your guide in every particular relating to your survey. [See following letter]

Standard paragraph Nos. 12d, 15d, 16d, 10d, 14d, 11d, 5d, 8d. [See pp. 356, 357]
 SURVEYOR GENERAL'S OFFICE
 Dubuque Octr. 8th 1847
 GEO. W. JONES
 Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 212, 1847.

JAMES DAVIS:

In addition to the subdividing specified in the triplicate contract herewith sent you, you are to meander so much of *both banks* of Des Moines river as traverses the townships therein mentioned.

The Section, meander and other corners of the township lines of your district will be found upon the following pages.

In all your intersections of the Des Moines river you are to state in its proper place in your field notes the right angled width of the same.

No person is to be allowed to take a copy or copies of your field notes or any portion or portions of them, nor are you to make such copy or copies nor are you to draw or allow to be drawn from your field notes any diagram or diagrams except such as you return to this office.

Upon the return of your contract and Bond you will please state the name of the post office through which you desire to be addressed during the progress of your survey.

SURVEYOR GENERAL'S OFFICE
 Dubuque Octr. 8th 1847
 GEO. W. JONES
 Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C: 269, 1847

HON R.M. YOUNG

*Commr. of the Genl. L. Office
 Washington D. C.*

I have the honor to transmit, herewith copies of the original plats of four townships situated North of the Base line and West of the 5th prin mer in the State of Iowa, showing the resurvey by Stiles S. Carpenter, Dep Sur. pursuant to his contract of August 5th 1847, of the work returned by Willard Barrows, Dep Surveyor, under his contract of November 16, 1844 viz:

No. 76, 77 & 78 of Range No 15 and

No. 76 of Range No 16: also Mr. Carpenters account in full for the execution of the same to the amount of which I will thank you to make a requisition in his favor. He prefers a draft on St. Louis Mo. sent to him through the Post Office at Bloomfield Davis Co. Iowa.

Mr. Carpenter found it impossible to adopt any portion of the original work.

I am very respectfully Your Obt. Servt
 SURVEYOR GENERAL'S OFFICE
 Dubuque, Dec. 15th. 1847
 GEO. W. JONES
 Sur Genl.

EXAMINATION OF SUBDIVISION—LETTER BOOK C: 281, 1848

SAMUEL JACOBS Esq.:

It having been ascertained in this office that the surveys either in T.70 R 22 or in the same Township in Range 23 West of the Fifth Principal meridian in the State of

Iowa, are erroneous, depending upon the length of the Range line dividing the said townships, you are hereby authorized and requested to examine and correct the same as hereinafter directed: And it is understood that for your said examination and correction you shall receive a *per diem* compensation of not less than four dollars, exclusive of actual disbursements, for which you will please take and return vouchers.

You will commence your examination at the quarter section post between Secs. 7 & 12 upon the Range line above named, and retrace and remeasure the said line to the North end thereof. In this remeasurement you will please bear in mind the fact of unavoidable differences of measure and carefully avoid pronouncing that an error which may possibly arise from such difference. Should you find the section and quarter section corner upon the said Range line both set at the proper distance respectively & that the closing or last mile of the said Range line is 74 chs of length, you will then confine your examination wholly to the survey of the line between sections 6 & 7 and of all the lines closing to the North boundary of T. 70 R 22 should you find errors in the position of the quarter section corners upon any or all of these several sectional lines, you are thoroughly to correct the same—reporting each correction, with the whole length of each of the said lines, to this office.

Should you however upon examination, determine the closing mile of the said Range line to be 79.95 chs, you will, in that case, limit your examination to the same lines T. 70 R. 23, as is directed above for T. 70, R. 22

You will receive, herewith, two diagrams, representing the length of all the sectional lines in question in each of the said townships as returned to this office by the respective Deputies who surveyed the same

You are to regard and comply with the requisition of my printed, general instructions now in your possession, in every respect pertaining to assistants, affidavit and arrangement & order of field notes, or so far as practicable

It is expected that you will enter upon this examination without delay and that you will report thereupon and make return thereof at the earliest day possible

Very respectfully, Your Obt. Servt

SURVEYOR GENERAL'S OFFICE
Dubuque Jan. 25th 1848

GEO. W. JONES
Sur genl.

SPECIAL INSTRUCTIONS—LETTER BOOK C. 298, 1848

R. W. YOUNG, *Commr. G. L. D.*
Washington, D. C.

On the 26th of January last I transmitted to you a copy of my special instructions to Samuel Jacob, Deputy Surveyor, for the correction of errors which were ascertained to exist either in the survey of T 70, R 22, or in the same township in R 23, depending upon the length of the Range line dividing the same. Mr. Jacobs found the length of the closing mile of the said Range line to be as reported in Mr. Bonnéfield's corrections thereof—, and found, also, that all the lines, closing to the North boundary of T 70 R 22, were shorter than reported by Mr McDonald, but that the quarter section corners thereon were correctly established: limiting the corrections simply to a report of the true length of the said sectional lines.

The accompanying map, a copy of which was this day transmitted to the Register at Fairfield represents the survey of the said township as corrected by Mr. Jacobs, and which is so different from the plat in your office, both in respect of the length of the said lines and the area of the fractional lots upon the North boundary, that I have thought it advisable to forward an entire map, in place of the usual diagram. An order in favor of Mr Jacobs has been drawn upon Mr McDonald to the full amount of the expenses in the said examination & correction.

I am very respectfully Your Obt. Servt

SURVEYOR GENERAL'S OFFICE
Dubuque March 3d. 1848

GEO. W. JONES
Sur Genl

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 363, 1848

GUY H. CARLETON Esq.:

By your contract of this day you are to survey and establish all the proper boundaries of the following townships viz: Township 93 of Range 9 Township 94 of Ranges 7, 8 & 9 Township 95 of Ranges 7, 8 & 9 Township 96 of Ranges 5, 6, 7, 8, & 9 Township

97 of Ranges 2, 3, 4, 5, 6, 7, 8 & 9, Township 98 of Ranges 2, 3, 4, 5, 6, 7, 8, & 9 Township 99 of Ranges 2, 3, 4, 5, 6, 7, 8 & 9 Township 98 of Ranges 2, 3, 4, 5, 6, 7, 8 & 9 Township 99 of Ranges 2, 3, 4, 5, 6, 7, 8 & 9 Township 100 of Ranges 3, 4, 5, 6, 7 & 8 Township 101 of Ranges 3, 4, 5, & 6 Township 102 of Ranges 3 & 4 also the following township boundaries & parts of boundaries, viz: part of line (see diagram) between Ranges 9 & 10 of Township 92; line between Ranges 7 & 8 and part of line between Ranges 6 & 7 of Township 93; line between townships 93 & 94 and part of line between townships 94 & 95 of Range 6; part of line between Ranges 5 & 6 of township 95 and part of line between Ranges 3 & 4 of township 96, all situated North of the base line and West of the Fifth principal meridian; and you will also subdivide into sections the Township or Townships, as the case may be, situated within the district above described, in which the Winnebago subagency buildings & improvements near Fort Atkinson are situated.

All the township lines and parts of lines mentioned above are represented in *Black ink* upon the diagram herewith furnished you.

Upon this diagram you will find the topography, length and variation of such boundaries of your said district as are actually run, all of which are represented in *red ink*. The parts of township lines represented in red ink were originally run to and terminated in the South boundary of the "Neutral ground." These you are to continue to their proper length. Upon the said diagram you will also find a full description of all township and other corners from which you are to start.

You are to commence your survey at the South West corner of your district and progress by the mode prescribed in the foregoing general instructions; observing that, after passing the line dividing townships No. 95 & 96, the nearest complete range line to the Mississippi river is to be regarded as a meridian from which to close your townships West thereof, and from which also to close all fractional township and range lines upon said river.

The line between ranges 3 & 4 of township 98 North, is to be run due North, precisely six miles and made to intersect the Third correction line, viz: the line between townships 98 & 99, 13 chs. East of the corresponding township corner upon said correction line, you will then run and establish the 3d. correction line, from the point thereon—obtained as aforesaid due East to the Mississippi river and West to the line dividing ranges 9 & 10. This line is to be a series of Township bases, the last half of every sixth mile of which, that is, the last half of the closing mile of every successive township base, is to be forty three chains.

Your bearing trees to corners upon this line are all to stand north thereof. At quarter sections corners you are to take two bearings, at section corners three and at township corners four. The pits of mounds are to stand East of $\frac{1}{4}$ corners, North of section corners and both north & south of township corners and at the distances therefrom respectively as required and stated in the foregoing general instructions.

In closing to the said correction line you will state the distance to the nearest corner thereon, describing the said corner by its appropriate name.

Where you shall have surveyed the township or townships, as the case may be, embracing the "Winnebago Agency" near Fort Atkinson as represented upon the diagram thereof herewith furnished, you will immediately subdivide the said township or townships and return the field notes thereof to this office with the field notes and diagram of your township lines at that time surveyed.

In this subdivision you are to determine by course and distance the exact position of the agency houses and adjacent buildings, also of the fields indicated upon this diagram as well as the relative position of each; observing to employ the same numbers and letters in describing the said fields and buildings as are used to express the same upon the diagram thereof herewith furnished. The object of the subdivision above provided for, as you will readily perceive, is to ascertain with certainty the legal subdivisions upon which the agency improvements, respectively, are situated.

Standard paragraph Nos. 19d, 20d, 21d. [See p. 357]

You are to establish meander corners upon all such lakes, rivers, ponds, bayous, sloughs & Islands as will subserve the public interest by being meandered or that will thereby facilitate the sale of the adjoining lands.

I am very respectfully Your Obt. Servt.

SURVEYOR GENERAL'S OFFICE

Dubuque, July 26th, 1848

GEO. W. JONES

Sur. Genl.

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 365, 1848

JOHN BALL:

By your contract of this day you are to survey & establish all the proper boundaries of the following townships, viz; township 91 of Ranges 14, 15 & 16; Township 92 of Ranges, 12, 13, 14, 15 & 16; Township 93 of Ranges 11, 12, 13, 14, 15 & 16; Township 94 of Ranges 11, 12, 13, 14, 15, & 16; township 95 of Ranges 11, 12, 13, 14, 15 & 16; township 96 of Ranges 11, 12, 13, 14, 15 & 16; Township 97 of Ranges 11, 12 & 13; also the line between Ranges 14 & 15, 15 & 16 and 16 & 17 of Township 90, line between Ranges 12 & 13 of township 91 line between Ranges 10 & 11 of townships 92 to 98, line between townships 92 & 93, 93 & 94, 94 & 95, 95 & 96, 96 & 97, 97 & 98 and 98 & 99 of Range 10 all situated north of the Base line and West of the fifth Prin. mer. Iowa.

You are to begin your survey at the South East corner of your district and progress by the mode prescribed by the foregoing general instructions.

The East boundary of your district from township 92 to 98 inclusive, is not yet established, but will be, before your survey arrives at the same.

Mr. Carleton by whom your said boundary is to be established, will leave at each township corner thereon ample evidence of his intersection and variations.

You are to run and establish the line dividing townships 98 & 99 as the Third correction line, observing to make the last half of the sixth or closing mile thereof forty-three chains. All your bearing trees upon this line are to stand North thereof, at quarter section corners you are to take two, at section corners three and at township corners four bearings. The pits of mounds upon the same are to stand East of $\frac{1}{4}$ Sec. North of Section and both North & South of Township corners, and at the distances therefrom, respectively, as required and stated in the foregoing general instructions.

The lines drawn in black ink upon the accompanying diagram are those you are to run. Upon this diagram you will find the topography, variation and length as well as the township corners upon so many of the boundary lines of your district as are actually run. In closing to the aforesaid correction line your bearings are all to stand South thereof.

Standard paragraph Nos. 19d, 20d, 21d, 22d. [See p. 357]

SURVEYOR GENERAL'S OFFICE

Dubuque July 27th 1848

GEORGE W. JONES

Sur. Gen.

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 370, 1848

ANDREW LEECH:

With these instructions you will receive a triplicate contract and bond for the survey of the following township boundaries situated North of the base line and West of the fifth principal meridian in the State of Iowa, viz; Line between Ranges 30 & 31, 31 & 32, 32 & 33, 33 & 34 and 34 & 35 of townships from 68 to 78 inclusive, omitting the line between Ranges 33 & 34, and 34 & 35 of township 68; line between townships from 68 to 78 inclusive of Ranges 30, 31, 32, 33 and 34 omitting the line between townships 68 & 69 of Range 34.

The said contract is to be executed on your part, severally by signing & swearing to the same, observing to have two witnesses to your signature over "Dep. Sur." and that the officer who administers the oath and certifies to your signature thereto states the location as well as style of his office.

The said triplicate bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount must be a matter of personal knowledge with me.

The signature of the said sureties must follow your own all to be attested by two witnesses whose residence must be stated underneath their signatures.

I send by James M. Marsh Dep. Sur. a standard chain; which you are to preserve with great care and by which your measuring chain is to be adjusted daily. Mr. Marsh is to run the South East & North boundaries of your district and will communicate with you upon the subject of the same. It is recommended that while together you devise some convenient mode of ascertaining his intersections and variations from each township corner upon your said East boundary. The lines in black ink upon the accompanying diagram are these you are to run.

You are to commence and prosecute your survey in every respect as directed in the foregoing general instructions.

In closing to the first correction line, you are if practicable to take four bearings: none of which, however, are to stand North thereof.

Your line between townships 88 & 89 of Range 33, may possibly have to be run at a variation, differing from the magnetic variation, in which event both must be distinctly stated in their proper places in the field notes of each mile thereof.

Standard paragraph Nos. 20d, 21d, 22d, 16d, 10d. [See pp. 356, 357]

Your field notes are all to be written in black ink of the most durable quality.

With your field notes of this survey you will please submit a report upon the extent and character of settlement upon your district giving if possible the whole number of settlers and the number within each township.

You will also report upon the general character of your district in respect to the distribution & proportionate quantities of timber and prairie with the general depth & productiveness of the soil. You will further report a list of such townships, as in view of their inducements to settlement and purchase, should be earliest subdivided. A faithful attention to the subjects to be embraced in this report will be of great service to this office in directing future surveys within your district.

Please to return your field notes in person.

SURVEYOR GENERAL'S OFFICE
Dubuque Augt. 3d. 1848

GEO. W. JONES
Sur. Genl.

EXTERIOR TOWNSHIP LINES—LETTER BOOK C: 372, 1848

JAMES M. MARSH Esq.:

By the terms of your contract of this day you are to survey and establish the following township boundaries, situated north of the Base line and West of the fifth principal meridian in the State of Iowa, Viz: the South boundary of Town 68 of Ranges from 26 to 33 inclusive; the line between Ranges 33 & 34 of Township 68; The South boundary of Township 69 from range 34, inclusive, to the Missouri river; the lines between ranges 26 & 27, 27 & 28, 28 & 29 & 29 & 30 of Townships from 68 to 78 inclusive; the line between twps. 68 to 78 inclusive of Ranges 26, 27, 28 & 29, and the First Correction line from the South West corner of township 79 of Ranges 27, due West to the Missouri river.

You are to commence your survey at the South West corner of township 68 of Range 25 and run and establish the said boundary *due West* to the South West corner of the same township in range 33. From the last mentioned corner you will run and establish the line dividing ranges 33 & 34, due North six miles and establish the corner of townships 68 & 69 of Ranges 33 & 34. Thence you are to run due West to the Missouri river; observing that the last half of every sixth mile, that is, the last half of the closing mile of every successive township base, both upon the south boundary of township 68 & 69, is to be forty three chains.

You are then to progress with your survey in the manner prescribed by my printed general instructions; except that the line between ranges 25 & 26 is to constitute an *independent meridian*. This line is to be run due North from the South to the North boundary of your district, and is to form a tier of Range lines, each of which, except the last one thereof, are to be six miles of length. From the respective township corners upon this meridian, you are to run random lines due East, stating the variation upon each mile thereof, for the corresponding township corner now established. You will then return, establishing the township line as you progress and carefully noting the actual variation of the same. As your respective lines, closing to the old work, are to be protracted upon the plats by a comparison of the variation at which they were randomized, you will see the importance of exercising the utmost care in noting both.

Your notes of this meridian are to be incorporated with your other notes of township lines, and to occupy their appropriate place in connexion therewith, as if run like other township lines. The establishment of this meridian is not to affect the numbering of your townships nor ranges; it being run for the express purpose of defining and arresting the errors that exist in the surveys East thereof.

You are to extend the first correction line from the South West corner of Township No. 79 of Range 27, *due West* to the Missouri river. The last half mile of each township base upon the said correction line is to be forty three chains; precisely as hereinbefore directed for the south boundaries of townships 68 & 69.

All the lines of township 67 of Ranges 34 have been established under authority of the Surveyor General's Office at St. Louis Mo. With the North East corner of this township you are to close; But as the said corner, cannot possibly coincide precisely with your corner upon the south boundary of township 68 between Ranges 33 & 34 it is expected only that you note the distance which the two corners are apart and the course of that distance.

Should it occur that your said south boundary of township No. 68 of Range 33, intersects the existing east line of said township 67 of Range 34, you will carefully note the point of such intersections and continue your line to its complete measure as herebefore directed; observing to make no marks, whatever, within the last mentioned township. As it is impossible to define the exact relation of the two surveys after a separation for more than two hundred miles, it is consequently impossible to give you definite instructions in regard to your intersection or other connexion therewith, further than that *all your lines are to be run the limits of one previously made.*

When you shall have arrived at a point in your South boundary of township 69 of Range 34, opposite to the line dividing ranges 34 & 35 of the Missouri Surveys, you will go South and bring up and close the said line, upon your own work. In the event of your intersecting the said line, you are merely to note the exact point thereon in which you intersect.

To facilitate your closings with the said Missouri surveys, you are herewith furnished all the field notes of the following lines thereof, viz: line between ranges 33 & 34 of township 67, line between townships 67 & 68 of range 34 and line between Ranges 34 & 35 of Townp. 68.

Herewith you are furnished a copy of the official diagram of a Military Reservation upon the East side of the Missouri river and opposite the mouth of Table creek. Should your line intersect any portion of this Reservation as is indicated upon the said diagram, you are to establish a corner at the point of intersection; the post or bearing trees, as the case may be are to be marked Mil. Res.

In your establishment of the South boundaries of township 68 & 69 and of the First correction line, as hereinbefore directed, your bearing trees are all to stand upon the North side, thereof respectively, at quarter section corners you are to take two bearings at section corners three and at Township corners four. The pits of mounds at corners upon the said lines are to stand east of your quarter section and north of section and both north & south of Township corners, and at the distances respectively as stated in your general instructions.

In closing to the First Correction line, you are to take if practicable, four bearings, none of which however, are to stand north thereof.

Standard paragraph Nos. 20d, 21d, 22d. [See p. 357]

Herewith you are furnished a diagram with the lines you are to run represented in Black ink and those already run, which adjoin your district, represented in red ink. Upon this diagram you will find the variation, topography and length of such lines as lie adjacent to your work; also with the bearings or other evidences at the respective township corners thereon.

With you field notes of this survey you will please to submit a report upon the extent and character of settlement and within the vicinity of your district; giving as nearly as possible the whole number of settlers and the number within each township. You will also report upon the general character of your district in respect to the distribution and proportionate quantities of prairie and timber, with the general depth and productiveness of the soil. You will further report a list of such townships as, in view of their inducements to settlement and purchase, should be earliest subdivided. A faithful attention to the subjects to be embraced in this report, will be of great service to this office in directing future surveys within the region of your work.

I am very respectfully Your Obedt. Servt.

SURVEYOR GENERAL'S OFFICE

GEO. W. JONES

Dubuque, August 1st 1848

Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK C: 386, 1848

JOHN PARKER:

The subdividing for which you have this day contracted with me viz: of Townships No. 92, 93, & 94 of Ranges 10 & 11 is to be executed in every respect, strictly in accord-

ance with the foregoing printed instructions, any departure from which will be deemed sufficient cause for the appointment of a Deputy to examine the same as contemplated by the terms of your said contract.

Each and every one of your assistants must be men of strict integrity.

Standard paragraph No. 21d. [See p. 357]

When you shall have completed one half of your district it is at your option to make return thereof to this office properly attested & sworn to for which advance payment will be made if you desire it.

GEO. W. JONES

Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 25, 1848

CYRUS SANDERS ESQ:

With this you will receive a contract and bond in triplicate for the subdivision into Sections of the following townships, situated North of the Base line and West of the Fifth Prin. Mer. in the State of Iowa. Viz:

Township No. 91 of Range No. 13—and

Townships No. 90, 91, 92 & 93 of Range No. 14—

The said Contract is to be executed by signing and swearing to the same observing to have two witnesses to your signature over "Deputy Surveyor" and that the Officer who administers the Oath and certifies to your signature thereto, states the location as well as style of his Office

The Bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount therein expressed must be a matter of personal knowledge with me. The signatures of the two sureties must follow your own, all to be attested by two witnesses whose residence must be stated underneath their signatures.

The Bond must be dated upon the day of its execution and the whole returned to this Office for approval, and, if correct, one thereof will be immediately returned to you.

Your Oath as U.S. Deputy Surveyor a form for which is herewith enclosed is to be executed and returned with your Contract and Bond

If you can obtain the measure of the Standard chain from any one of the Deputies who have surveyed public lands under authority of this Office and who can vouch for its accuracy, you are at liberty to do so: Otherwise you must obtain it from this Office.

No Special instructions are deemed necessary in this case, my general instructions, herewith transmitted, being full and explicit upon the subject of plain subdividing of the character assigned you

Following my general instructions above named, you will find a description of all section and township corners with which you are to close.

A Commission of Deputyship is enclosed.

SURVEYOR GENERAL'S OFFICE

Dubuque, Dec. 11, 1848

GEO. W. JONES

Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK D: 27, 1848

GEORGE BERRY ESQ:

James M. Marsh, Dep. Sur. has this day made returns of Township lines in the "Potawatomie Purchase", Iowa; with which he has submitted a report, setting forth the character of country and amount of settlement within each township of his district. From the nature of this Report it has been determined to subdivide less in that region than has heretofore been contemplated by this office. Genl. Andrew Leech, another Deputy upon township lines in the purchase aforesaid, has been compelled, on account of inclemency of weather, to suspend until spring. Of the portion of his work now executed, no report has been made; but it is understood through Mr. Marsh and other sources entitled to credence, that his district generally has few or no claims to immediate subdivision.

It was designed by Genl. Jones to locate, if possible, yourself and several other deputies within the region in question; but it is now found impossible from facts above stated, to execute this design. I have therefore selected and herewith submit for your consideration, ten townships of subdividing as expressed and described in the accompanying Contract, located about 90 miles North West of this City. Should you conclude to

accept of this work, you will please execute your triplicate Contract by signing and swearing to the same, observing to have two witnesses to your signature over Deputy Surveyor and that the Officer who administers the Oath, and certifies to your signature thereto, states the location as well as style of his office.

Your triplicate bond is to be filled with the names and residences of two sureties whose signatures must follow your own, attested by two witnesses whose residence must also be stated underneath their signatures. The ample sufficiency of the said sureties for the amount must be a matter of personal knowledge with the Surveyor General. The Bond must be dated upon the day of its execution.

Your triplicate Contract and Bond thus executed must be returned without delay to this office for approval, and, if correct, one thereof will be immediately returned to you. Standard paragraph 5e. [See p. 357]

As soon as you signify, by a return of the accompanying papers, properly executed in the manner above directed, your acceptance of this work, your instructions, diagrams, &c will be immediately sent you, as also a description of the best route to your work.

SURVEYOR GENERAL'S OFFICE

Dubuque, Dec. 15th, 1848

Your Obt. Servt.

HENRY A. WILTSE, *Chf. Clerk*

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 34, 1849

THOMAS BAKER:

Standard paragraph Nos. 10e, 4e, 3e, 1e, 2e, 8e, 9e. [See pp. 357, 358]

Chs lks T 76, R. 26 W, 5th Mer. Iowa

East random between Sec. 29 & 32

Var. 10° E.

N. 84° 21' e

80.09 Intersected 20 lks S of Sec. cōr.

West corrected between Secs. 29 & 32

S. 84° 12' West Var. 10° E.

40.04½ Set a post at ¼ Sec. corner in a md. of earth & sod pit 8 lks E

80.09 Section corner

SURVEYOR GENL'S OFFICE

Dubuque, Jan. 11th, 1849

HENRY A. WILTSE

Chief Clerk

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 35, 1849

JOHN A. FITZER, Esq.

U.S. Dep. Sur.

Fairfield, Jefferson Co. Iowa

With this you will receive a contract and Bond in triplicate for the subdivision into Sections of the following townships situated North of the Base line and West of the Fifth principal Meridian in the state of Iowa, viz:

Township 76 of Ranges 27 & 28

Township 77 of Ranges 28 & 29

Township 78 of Ranges 28 & 29

The said contract is to be executed by *signing* and swearing to the same, observing to have two witnesses to your signature over "Deputy Surveyor", and that the officer who administers the oath and certifies to your signature thereto, states the location as well as style of his office.

The said Bond is to be filled up with the names and residences of two sureties whose ample sufficiency for the amount therein expressed must be a matter of personal knowledge with me. The signature of the two sureties must follow your own, all to be attested by two witnesses whose residence must be stated underneath their signatures.

Standard paragraph Nos. 7e, 5e, 6e, 4e, 3e, 1e, 2e. [See pp. 357, 358]

SURVEYOR GENERAL'S OFFICE

Dubuque, Jan. 11th, 1849

HENRY A. WILTSE,

Chief Clerk

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 36, 1849

IRA CLAFLIN:

With this you will receive a Contract and Bond in triplicate for the subdivision

into sections of the following townships situated North of the Base line and West of the Fifth principal Meridian in the State of Iowa, viz:

Township 70 of Ranges 27 and 28

Township 71 of Ranges 26, 27 & 28

The said contract is to be executed by *signing* and swearing to the same, observing to have two witnesses to your signature over "deputy Surveyor" and that the officer who administers the Oath and certifies to your signature thereto, states the location as well as style of his office. The said Bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount therein expressed must be a matter of personal knowledge with me. The signature of the two sureties must follow your own, all to be attested by two witnesses whose residence must be stated underneath their signature.

Standard paragraph Nos. 7e, 5e, 6e, 10e, 1e, 2e, 9e. [See pp. 357, 358]

chs lks T. 71, R. 26 W 5th mer. Iowa

Var. 10° East

N. 84° 21' East

80.09 Intersected 20 lks S of Section corner
west corrected between Secs. 29 & 32

Var. 10° East

S. 84° 21' West

40.04½ Set a post a ¼ Sec. cor. in a mound of
earth and sod pit 8 lks East

80.09 Section corner

In all other respects than the foregoing, you will be governed by my printed, general instructions herewith sent you, following which you will find a full description of all the corners upon the township lines of your district.

SURVEYOR GENERAL'S OFFICE

Dubuque, Jan. 11th, 1849.

HENRY A. WILTSE

Chief Clerk.

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 42, 1849

GEO. BERRY:

Enclosed You will receive an original copy of your triplicate Contract and Bond approved.

Your only practicable route to your district is by Steamboat to this place, thence to your work by a plain road. As it is thus convenient for you to pass Dubuque, you will, of course, visit the office in person and obtain your diagrams, corners and instructions, together with such other data as you may desire or that may suggest itself while you are here.

Your district is preferable in every point of view to any one South.

It is important and even indispensable that you embrace the *very opening* of navigation to start for this work, as your contract time is *the very longest that can possibly be given*. [See pp. 305, Berry]

SURVEYOR GENERAL'S OFFICE

Dubuque, Jan. 24th, 1849

HENRY A. WILTSE

Chief Clerk

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 56, 1849

E. W. EASTMAN:

Standard paragraph Nos. 9f, 10f, 11f, 1f, 2f, 3f, 4f. [See pp. 358, 359]

SURVEYOR GENERAL'S OFFICE

Dubuque, Feb. 9th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 63, 1849

WILLIAM S. TOWNSEND:

Standard paragraph Nos. 9f, 10f, 11f, 1f, 2f, 3f, 4f. [See pp. 358, 359]

SURVEYOR GENERAL'S OFFICE

Dubuque, March 22nd, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 66, 1849

JOHN G. McDONALD:

By your Contract of Dec. 11th, 1848, you are to subdivide into sections Township 95 of Range 5, and Townships 96 and 97 of Ranges 4, 5 & 6 West of the 5th Principal Meridian, Iowa.

Standard paragraph Nos. 13f, 14f, 15f, 16f, 17f, 18f, 19f, 12f. [See pp. 359, 360]

(The importance of this caution will strike you with peculiar force when you call to mind the manner in which you explained a serious error in your survey of 1847)

SURVEYOR GENERAL'S OFFICE

Dubuque, March 26th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 72, 1849

JOSEPH MOOREHEAD:

By your contract of Dec. 11th, 1848, you are to subdivide into sections Townships 97 & 98 of Ranges 7, 8, & 9, West of the 5th Principal Meridian, Iowa.

Standard paragraph Nos. 12f, 13f, 14f, 15f, 16f, 17f, 18f, 19f. [See pp. 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, May 1st, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 73, 1849

HON. R. M. YOUNG

Commissioner of Genl. L. Office

Washington, D. C.

I have the honor to transmit herewith an original copy of two triplicate contracts and Bonds, one entered into by my predecessor and the other by myself with the Deputies mentioned below, with a diagram of their respective Districts and a copy of my special instructions to the latter, viz:

Horatio Waldo, subdividing in Iowa

Joseph Moorehead, subdividing in Iowa

These contracts are the last that will be assigned out of the appropriation of 12th of August, 1848.

SURVEYOR GENERAL'S OFFICE

Dubuque, May 1st, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 73, 1849

GENL. JNO. G. McDONALD:

By your verbal report to me of this day understand that there are upon the line dividing ranges 3 & 4 T. 96 duplicate corners thereon at corner to Secs. 7, 12, 13 & 18 at qr. section corners between Secs. 7, & 12, and at corner to Secs. 1, 6, 7 & 12.

You are hereby required to revisit those corners and, after carefully re-establishing those called for by the notes herewith furnished you, to obliterate all others that are not properly corners.

You will then resurvey that part of the said Range line lying between Secs. 1 & 6, and if the quarter corners between these sections should exist in duplicate, you will correct the same as above directed. The measure of this line, carefully taken, you will also report to this office.

You will also examine the closing mile of the lines dividing townships 95, 96, 96 & 97 of Range 4. Should there be a *manifest error* upon either or both of these lines you will correct the same, by demolishing the existing qr. sec. corner or corners as the case may be, and establishing new ones & taking & returning notes as tho' you were making an original Survey of the said line or lines. You will also supply the omitted courses of the bearings to the cor. at Secs. 9, 10, 15 & 16 of T. 96, R. 6, & the *distance* of the bearings at the qr. sec. cor. between Secs. 11 & 14, T. 97 R. 5.

SURVEYOR GENERAL'S OFFICE

Dubuque, May 29th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 96, 1849

JAMES M. MARSH:

Your contract of this day specifies the following township boundaries viz: the second correction line from the South east corner of Ranges 21 due west to the Missouri river and the lines between ranges 17 & 18 to 22 & 23 inclusive of townships from 89 to 94 inc., & the lines between Ranges 17 & 18, 18 & 19, 19 & 20 of Township 95 and the lines between townships 89 & 90 to 94 & 95 inc., of Ranges 17, 18, 19, 20, 21, & 22 & the lines between Townships 95 & 96 of Ranges 17, 18 & 19.

You will commence your survey at the south west corners of Range 20, upon the second correction line and extend the same due west to the Missouri or Little Sioux rivers as the case may be, observing that the last half of every sixth mile, that is the last half of the closing mile of every successive township base, is to be forty-three chains of length. Your bearing trees to corners upon this line are all to stand north thereof; at quarter section corners you are to take two bearings, at section corners three and at township corners four. The pits to mounds at corners upon this line are to stand east of quarter section corners, north of section corners, and both north and south of township corners. This line should be run by the sun and be measured and marked with the utmost care, as it is to be the base for the survey of all the lands in Iowa, lying north thereof. You will please to identify the point of your intersection with the Missouri river (should you not intersect Little Sioux river) by giving as nearly as is practicable its distance from the nearest town, ferry, settlement or other notable object; also its distance below the mouth of Little Sioux river. You will also ascertain the width of the Missouri at the said point, by triangulation, and enter the same in its proper places in your field notes.

Of this survey north of this correction line you are to make an advance return, in order that the valuable lands of that district which are understood to be already settled to some extent, may be subdivided before the coming of winter. These returns should embrace about one-half of your district, and should, if possible, be received here early in September next.

With these returns you will please to submit a report of the character hereinafter named.

In establishing the western boundary of the district you will please to leave your (temporary) six-mile posts standing, in all instances where you do not intersect, at *post*, for the use and convenience of a deputy who will have a district of township lines adjacent to yours upon the West.

In marking lines and establishing corners, great care must be exercised and such parts thereof as are not executed by yourself, should, if practicable, be personally inspected by you. The importance of this caution will be manifest when you reflect that it is upon this evidence alone that the settler usually depends in locating and entering his land.

Standard paragraph Nos. 21f, 22f, 23f. [See p. 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, July 9th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 112, 1849

A. K. EATON:

Your contract of July 13th, 1849, specifies the subdivision into sections of the following townships, viz:

Townships 92 & 93 of Range 13

Townships 95, 96 & 97 of Ranges 12 & 13

Townships 96 of Range 14.

This work is to be executed upon the plan laid down in detail in the accompanying General Instructions.

Standard paragraph Nos. 7f, 8f, 5f, 6f. [See pp. 358, 359]

SURVEYOR GENERAL'S OFFICE

Dubuque, July 13, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 114, 1849

JOHN BALL:

Your contract of the 13th inst. this day specifies the establishment of the following township boundaries, situated West of the Fifth principal meridian in the State of Iowa, viz:

Lines between Ranges 27 & 28, and 28 & 29 of Townships from 79 to 88 inc.,
 Lines between Ranges 24 & 25, 25 & 26, and 26 & 27, of Township 87
 Lines between Ranges 21 & 22 to 26 & 27 inc., of Township 88
 Lines between Ranges 23 & 24, 24 & 25, and 25 & 26 of Township 93
 Lines between Townships 79 & 80 to 87-88 Inc., of Ranges 27 and 28,
 Lines between Townships 88 and 87 of Ranges 24, 25, & 26, and between
 93 & 94 of Ranges 23, 24, & 25; and also

All the proper boundaries of and within the following district, situated as aforesaid, viz:

North of the second correction line, West of the line
 dividing ranges 22 & 23, South of the line dividing
 Townships 92 & 93 inc., & East of the Main Channel of
 the Des Moines river.

Of this survey you are to make an advance return of all that portion of your district lying South of the Second Correction line, in order that the valuable lands of that district which are understood to be already settled to some extent, may be subdivided before the coming on of winter. These returns should, if possible, be received here early in September next and with them you will please to submit a report of the character hereinafter named.

Standard paragraph Nos. 20f, 21f, 22f, 23f. [See p. 360]

SURVEYOR GENERAL'S OFFICE
 Dubuque, July 16, 1849

C. H. BOOTH
 Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 119, 1849

THOMAS J. MCKEAN:

Your contract of the 13th July with me provides for the subdivision into sections of the following townships, situated West of the Fifth principal meridian in the State of Iowa, viz:

Township 75, Ranges 29, 32 & 33,
 Township 76, Ranges 29 & 30
 Township 77, Range 31
 Township 78, Ranges 30, 31, 32

By reference to which you will perceive that the magnetic variation of your lines is increased or diminished as the case may be in proportion as your lines deviate from the magnetic meridian. The term Variation, therefore, as used in your instructions, implies more than is usually embraced in the signification of that term. By your general instructions you will observe that you are required to close your sections, in all cases (except in the tiers adjoining the northers and western boundaries) within given limits. These instructions, however, are general in their nature, applying, of necessity, as well to the difficult swamps of Wisconsin as the unobstructed surface in Iowa. This fact should be borne in mind in deciding upon the accuracy of your measurements.

The township boundaries of your district are believed to be faithfully and accurately established, both in respect to course and measurement; You will, therefore, endeavour to conform to them as nearly as practicable, especially in measurement, in order that your own corners may stand in line with those upon your township boundaries.

Upon your lines closing to the 1st correction line, which will be about 140 chs. of length, you are to establish corners at every forty chains. The first corner then established is, or course, the proper quarter section corner and is to be marked accordingly. The two corners North of the quarter section corner are each to be marked upon the corner post 160 A. To each corner thus marked two bearing trees are, if practicable, to be taken and are to be marked with the township, range and section within which they stand. If mounds are erected as evidence of these extra corners, they should be made like the mounds at quarter section, except that the pit is to be 8 lks West instead of East. The line between Ranges 29 & 30 of T. 78 was established before the above system of

corners was adopted. You will, therefore, please to establish upon that line, two extra corners, North of the existing quarter section corners, in accordance with the above directions for establishing extra corners, and make a separate return of the same to this office.

Your lines between sections which adjoin the correction line are to be true lines. All bearing trees and pits to mounds at Section corners established by you in said correction line are to stand South thereof.

Standard paragraph 5f, 24f. [See pp. 358, 360]

Your field notes must be written in black ink of the most durable quality and every figure and letter of your field notes must be plainly and fairly written.

SURVEYOR GENERAL'S OFFICE

Dubuque, July 20th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 121, 1849

JOHN PARKER:

Your contract of July 19th, 1849, specifies the subdivision into sections of the following townships, viz:

Townships 95, 96, and 97 of Ranges 10 & 11

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, July 24th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 132, 1849

LOUIS W. DAVIS:

Your contract of this day specifies the subdivision into sections of the following townships: viz:

Townships 91, 93 & 94 of Range 15

Townships 92, 94 & 95 of Range 16

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Aug. 7th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 135, 1849

SAMUEL O. WOODWORTH:

Your contract of August 10th, 1849, specifies the subdivision into Sections of the following townships, viz:

Township No. 73 of Ranges 31, 32, 33, & 34

Township No. 74 of Ranges 32 & 33

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, August 15th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 136, 1849

EDWIN JAMES:

Your contract of Aug. 11th, 1849, specifies the subdivision into sections of the following townships, viz:

Townships 72, 73 & 74 of Range 29

Townships 72 & 73 of Range 30

Township 72 of Range 31

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, August 29th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 147, 1849

JOHN W. ELLIS:

Your contract of this day specifies the establishment of the following township boundaries situated West of the Fifth principal Meridian in the state of Iowa, viz:

All the lines between Townships 79 & 80 to 87 & 88 inc.,
of Ranges 29, 30, 31, 32, & 33

All the lines between Townships 79 to 88 inc., of
Ranges 29 & 30 to 33 & 34 inc.

Standard paragraph Nos. 20f, 21f, 22f, 23f. [See p. 360]

In closing to the second correction lines all bearings are to stand south thereof. The pits to mounds, however, are to stand both north and south as at other township corners.

SURVEYOR GENERAL'S OFFICE
Dubuque, August 13th, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 150, 1849

GUY H. CARLETON, ESQR.
Detroit, Michigan

The water of the Mississippi River is now sufficiently low for the advantageous execution of the unfinished portion of your contract of the 15th of December last. You are, therefore, requested to close that contract without delay.

SURVEYOR GENERAL'S OFFICE
Dubuque, August 29, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 164, 1849

L. S. NORRIS:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Townships No. 84, 85, 86 & 87 of Range 27
Townships No. 86 & 87 of Range 28.

You are carefully to meander both banks of the Des Moines River through so many of the foregoing townships as are traversed thereby. There is now no evidence of the corner to sections 13, 18, 19 & 24 on line between Ranges 28 & 29 of Township 86 but a post. You will measure south upon the said Range line, from the said post, 5 chains, or sufficiently to clear the marsh in which said post stands, and there establish a witness Sec. cor. post in mound, pit 8 lks South; and return the said distance and corner to this office with the field notes of your own survey.

For this correction you will be paid by the Deputy for whom the correction is made. Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 22d, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 165, 1849

J. J. E. NORMAN:

Your contract of above date specifies the subdivision into Sections of the following townships, viz:

Townships 84 & 85 of Range 26
Townships 82 & 83 of Range 27
Townships 82, 84 & 85 of Range 28.

You are carefully to meander both banks of the Des Moines river through so many of the fore-going townships as is traversed thereby—See accompanying diagrams of T. 83, R. 27, and T. 84, R. 26.

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 22d, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 166, 1849

WM. H. HENDERSON:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Townships No. 79, 80 & 81 of Ranges 27 & 28

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]
 SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 22d, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 167, 1849

WM. J. NEELY:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Township 87 of Ranges 25 & 26

Township 88 of Ranges 25, 26, 27 & 28

You are carefully to meander both banks of the Des Moines River through Township 88 of Range 28.

Standard paragraph Nos. 25f, 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]
 SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 24th, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 169, 1849

WILLIAM LEFFLER:

Your contract of above date specifies the subdivision into sections of the following townships:

Township 70 of Ranges 30, 31, 32 & 33

Township 71 of Ranges 30 & 31

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 27, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 170, 1849

JAMES JACKSON, JR.

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Township 87 of Range 24

Township 88 of Ranges 21, 22, 23 & 24

Standard paragraph Nos. 25f, 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 24th, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 171, 1849

W. ALBERT PATTERSON:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Township 71 of Ranges 32, 33 & 34

Township 72 of Ranges 32, 33 & 34

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 29th, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 172, 1849

JOHN D. EVANS:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Township 68 of Ranges 30 & 31

Township 69 of Ranges 30, 31, 32, 33 & 34

Township 70 of Ranges 34

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 24th, 1849

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 173, 1849

SAMUEL C. WILTSE:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Townships No. 89, 90 & 91 of Ranges 17 and 18

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 24th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 174, 1849

JOHN G. McDONALD:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Townships No. 89 & 90 of Ranges 19, 20, 21 and 22

Standard paragraph Nos. 24f, 7f, 8f, 5f, 6f. [See pp. 358, 359, 360]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 25th, 1849

C. H. BOOTH

Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 249, 1850

THOS. J. MCKEAN:

Your duty, in the examination for which you have this day entered into Contract, is to define upon the ground the survey of Township 90 of Range 3 West of the 5th Prin. Meridian, as reported in the field notes of the original survey. The object is to determine facts as they exist in the field, and to report the same to this office precisely as you find them.

To guard against discrepancies arising from *differences of measurement*, you should be careful to employ men of unquestionable integrity and only those who have not the remotest interest in the issue of the examination, whose services you will, if possible, continue throughout the work. Preliminary to your examination, you should re-chain several miles of the boundaries of the township, at such point or points as in your judgment will institute a correct comparison of your own with the original chaining; observing that your chainmen take neither more nor less care in testing these than they do in testing the interior lines.

Each of your assistants, before performing any duty as such, should take and subscribe an oath of the form prescribed in my general instructions to Deputies.

Much of this township is under cultivation, where, as well as at other points, many of the original monuments will have been defaced and perhaps destroyed and others erected, and instances will doubtless occur where, from causes that are known or may be supposed to exist, no evidence of the original corner will appear. A point mutually recognized as the original corner by the owners of the contiguous lands, may be safely relied upon, but if there is any want of concurrence in the testimony or an absence of any party or parties owning contiguous lands, such testimony should not be received, but the original notes alone should be made the basis for determining the point originally occupied by such corner. Such cases will rarely, if ever, occur elsewhere than in the improved or prairie portions of the township. To re-establish missing corners from the field notes, you should measure a right line between the nearest existing corners (upon a meridian section line if the missing corner is a section corner), *through the missing corner*, and make a proportional distribution of the whole distance according to the reported length of the several lines or part of lines thus re-measured.

You will please to bear in mind that the aim of this examination is to acquire data by which an understanding of the particular character of these surveys may be had. Still a judicious inspection of a portion of the work will be ample, it is presumed, to a correct understanding of the whole. You should re-survey the central meridian line of the township from the South to the North boundary continuously; closing by course and distance, with every quarter and section corner as you progress.

From this line, thus determined, you can run East or West as may be requisite, in order to test the relative position or re-establish other lines, the examination of which may have been suggested by the results already obtained. You are not, however, to un-

derstand these directions as limiting the number, or defining the location, of the lines to be examined, but only as establishing a convenient and proper basis for the work.

You should take notes of every thing you do in the matter of, or pertaining to, this examination; observing, as far as practicable, the same arrangement adopted in entering notes of an original survey, except in respect to order, which will, of course, depend upon and follow the order in which you progress.

You should make no marks in the field, except such temporary ones as are necessary to facilitate your own work, all of which should be obliterated before you leave the ground.

Herewith you are furnished a full and accurate transcript of the original field notes, —1st, of the respective boundaries of the township, and 2d, of the subdivision thereof, and an index diagram of both.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 9th, 1850

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 260, 1850

HON. J. BUTTERFIELD
Commsr. of the Genl. L. Office
Washington, D. C.

In today's mail I have the honor to transmit a diagram exhibiting the examination of the original surveys in T, 90, R. 3 West of the Fifth principal Meridian, as executed by Thos. J. McKean, Depy. Surveyor under contract of April 9th, 1850.

The result of this examination fully sustains the representations made in the documents transmitted to your office on the 14th of September last, and discovers further defects in these surveys of an equally serious character.

Your communication of the 12th of March last, authorizing this examination, contemplates, it appears to me, no other errors than those represented by the Petitioners to exist in the Northern portion of the township, while this examination shows that errors or various character exist upon every side of the township. The line between Sections 34 & 35 was probably run South to the quarter section corner and no farther, and that between Sections 33 & 34 was probably never run at all. The line between Sections 11 & 14, situated in dense timber, was probably run East to the quarter section corner, although not a blaze occurs upon it and the said quarter section corner stands at an erroneous distance. Upon the line dividing Sections 11 & 12, also in dense timber, not a blaze was ever made, nor corner established. The line between Sections 7 & 18 (and doubtless all the lines of the Western tier) is six and a half chains shorter than reported, and is without a quarter section corner.

The northern portion of the township was never surveyed. The original notes call, in some instances, for bearings where trees never existed, and in others locate mounds in dense timber of a hundred years' growth. A portion of a center of the township was surveyed, but not conformably to instructions.

Whether the original survey, as far as it can be defined, shall be respected, or whether a thorough re-survey of the whole township shall be made, is a question which I respectfully submit for your decision.

The resident owners of the lands in this township, of whom there is a large settlement, manifest a deep anxiety for the speedy adjustment for these surveys.

SURVEYOR GENERAL'S OFFICE
Dubuque, April 30th, 1850

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 274, 1850

JOHN T. EVERETT:

Your contract of above date specifies the subdivision into sections of the following townships, viz:

Township No. 79 of Ranges 29, 30, 31 & 32

Township No. 80 of Ranges 30, 31, 32

Township No. 81 of Ranges 32 & 33

Standard paragraph Nos. 24f, 7f, 8f, 5f. [See pp. 358, 359, 360]

You will report in your General descriptions the whole number of residences and, as nearly as practicable, the extent of improvement within each township. Where you cannot determine these important facts accurately without leaving your lines, you must spe-

cify the smallest legal subdivision or subdivisions upon which such residence or other improvement exists.

The notes which you take in the field are to be returned to this office. You are not to swear to nor are your assistants to attest any other than your original or the *notes taken upon the spot*. With this view you will enter your notes, taken as above directed, in books containing a number of pages that will admit of their being entered in every particular in strict conformity to the foregoing printed instructions. These books must be of regular size, form, and material. If, after the notes of any one or more townships are thus taken, the book or books are too much soiled, worn or defaced to be returned in conformity to the foregoing printed instructions, you will make out and submit, *with the original*, a fair handed and neat copy of the same.

The accompanying diagrams upon a scale of two inches per mile, upon which is already represented the survey of the township boundaries of each township of your district respectively, are to receive a full and accurate delineation of all the topography of your district; all properly connected so as to form a complete map, which is to be neatly executed. These diagrams may be rolled, but should not be folded.

Where, from any cause, pits to mounds cannot be made in the *direction* or at the distance therefrom directed upon of your printed instructions, the true cause for such departure must be distinctly stated upon the same page and immediately below the notes of such corner.

In swearing your assistants or obtaining their signatures to your field notes, should one or more of them be unable to write, he or they are to make his or their mark before two subscribing witnesses.

Any stream or other body of water which any of your lines intersect, and which exceeds 100 lks of width in the *direction of your line*, is to be entered by noting the distance at which you strike and that at which you leave it, in addition to its true right-angled width, and, if crossed by offset or triangulation, you are to return full notes of the same, taken as other notes are taken, upon the spot.

In closing to the East and West boundaries of such township you will say intersect *range line*: in closing to your own work you will say intersect *meridian section line*, and of the lines closing upon the North boundary you will use the term North boundary.

In your printed instructions, the words "or unadapted to the construction of a proper corner" are to be considered and understood by you as having been inserted after the word "inaccessible" on the second line.

Witness corners are to be established *upon the line* which you are at the time running, and each one must appear upon the page where the true corner would have been noted, and at or opposite the left hand marginal distance at which the witness corner is actually established.

The object in closing *at* the corners upon the North & West boundaries of your respective townships, is accomplished *only* when your variations and measurements show such closings to be natural and not forced. Your lines must be so run that you will necessarily intersect at or very near those corners, in which case the variation at which your aforesaid lines are run will coincide *very nearly* to that employed upon the tier of lines of which such closing lines are a part.

Your lines closing to the North & West boundaries, except for reasons satisfactorily explained by you and approved by this office, must not exceed nor fall short of a proportionate average of the closing lines of the township, more than one chain.

The *material* of which each and every mound is made, must be stated as a part of the notes of the corner at which the same is constructed. The earth from the pit is to be heaped upon the spot for the mound and neatly covered with sod, grass side up, so that the grass will continue to grow.

Trees happening at the point for establishing a corner do not relieve you of taking the required number of bearing trees, if bearing trees are to be had.

It is in contemplation to have the surveys out of the next appropriation examined in the field by a special agent appointed for that purpose, who may possibly have received his appointment and have entered upon his duty before your work is completed. Should he make your district a point in the line of his examination, and for that purpose visit your camp, you will execute the wishes of the Department and myself by giving him access to your notes, directing him to any points on your work which he may desire to visit, and showing him all attention which the nature of your engagements and duties will permit.

The recent development of errors and imperfections in the surveys heretofore supposed to have been faithfully and accurately executed, imposes upon this office the necessity of applying all the test in its power, and of subjecting both the notes of surveys and the surveys also, to the most rigid scrutiny, before payment is made. You should, therefore, acquaint yourself minutely and thoroughly with your instructions, as a violation of them in any particular will cause a suspension of your work until satisfactory corrections are made.

In portions of your district you will meet with grassy lakes or miry marshes, which are not to be meandered, but which if the whole or any part of them, at the points where your lines cross, are impassible, such impassible whole or parts must be crossed by offset or triangulation.

If any other than the assistant specially sworn as marker, is employed in the service of marking corners, the oath of marker must be previously administered to him.

SURVEYOR GENERAL'S OFFICE
Dubuque, May 30th, 1850

C. H. BOOTH
Surveyor General

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 405. 1851

HOMER S. FINLEY & JAMES MCKEOGH:

[See pp. 321, 322, Wiltse]

You will perceive that the three Townships of your District, situated in Range 26 have oblique lines for their northern and southern boundaries. The eastern boundaries also the same townships are understood to deflect to the West to the amount indicated by the difference between the length of the south boundaries of Section 31 and the north boundaries of Section 6 respectively, as expressed upon the accompanying diagram of said townships; upon which is also expressed the true magnetic variation as well as *course* of the said oblique.

The Eastern boundaries of the townships under consideration were either measured with a chain out of adjustment; or else the manner of using it was seriously incorrect; as the distances thus taken, are in fact greater than they purport to be. The existence of this difficulty will render it impossible for you to establish your section corners in a line with the corresponding corners upon the respective range lines, as it is always desirable to do and as can easily be done in your other townships. You will therefore institute a survey made to conform as nearly as is practicable with the course and measurement of the Township lines and the range line forming the Western boundary of these Townships. With this view you will apply your "test of township lines" of the West boundary in place of the East, as three of the boundaries of each one of the townships in question (the South, West, and North) were measured by the same chain. With your chain and compass adjusted to run parallel to the Western boundary, your survey will show a heavier deflection in the East and West lines of the first tier—which will increase as you go Northward—than of any subsequent one, but will enable you to close upon the Western boundary with the same course, to which the East and West lines of the 4 middle tiers are run, and will also place all your own section corners in a line with those upon the western boundary. Of course all the East and West lines within these townships will be oblique to a degree corresponding very nearly (except in the Eastern tier of Sections in each case) to the average course of the north and south boundaries respectively. In the survey of your east and west lines within these townships therefore, it is desirable that you should employ a uniform magnetic variation,—say, ten degrees East—and that you should correct the *course* of your random lines, instead of changing your variation. The variation should be first stated, as in ordinary cases, and immediately underneath the same, the course of the line. The course to bearing trees at quarter section corners on these oblique lines must be taken and entered, not with reference to the course of these lines, but with strict reference to the true meridian. Your north and south lines within each of these townships will conform to the true meridian, as in a plain or right-angled township.

The other three townships of your district will be surveyed as required by your printed instructions.

The object in closing at the corners upon the North and West boundaries of the three last named townships is accomplished *only* when your variation and measurements show such closings to be natural and not forced. Your lines must be so-run, that you will necessarily intersect at or very near those corners, in which case the variation at

which your aforesaid lines are run will coincide *very nearly* to that employed upon the tier of lines of which such closing lines are a part.

Standard paragraph Nos. 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g.

SURVEYOR GENERAL'S OFFICE
Dubuque May 8th 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 411. 1851

EDWIN JAMES, JR.

[See pp. 321, 322, Wiltse]

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]

You should therefore acquaint yourself minutely, and thoroughly with your instructions, as a violation of them in any *particular*, will cause a suspension of your work, and unless such violations are satisfactorily explained, will result in the rejection of the whole.

SURVEYOR GENERAL'S OFFICE
Dubuque May 8th 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

EXTERIOR TOWNSHIP LINES: LETTER BOOK D: 416. 1851

JOHN F. CONKEY:

[See pp. 321, 322, Wiltse]

The district of township lines for the survey of which you have this day entered into a contract embraces all the proper township and range lines in that part of the State of Iowa, situated West of the Fifth Principal Meridian, north of the line of townships 68 & 69 (which is your base), west of the line of ranges 34 & 35, south of the First Correction line, and East of and including the line of ranges 39 & 40. When you shall have completed your surveys to the line of Townships 70 & 71 inclusive, you will please to make return of your field notes and diagrams thereof to this office; and when you shall have completed to line of Townships 73 & 74 inc. you will please in like manner make a second return.

The existing east boundary of your district is believed to be a true meridian; should it vary therefrom, however, in the least, such variation is not to be carried into your work.

As another district of township lines lying west of, and adjoining yours is to be immediately put under contract for survey, you will please, in every case, to leave a post standing at each of the six mile points on said line of ranges 39 and 40, and, to guard against accidents, you will also indicate in pencil upon each of the township corner posts in this range line, the length of the line at the end of which such posts respectively stand, with any other data which may be useful to the Deputy west of you.

Your District lies between $40^{\circ} 44'$ and $41^{\circ} 36'$ of North Latitude—the average convergence for which, per township is sixty two links very nearly.

Standard paragraph Nos. 8g, 23g, 24g, 2g, 1g, 26g, 4g, 5g, 6g, 12g, 13g, 15g, 9g, 10g, 22g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque May 8th 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

Additional.

Your Range Lines closing to the First Correction Line, will be in the vicinity of sixty chains longer than your other or ordinary range lines. In establishing the last or north mile of these range lines, you will, at the end of the first forty chains, establish a quarter section corner (as in ordinary cases) and at the end of each forty chains thereafter establish a corner marked 160 A. and bearing no other letter or figures whatever. Your corner in the first Correction parallel must be marked in each case with the proper township and ranges, and the sections between which such corner stands.

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK D: 461, 1851

HON. J. BUTTERFIELD

Commissioner of General L. O.
Washington D. C.

Herewith you will receive a copy of my instructions to Henry A. Wiltse, whom I have appointed my Deputy & assistant for the purpose of a general examination of surveys while in progress in the field or after their completion. The instructions to Mr. W.

will explain the duties he is to perform, and the manner in which he is to be paid for the same.

SURVEYOR GENERAL'S OFFICE
Dubuque May 30th, 1851

Very Respectfully Your Obt. Servant
GEORGE B. SARGENT, *Sur. Genl.*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 462, 1851

LOUIS V. DAVIS:

[See pp. 321, 322, Wiltse]

The district of township lines for the survey of which you have this day contracted embraces all the proper township and range lines, and parts thereof, in that part of the State of Iowa lying West of the Fifth Principal Meridian, North of the line of townships 68 & 69 (which is your base) west of the line of ranges 39 & 40, south of the First Correction Line and east of the main channel of the Missouri River.

Of these surveys you will please to make at least two advance returns, the first to embrace that part of the district South of and including the line of Townships 71 & 72, and the second that part lying between the said Township line and that dividing Townships 74 & 75 inclusive. Both returns with diagrams thereof to be made as soon as the surveys shall have reached the respective points indicated.

The length of the respective range lines forming the eastern boundary of your district will be left in pencil upon the posts at the several township corners. Should this writing be obliterated, you can arrive at the fact by measuring from the six mile point.—The post at which is to be left standing—to the actual corner.

Your District lies between 40° 44' and 41° 36' of North Latitude—the average convergence for which per township, is sixty-two links very nearly.

Bearings at your Corners in the First Correction Line are to stand south thereof,

In case the South boundaries of any one or more townships should be rendered fractional by intersecting the Missouri river, and the North boundaries of the same townships, should not be fractional, you will at the end of the sixth mile on such north boundaries, establish the proper township corner, and thence run due South and West respectively to the Missouri River—observing to make the first half of the range line or lines thus run South, the same length of the last or north half mile of the first range line east thereof.

You are carefully to determine the ordinary water line of the Missouri, and other rivers of your district, and establish all meander corners in this line.

Much inconvenience and embarrassment has heretofore been experienced by the failure of Deputies to meander small islands which have afterwards had or will have to be surveyed at great cost and labor. In order to avoid this difficulty in future, you will set meander corners upon both margins of all islands, regardless of size or character, which your lines intersect and which lie in any body of water that is to be meandered.

Standard paragraph Nos. 24g, 2g, 1g, 26g, 4g, 5g, 6g, 12g, 13g, 15g, 16g, 9g, 10g, 8g, 22g, 23g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque May 10 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

Additional.

Your range lines closing to the First Correction line, will be in the vicinity of sixty chains longer than your other or ordinary range lines. In establishing the last, or North mile of these range lines you will, at the end of the first forty chains, establish a quarter section corner (as in ordinary cases) and at the end of each forty chains thereafter establish a corner marked 160 A. and bearing no other letter or figures whatever. Your corners in the First Correction parallel must be marked in each case with the proper township and ranges, and the sections between which such corner stands.

EXTERIOR TOWNSHIP LINES—LETTER BOOK D: 483, 1851

ALEXANDER ANDERSON:

[See pp. 321, 322, Wiltse]

The outline surveys for which you have this day entered into a Contract embraces the proper township and range lines of that part of the State of Iowa, lying between the First and Second Correction Parallels, and West of and including the line of ranges 39 and 40. The main channel of the Missouri river is the western boundary of the State of Iowa, and every one of your lines which intersect this river, are to be produced to the main channel.

The line of ranges 39 & 40 is to be made an independent meridional line, and is to be, in the strictest sense a *true meridian*. Upon this line, township corners are to be established at the end of every sixth mile, precisely. This line will be the basis of your range lines, to which they must exactly conform in course, and as nearly as practicable in measurement. With this view the adjustment of your compass throughout should be very frequently tested, and your chain carriers should be in every way qualified to discharge their responsible duties.

The order of taking up, the method of establishing, and the limits within which you are to close your lines are prescribed upon your printed instructions.

Your district lies between 41° 36' and 42° 28' of North Latitude, the convergency for which is six chains and fifty links per range, or an average of sixty five links the township very nearly. If the Fifth Principal Meridian has been established with precision and the measurement upon the two parallels is uniform and equal, your aforesaid meridional line will intersect the Second Parallel about five Chains East of corner to Sections 33 and 34, Town, 89, Range 39. But the later & especially the last closings upon the parallel have not shown sufficient convergency by something like fifteen chains. Should this discrepancy not be in the meridional lines of previous surveys, you will probably close west instead of East of the above section corner.

Of your surveys, you will please to make at least two advance returns—the first to embrace all south of, and include the line of townships 81 & 82, and the next to the line of 84 & 85 inc. Each return to be accompanied by a diagram and separate report as to the particular character of each township.

Bearings at your corners in the Second Correction line are to stand South thereof.

In case the south boundaries of any one or more townships should be rendered fractional by intersecting the Missouri River, and the north boundaries of the same townships should not be fractional, you will, at the end of the sixth mile on such north boundaries, establish the proper township corner, and thence run due South and West respectively to the Missouri river—observing to make the first half mile of the range line or lines thus run South, the same length of the last or north half mile of the first range line east thereof.

You are carefully to determine the ordinary water line of the Missouri and other rivers of your district and establish all meander corners in this line.

Much inconvenience and embarrassment have heretofore been experienced by the failure of Deputies to meander small islands which have afterwards had, or will have to be surveyed at great cost and labor. In order to avoid this difficulty in future, you will set meander corners upon both margins of all islands, regardless of size or character, which your lines intersect, and which lie in any body of water that is to be meandered.

Standard paragraph Nos. 2g, 6g, 1g, 26g, 4g, 5g, 21g, 8g, 12g, 13g, 15g, 16g, 9g, 10g, 22g, 24g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
May 13 1851, Dubuque

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 489. 1851

HORATIO WALDO & FRANCIS R. MADEIRA:

[See pp. 321, 322, Wiltse]

The ten Townships of sub-dividing for which you have this day entered into a Contract, are situated West of the Fifth Principal Meridian, and between the First and Second Correction Parallels in the State of Iowa, and are numbered 79, 80, 82 & 83 of Range 33; 82 & 83 of Ranges 31 & 32; and 83 of Ranges 29 & 30.

Standard paragraph Nos. 17g, 19g, 20g, 3g, 2g, 1g, 4g, 21g, 8g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque, May 16th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 506. 1851

ALONZA SHAW:

[See pp. 321, 322, Wiltse]

The district of six townships assigned you for sub-division, is situated West of the Fifth Principal Meridian in the State of Iowa, & numbered as follows: Township 91 of Ranges 19 & 20 and Township 92 of Ranges 17, 18, 19 & 20.

Standard paragraph Nos. 25g, 19g, 20g, 3g, 2g, 1g, 4g, 21g, 8g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE

Dubuque, May 16th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa.

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 519. 1851

WM. H. HENDERSON:

[See pp. 321, 322, Wiltse]

The six townships of subdivision for which you have this day entered into a contract are situated West of the Fifth Principal Meridian, and between the First and Second Correction Parallels in the State of Iowa, and are numbered No. 80, 81 & 82 of Range No. 29, Townships No. 81 & 82 of Range 30 and Township No. 81 of range 31.

Each of these Townships are plain and are to be surveyed upon the plan laid down in my General Instructions to Deputies.

Standard paragraph Nos. 20g, 3g, 2g, 1g, 4g, 21g, 8g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE

Dubuque, May 22nd, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SPECIAL EXAMINATION—LETTER BOOK D: 529, 1851

HENRY A. WILTSE:

There is reserved in the contracts with my Deputies a stated per cent to be applied in defraying the expense of an examination of surveys upon the ground. This reservation has no reference to the character of the Deputies at present, or that may be hereafter employed; but is simply designed as a general check upon the character and accuracy of the surveys.

In the Selection of my Deputies I have been governed by the fixed purpose of employing no one whose capacity and fidelity admitted of question; nor is it presumed that a lower Standard, or less precaution has been observed in this respect by my predecessors; but time has shown, glaringly, erroneous and sometimes fraudulent work from sources where it was least expected, and so perpetrated as to completely avoid detection by an examination of the field notes.

These facts are as old as the service, and have scarcely become less with its growth, and perfection in other respects. Hence a general examination of work with reference to the marking of the lines and establishment of the corners, the course and magnetic variation of the lines and the character and bearing of the various objects of topography is regarded as supplying what should have been instituted at first, and what should have been practiced throughout the public surveys.

To this important trust I have appointed you.

With as little delay as is practicable you will visit the field of labor of the Deputies now engaged upon surveys in Wisconsin, with whose names and districts the accompanying diagram will render you familiar.

You must provide yourself with approved and accurate instruments, and a standard and measuring chain, and where you find an evident neglect in establishment of corners, marking, or course of lines, you are to call to your aid such assistants as are requisite to retrace a few miles promiscuously selected from the district under examination.

You will report to this Office such data, respecting the character of the work, and the execution of the same in each district, which you may by diligent and faithful attention to the subject be able to acquire.

You will likewise take notes of the character of the soil and timber of each township in which you make examination, and collect all possible information in respect to the existence, locality, and consumption of pine timber, and in relation to the location and extent of settlement.

You will report to this Office in person as soon as you make an examination of the surveys indicated, as you will be required to visit a district in Minnesota and in Western Iowa as soon as practicable.

Should you discover any fraud or negligence on the part of any Deputy, you will immediately inform this Office, and also the Deputy engaged in the work, if he is in the field.

Your compensation will be at the rate of Sixteen Hundred Dollars per annum, and Three Dollars per day will be allowed for your travelling expenses, team &c.

If you find it necessary to employ assistants, a fair compensation will be paid for their services upon your producing a proper voucher for the same.

SURVEYOR GENERAL'S OFFICE
Dubuque, May 24th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 567, 1851

CHARLES GILLIAM:

[See pp. 321, 322, Wiltse]

The District of six Townships assigned you for sub-divisions is situated West of the Fifth Principal Meridian in the State of Iowa & numbered as follows—Townships 89 & 90 of Ranges 26, 27 & 28.

You are to meander the East Bank of the Des Moines River, and all Lakes, Ponds, Bayous & Sloughs, the meandering of which would subserve the public interest.

Standard paragraph Nos. 3g, 2g, 1g, 4g, 21g, 8g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 25g, 19g, 20g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque, July 5th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK D: 587, 1851

HENRY A. WILTSE:

In pursuance of your duties as examiner of the surveys under my charge & direction you will proceed immediately to examine those now in progress in the Western portion of this State.

Herewith you are furnished a diagram upon which is indicated the locality of the respective districts of those Deputies whose work will undergo your inspection & as the most practicable route at present will lead you in a Southwesterly direction you will commence your examination in the subdivision districts of Finley & McKeogh & Edwin James Jr Deputy Surveyors.

After satisfying yourself as to the character of their work you will proceed to the township line districts of John F. Conkey and Louis V. Davis, thence North to that of Alexander Anderson all of which you will carefully and critically examine.

Upon your return, you will visit respectively the subdivision districts of Waldo & Maderia, W. H. Henderson, C Gilliam and A Shaw and report the result of your observations to this office with as little delay as a strict regard to your duty will permit.

Your duties will be generally the same as are prescribed in my instructions of the 24th of May last.

In your promiscuous selection of points & lines for particular inspection you should fix upon such localities as are most difficult of survey. If such lines bear the test of the most rigid scrutiny and are generally well blazed and the corners conspicuously and accurately established and marked it will be proper to conclude that the survey has been or is being as the case may be faithfully made. Should you discover any omission or carelessness in running or marking the lines or establishing corners or errors of any nature whatever you will pursue the course in regard thereto directed by my said instructions of 24th of May.

After leaving the district of Alexander Anderson on your route to the work in progress East of Range 34, you will be necessarily compelled to traverse the country between the First and Second correction lines watered in part by Boyer Lake & river. In so doing I will thank you to make such observations and obtain such data as you may be able without interfering with your duties in any particular.

SURVEYOR GENERAL'S OFFICE
Dubuque July 10th 1851

GEORGE B. SARGENT, *Sur. Genl.*
Wis & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK D: 614, 1851

IRA COOK Esq.

On Account of the death of Jno M. Smith the Deputy engaged in surveying the district East of you your surveys for the present will have to be delayed. In consideration

of having your company organized & having to stop work I have concluded to assign you a district of subdivision—South of the second correction parallel—consisting of T. 18 Rs. 9 & 10, Town. 19, Rs. 9, 10 & 11, & Town. 20, Ranges 7 to 11 inc.

I will forward the necessary papers by tomorrows mail & as soon as you can leave your work in a returnable shape you can make the necessary arrangements to move to the new district assigned you with the full understanding that as soon as the survey east of you can again progress you will have to finish your present district.

SURVEYOR GENERAL'S OFFICE
Dubuque Augt 6th 1851

GEO B SARGENT, *Surveyor General*
Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK D: 630, 1851

THOMAS J MCKEAN, Esq
Marion Linn Co. Iowa

I enclose you herewith an appointment as Deputy Surveyor and desire to assign you to the duties of Examining assistant for the States of Wisconsin Iowa &c. I find that it will be impossible for one Deputy to perform the duties which are necessary to a strict examination of the work being executed this season your pay will be at the rate of \$1200 pr. annum & a fair per diem allowed for travelling expenses; it will be necessary for you to report yourself at this office at once as no time must be lost in entering on your duties.

Very Respyt yours

SURVEYOR GENERAL'S OFFICE
Dubuque August 13th 1851

GEO. B. SARGENT, *Sur. Genl.*
Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK D: 636, 1851

AMBROSE CARPENTER Esq
Wells Mills Appanoose Co. Iowa

By yesterdays Mail, I transmitted to your address my general & special instructions for the subdivision of your contract, blank forms for your assistants Oaths, diagrams exhibiting the length of lines & bearings to corners on the exterior boundaries of so much of your district as has been surveyed. The balance consisting of the Range lines has been put under contract, and you will obtain the notes & bearings from John S. Sheller Dep. Sur to whom has been assigned this work, & who will proceed with as little delay as possible to perform it.

You will also find blank books of the form prescribed by your instructions. The notes of township 68 Ranges 32, 33, & 34 are to be entered in those indexed with the respective township & Range. The balance of your district in the others

My instructions are full & explicit and I expect that you will make yourself thoroughly acquainted with them *and comply strictly with the directions contained therein.*

SURVEYOR GENERAL'S OFFICE
Dubuque August 19th 1851

GEORGE B. SARGENT, *Surveyor General*
Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK D: 667, 1851

F A MADEIRA Esq:

Herewith you will receive one copy of your triplicate contract & Bond (approved) for the subdivision into sections of the two townships named therein and which are the same relinquished by Mr. Waldo & yourself of the 23d inst. Having had the instructions, diagrams & all the papers necessary for the execution of this work furnished you on the occasion of your receiving the contract in conjunction with Mr. Waldo & he for reasons given in your letter of the 23d inst having expressed an inability to proceed, I have allowed the joint contract to be relinquished & assigned it to you for the purpose of being finished and you have therefore only to follow to the letter the said instructions heretofore referred to and to make return of the work with as little delay as accuracy and a faithful survey will permit.

SURVEYOR GENERAL'S OFFICE
Dubuque Sept. 30th, 1851.

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa.

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 22, 1851

THOMAS D. EVANS:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
August 23rd, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 28, 1851

SAM'L M. BALLARD:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 14g, 7g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
August 22, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 34, 1851

HENRY C. MOOREHEAD:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 16g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
September 1, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 40, 1851

SILAS A. HUDSON:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
August 25th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 46, 1851

WM. DUNN:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
Dubuque August 25, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin and Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 52, 1851

JOHNSON PIERSON:

The surveys for the execution of which, you have this day entered into contract, comprizes the subdivision into sections of the following townships, situated West of the Fifth Principal Meridian, in the State of Iowa, viz. Townships No. 69, and 70, of Ranges No. 40, 41 & 42, Fract. Townships No. 69, & 70, of Range 43, and Fract. Town. No. 69 of Range 41.
 Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE
Dubuque August 25, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin and Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 59, 1851

JOHN W. ROSS:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]
 SURVEYOR GENERAL'S OFFICE
Dubuque, August 26, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin and Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 76, 1851

JOSEPH H. STREET:

The survey for which you have this day entered into contract, comprises the subdivision into sections of the following Townships situated West of the Fifth Prin. Meridian in the State of Iowa, viz. Township No. 71, of Ranges No. 40, 41 & 42; Township No. 72 of Ranges No. 40, 41, 42 & 43; Fractional Township No. 71 of Ranges 43, and Fract. Town. No. 72 of Range 44.

Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 1st, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin and Iowa.

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 82, 1851

JACOB K. STARR:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 2d, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 88, 1851

PETER MORIARTY:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g 8g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 2d, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 94, 1851

SHADRACK BURLESON:

In closing to the first correction parallel in Township No. 78 Range 33, you will perceive that the lines between the Northern tier of Sections exceed the usual length, between 63 and 64 chains upon each of these lines, the quarter section corners are to be established at the distance prescribed by your General Instructions, in addition to which you are to establish two corners (each to be marked "A. 160" and to bear no other marks whatever), the first to stand 40 and the second 80 chains North of the said quarter section corners, upon each of the lines of said Northern tier of sections. In closing to said correction parallel, the bearings to all corners established in this line must stand South thereof, and you will be particular to note your intersections, see printed instructions.

Standard paragraph Nos. 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g, 17g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE

Dubuque, Sept. 3d, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

EXTERIOR TOWNSHIP LINES—LETTER BOOK E: 100, 1851

JOHN S. SHELTER:

A portion of the district of surveying for which you have this day entered into contract, consists of the following Range lines situated West of the Fifth Principal Meridian in the State of Iowa viz. The East boundary of Township No. 68, Range 34, and lines between Ranges 35 and 36 to 43 and 44 both inclusive of Township No. 68.

The Deputy who surveyed the line dividing Township 67 and 68 of Range 33 reports intersecting the East boundary of Township No. 67 Range 34, thus, ch's lks. West, on the South side of Sec. 31 Town 68, R. 33.

27, 13 Intersected East boundary of T. 67, R. 34-37, 46 lks. South of corner to said Township, and instead of establishing corner to Townships 67 & 68, R. 33 he continued his line to the complement thereof, 83.00 into the Township West, (without having made

any marks in said Township) from the termination of his line he ran due North, establishing quarter section and section corners which you are hereby directed to destroy.

You will please to retrace the South side of Section 31 Township 68 Range 33, and at the point where he intersected said Range line, you will establish corner to Townships 67 & 68 Range 33, observing that all the bearings stand East thereof. You will then run North 37 ch's 46 lks to the *S. E. corner of Township 68, Range 34* and from this corner commence your own survey, running due North 40 chains and establishing quarter section corner &c, in the manner prescribed in your printed instructions bearing in mind that this line is the East boundary of Township 68 Range 34 and must be so stated in your field notes, and that it has no reference whatever to the township East of it, until you intersect the North boundary of your district, where you will establish a corner (See Printed Instructions) the bearings to which, and to all your lines intersecting this boundary, must stand south thereof. The line between Ranges 34 & 35 was surveyed by D. A. Spaulding deputy surveyor under instructions from Silas Reed Surveyor General of Illinois and Missouri dated April 3d 1845 and being run without any reference to the surveys under authority of this office, and to close on what was then considered the North boundary of Missouri (viz. Brown's line) of course does not agree with them. The deputy who surveyed the North boundary of your district, reports that he intersected this line 48 chains 56 links South of the corner set by said Spaulding.

You will please retrace a portion of said Range line, giving in the proper place in your field books the actual length of the line, its intersection of your said North boundary, with the nearest corner thereon, and establishing a corner at said intersection. You will destroy that made by Spaulding.

From corner to Townships 67 & 68 Range 35 & 36 you will run due North establishing corners in the manner laid down in your Printed Instructions, already referred to and so on with the remainder of your lines, until you come to that dividing Ranges 43 & 44. In the survey of this line you will measure on your North boundary from Corner to Township 68 Ranges 43 & 44, a distance to correspond with your intersection of said line, by the line dividing Ranges 42 & 43 in the manner heretofore described and from said Corner run due South to the Missouri River, observing to make the East boundary of section 1 to correspond in length with the East boundary of section 1 in line of Ranges 42 & 43.

Every respective mile upon a Township or range line are to be full, except the West half of the last or closing mile of the former, and the North or closing half mile of the latter; that is, all fractions are to be carried to the North & West in each Township, unless otherwise specially directed.

Standard paragraph Nos. 24g, 2g, 1g, 26g, 4g, 5g, 6g, 12g, 13g, 15g, 8g, 19g, 20g, 7g, 14g, 9g. [See pp. 360, 361, 362, 363]

As soon as you have completed the survey of the township boundaries of your district you will return the field notes thereof with a diagram to this office.

The remainder of the district assigned you consists of the subdivision into sections of the following Townships, viz Townships 68 of Ranges 39 to 44 inclusive each of which are plain with the exception of Township 68 Ranges 43 & 44, and are to be subdivided upon the plan laid down in my General Instructions to Deputies.

By these instructions you will observe that you are required to close your sections except in the North and West tiers respectively within given limits. This limitation however applies to the difficult running in Wisconsin and Minnesota, as well as to that upon the unobstructed surface of Iowa. As this limit is not to be exceeded under any state of circumstances, it is presumable that under the most favorable, such as is supposed to exist in your case, a much narrower limit would be expedient. This fact should be borne in mind in deciding upon the accuracy of your closings.

In the subdivision of Township 68 Range 43, you will proceed as above directed, except that you will close to the River by true lines.

In Township 68 Range 44 you will commence in the North boundary of the township 80 chains from corner to ranges 43 & 44 thence run due South and establish corner to sections 1, 2, 11 & 12 from thence random for corner in East boundary and correct back observing to make your North tier of sections of the same length as the East boundary of section and soon closing to the river as before directed.

You will report in your general descriptions and indicate upon your diagrams the whole number of Residences or other edifices and as nearly as practicable, the extent of improvement within each township. Where you cannot determine these important facts

accurately without leaving your lines, you must specify the smallest legal subdivision or subdivisions upon which such residence or other improvement exists.

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 6th, 1851

GEO. B. SARGENT, *Sur. Gen'l*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 108, 1851

WILLIAM W. SMITH:

The district of Eight Townships assigned you for subdivision is situated West of the Fifth Principal Meridian in the State of Iowa and numbered as follows, Townships 91 & 92 of Ranges 25, 26, 27 & 28.

Standard paragraph Nos. 17g, 19g, 20g, 3g, 2g, 1g, 4g, 21g, 8g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 12th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 114, 1851

A. CARPENTER:

The East Boundary of Township No. 68, Range No. 34 was surveyed without any reference to the Township East of it; Therefore in surveying Township No. 68, Range 33 (and only this one) in closing to the West you will run due West, noting your intersection with the nearest corners in said line, and establishing the proper corners, the bearings to which must all stand in the Township you are then surveying.

You will bear in mind that in establishing your corners on the North boundary you must note your intersection with the nearest corners already established (see part 10 Page 13 of your printed instructions) and the bearings to all your own corners must stand South thereof.

Standard paragraph Nos. 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque,

GEO. B. SARGENT, *Sur Gen'l*
for Washington & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 122, 1851

THOMAS CASSIDAY

The survey for which you have this day entered into contract, comprises the subdivision into sections of the following Townships situated West of the Fifth Prin. Mer. in the State of Iowa, viz. Townships No. 73 & 74 of Ranges 40 to 44 inclusive.

Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 29th, 1851

GEORGE B. SARGENT
Surveyor General for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 128, 1851

WILLIAM H. HENDERSON:

In closing to the First Correction Parallel, you will perceive that the lines between the Northern tier of sections exceed the usual length between 53 & 60 chains; upon each of these lines the quarter section corners are to be established at the distance prescribed by your General Instructions, in addition to which you are to establish two corners (Each to be marked "160 A." and to bear no other marks whatever) the first to stand 40, and the second 80 chains, North of the said quarter section upon each of the lines of said Northern tier of sections. In closing to said Correction Parallel, the bearings to all corners which you establish therein must stand South thereof; please note particularly part 10, Page 13 of your Printed Instructions.

Standard paragraph Nos. 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g, 17g. [See pp. 360, 361, 362, 363]

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 18th, 1851

GEORGE B. SARGENT
Surveyor General for Wisconsin & Iowa

TOWNSHIP LINES & SUBDIVISIONS—LETTER BOOK E: 134, 1851

JOHN G. CLARK:

Your contract of this day specifies the survey and establishment of the lines between Ranges 19 and 20, to 24 and 25, of Town 67, and the subdivision into Sections of Townships 67, Ranges 18, 19, 20, 21, 22, 23, and 24 as rendered fractional by the boundary recently established between the States of Missouri and Iowa.

You are also to make proper connections with the said boundary & prosecute the survey in the manner hereinafter directed. The base line of this State is the North Boundary of your District and you will find the last half of the closing mile in Each Township to be 43 chains of length, commencing in this line to corner to Sections 31 and 36, T. 68, Ranges 19 and 20; you are to run due South, establishing quarter section and Section corners at 40 and 80 chains respectively, until you intersect the Boundary line between Missouri and Iowa, on which you are to establish your corner, observing to have the bearings thereto all stand North thereof, and to carefully measure and note your intersection with the nearest corner established by the Commissioners who surveyed the said Boundary. This you will be readily enabled to do from the notes of said line, being herewith furnished you. In this manner you proceed with each successive range line reversing the regular order of survey, and throwing the fractions to the South, instead of the North.

Having completed the survey of the Range lines, you will commence at Corner to Sections 1, 2, 35 and 36 in your North Boundary, and run South 80 chains, establishing quarter Section and Section Corners as above directed, from thence you will random East for Corner on Range line and correcting back in the manner laid down in my printed instructions, and so on to the intersection of your lines with the State line, where you will establish a corner, and note the intersection as directed in the Survey of the Range lines.

With your field notes you are to return the map of each Township of your District herewith enclosed; upon which must be expressed the length and variation of each of your lines, with all the Topography thereon neatly laid down. With a view to the completeness of these maps, you should make sketches of the Topography as you progress with your lines, that you may be able to present not only the points upon your lines at which the same occurs, but also its direction and position between the lines or within each section, as every object of Topography is to be properly closed or connected. These maps form the basis of all the official plats, and are by law denominated the Original, as such they are carefully preserved in this Office where they are much referred to and examined.

Standard paragraph Nos. 10g, 9g. [See p. 361]

SURVEYOR GENERAL'S OFFICE

Dubuque, March 16th, 1852

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 139, 1851

ELISHA S. NORRIS:

Standard paragraph Nos. 17g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g, 8g. [See pp. 360, 361, 362, 363]

In closing to the First Correction Parallel you will please pay particular attention to your Printed Instructions and observe that the bearings to all corners in said line, *must* stand south thereof, and you will perceive in closing to said Correction Parallel, that the lines between the Northern tier of sections exceed the usual length some sixty chains; upon each of these lines the quarter section corners are to be established at the distance prescribed by your General Instructions, in addition to which you are to establish two corners (each to be marked "160 A." and to bear no other marks whatever) the first to stand Forty, and the second Eighty Chains, North of the said quarter section corners, upon each of the lines of the said Northern tier of sections.

SURVEYOR GENERAL'S OFFICE

Dubuque, Oct. 6th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 145, 1851

GEORGE BUMGARDNER:

Your contract of this day embraces, the subdivision into sections of the following Townships situated West of the Fifth Principal Meridian in the State of Iowa, viz. Townships No. 75 & 76 of Ranges No. 40, 41, 42, 43 & 44.

Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE

Dubuque, Oct. 6th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 160, 1851

WALTER CLEMENT & WILLIAM H. SEEVERS:

Your contract of this day embraces, the subdivision into sections of the following townships situated West of the Fifth Prin. Mer. in the State of Iowa. Viz:

Township 77, and 78 of Range 41, 42, 43, 44 & 45.

All lines closing to the Missouri River, are to be true lines, and should the line between sections 4 & 5 Township 78, Range 45, require to be run South, you will measure along the Correction line from corner to sections 3 and 4 Eighty chains west, where you will establish a corner and from thence run due South, being careful to make the distance to corners in the lines which you thus run correspond to those upon the meridian East, thereof.

Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE

Dubuque, Oct. 6th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

Note:

As a new standard of field books has recently been adopted you are not required to enter the notes of each mile upon a separate page of your field books, as your printed instructions indicate, but you are to continue the notes in regular order, *drawing a line between the notes of each mile.*

In closing to the First Correction parallel you will perceive that the lines between the Northern tier of sections, exceed the usual length upwards of 53 chains. Upon each of these lines the quarter section corners, are to be established at the distance prescribed in your general instructions in addition to which you are to establish two corners to be marked simply 160 A. and to bear no other marks whatever, the first to stand 40, and the second 80 chains due North of said quarter section corners. You will also please bear in mind, that all lines closing to said correction parallel are to be true lines, and that the bearings to all corners which you may establish in this parallel, must stand South thereof, and the intersections be given as directed in your printed instructions.

By some unaccountable oversight the Deputy who surveyed the town lines of your district in closing to the Correction parallel marked the corner at 80 chains, as corner to sections 1 and 6, where it should have been marked simply 160 A. You are hereby required to visit each of these corners, and obliterate the marks thereon. And in their stead mark 160 A. for this service you shall be paid a fair compensation.

SUBDIVIDING INTO SECTIONS—LETTER BOOK E: 171, 1851

ALEXANDER ANDERSON:

The survey for which you have this day entered into Contract. comprises the subdivision into sections of the following Townships, situated West of the Fifth Principal Meridian in the State of Iowa, viz. Township No. 79 of Ranges 40 to 45 inclusive, Township No. 80 of Ranges 40 to 43 inclusive, and Township No. 81 of Ranges 41, 42 & 43.

Standard paragraph Nos. 27g, 28g, 18g, 19g, 20g, 3g, 2g, 1g, 4g, 8g, 21g, 5g, 6g, 12g, 13g, 7g, 14g, 9g, 11g. [See pp. 360, 361, 362, 363, 364]

SURVEYOR GENERAL'S OFFICE

Aug. 30th, 1851

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

ISLAND SURVEYS IN MISSISSIPPI—LETTER BOOK E: 263, 1852

GEORGE BUMGARDNER ESQ:

You are hereby commissioned as hereinafter directed to survey an island in the Mississippi river lying opposite fracl. Sec. 2, Town 76 Range 2 West of the 5th Mer. Iowa & near the mouth of Muscatine Slough, for which service you are to be paid by Abraham Smally of Muscatine at whose solicitation this survey is made.

Herewith you will receive a diagram of said island and the adjacent shore also a

description of the original corners nearest said island which you may have to visit, and a copy of my printed General instructions of which your attention is particularly directed—

Your affidavits may be in the form prescribed omitting what relates to "Contract"

Your notes must be returned in the usual form & the affidavits of your assistants blanks for which are herewith transmitted must be returned with your field notes.

You will retrace sufficient of the line between Secs. 3 & 10 to enable you to determine the variation of the same & to adjust your chain to the measurement thereof which variation & length of chain must be employed in the survey of said island.

Should the line of Secs. 3 & 10 cross this island you must establish a meander corner at both points of intersection or should any section line barely touch it a meander corner should be made at the point of contact.

From the appearance of this island as laid down on the plat I am led to infer that it is *East of the Main Channel* of the Mississippi river—This you will examine into particularly before commencing the survey as should it lie *East of said Channel* these instructions are null & void, the island being in Illinois consequently out of the jurisdiction of this office & under that of the Sur. Genl. at St. Louis.

SURVEYOR GENERAL'S OFFICE

Dubuque, January 22d, 1852

GEORGE B. SARGENT, *Surveyor General*
for Wisconsin & Iowa

LETTER BOOK E: 282: 1852

GEORGE BAUMGARDNER ESQ

Muscatine Iowa

Sir:

Your communication of the 25th ulto is at hand— On attempting to protract your work the notes are found so deficient that it is impossible to complete the maps without some explanation—

SURVEYOR GENERAL'S OFFICE

Dubuque, March 2d, 1852

Very respy Your Obt Servt

GEORGE B. SARGENT, *Surveyor General*

SPECIAL INSTRUCTIONS—LETTER BOOK E: 291. 1852

ALEXR ANDERSON

Kanesville Iowa

[See p. 335, Anderson]

Herewith you will receive a contract and bond in triplicate for the survey of a district of township lines situated between the 1st & 2d corrections on the North & South & on the west by the line dividing Ranges 39 & 40. These you will please execute in the proper manner & return without delay

You will find also your diagram & special instructions and it is expected that when you have finished your work to the line dividing Towns 83 & 84 you will make an advance return of the same properly attested also a diagram & report upon the same—

Very respectfully Your Obt Servant

SURVEYOR GENERAL'S OFFICE

Dubuque March 6th. 1852

GEORGE B. SARGENT, *Surveyor General*

ISLAND SURVEYS IN RED CEDAR RIVER—LETTER BOOK E: 302. 1852

GEORGE BAUMGARDNER:

You are hereby commissioned to survey, as hereinafter directed certain islands in Red Cedar River, for which service you will be paid by J Scott Richman or Samuel Tarr.

Herewith you will receive diagrams of the shore adjacent to where said islands are supposed to be located, a description of the corners which it may be necessary for you to visit—and a copy of my printed General Instructions, of which your attention is particularly directed.

Should a section line cross any island, you are to establish a meander corner at both points of intersection, or should a section line barely touch the island a meander corner is to be established at the point of intersection.

Your affidavit may be made in the form prescribed on said instructions omitting what relates to "Contract"

Your notes must be returned in the usual form & the affidavits of your assistants (blanks for which are herewith furnished) must be returned with your field notes.

Of course you will make your own arrangements with these gentlemen, as this office orders, the survey in compliance with their wishes, they promising to pay for the same.

SURVEYOR GENERAL'S OFFICE

GEORGE B. SARGENT, *Surveyor General*

Dubuque March 11th, 1852

Wisconsin & Iowa

LETTER BOOK E: 328. 1852

HENRY C. MOOREHEAD ESQ

Davenport Scott Co. Iowa

Herewith you will receive a Contract & bond for the subdivision of three townships specified therein.

The diagrams &c are also transmitted, and the general & special instructions which are already in your possession will serve to guide you in the execution of this work.

Your attention is particularly directed to said instructions as the slightest deviation from them, on the same being reported by my examining Deputy will cause the suspension of your work.

Your attention is also called to certain missing corners not established in the work already sent in from this district and it is expected that a full report of the same having been placed in accordance with your instructions will be received as soon after you arrive on the ground as practicable.

SURVEYOR GENERAL'S OFFICE

Very respectfully Your. Obt. Servt

Dubuque April 6th, 1852

GEORGE B. SARGENT, *Surveyor General*

RESURVEY—LETTER BOOK E: 338, 1852

EDWIN JAMES JR.

By authority from the Commissioner of the Genl. Land Office under date of Octr 8th. 1851 You are hereby authorized to resurvey as hereinafter directed Township No. 90 N. of Range 3 West of the Fifth Prin Mer State of Iowa.

Commencing in the manner prescribed by the accompanying printed instructions you will proceed to retrace the lines of the existing survey from corner to corner and wherever the same are found and can be fully identified as those established by the original surveyor you are to affix thereto your own official marks of recognition and from said corners you will run, mark and establish the lines and corners for the residue of the Township."

In surveying between recognized corners at remote distances apart you are to random from corner to corner & correct back distributing the excess or deficiency as the case may be equally, so that each section may receive its due proportion of either—

As by this survey, the *lines as recognized by the settlers* and the lines of the surveys hereby authorized will most probably conflict, you will have to ascertain the connection between them and exhibit the same on your diagram and in a separate set of field notes to be kept by you for that purpose.

Herewith you are furnished a copy of the original field notes & plat. Copy of the diagram and notes of Maj Mc.Kean examining deputy and all other papers necessary for your guidance in the execution of this work.

For performing this service you will be paid at the rate of three dollars per day, and all necessary expenses incurred will on production of the proper vouchers, be included in your account.

SURVEYOR GENERAL'S OFFICE

GEORGE B. SARGENT, *Surveyor General*

Dubuque April 12th, 1852

Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK E: 346, 1852

EDWIN JAMES JR

Colesburg Iowa

Your communication of the 22d is at hand. You were instructed to distribute the excess or deficiency that might occur by randoming between any two recognized corners at remote distances apart—Thus should you find no corner between cor to secs. 13 & 14, 23 & 24 & 1, 2, 11, 12 and the distance by your measurements, should prove to be 164. instead of 160 chains you are to add two chains to the proper boundary of each section & in surveying the line between Secs. 1 & 2. should it fall short 160 links you are to pro-

portion the difference with reference to the length of the line as represented by the old survey by setting the qr post the proportionate No of links south of the distance where it was originally represented—by this method each qr sec will equally share in the gain or loss

SURVEYOR GENERAL'S OFFICE
Dubuque April 26th. 1852

Very Respectfully Your. Obt. Servt
GEORGE B. SARGENT, *Surveyor General*

SPECIAL INSTRUCTIONS—LETTER BOOK E: 375, 1852

IRA COOK Esq
Davenport Iowa

Accompanying this you will receive a triplicate Contract & Bond for the subdivision into sections of 5 townships in the State of Iowa and also for the survey of certain town lines connected therewith.

SURVEYOR GENERAL'S OFFICE
Dubuque June 3d 1852

Very respectfully your obt Servt
GEORGE B. SARGENT, *Surveyor General*

TOWNSHIP LINES & SUBDIVISIONS—LETTER BOOK E: 378. 1852

JOHN G. CLARK:

Your contract of this day specifies the survey and establishment of the lines between Ranges 19 and 20, to 24 and 25 of Town. 67, and the subdivision into Sections of Townships 67, Ranges 18, 19, 20, 21, 22, 23, and 24 as rendered fractional by the boundary recently established between the States of Missouri and Iowa.

You are also to make proper connections with the said boundary & prosecute the survey in the manner hereinafter directed. The base line of this State is the North Boundary of your District and you will find the last half of the closing mile in Each Township to be 43 chains of length, commencing in this line to corner to Sections 31 and 36, T. 68, Ranges 19 and 20; you are to run due South, respectively, until you intersect the Boundary line between Missouri and Iowa, on which you are to establish your corner, observing to have the bearings thereto all stand North thereof, and to carefully measure and note your intersection with the nearest corner established by the Commissioners who surveyed the said Boundary. This you will be readily enabled to do from the notes of said line, being herewith furnished you. In this manner you proceed with each successive range line reversing the regular order of survey, and throwing the fractions to the South, instead of the North.

Having completed the survey of the Range lines, you will commence at Corner to Sections 1, 2, 35 and 36 in your North Boundary, and run South 80 chains, establishing quarter Section and Section Corners as above directed, from thence you will random East for corner on Range line and correcting back in the manner laid down in my printed instructions, and so on to the intersection of your lines with the *State* line, where you will establish a corner, and note the intersection as directed in the Survey of the Range lines.

Standard paragraph Nos. 9g, 14g, 10g. [See pp. 361, 362].

SURVEYOR GENERAL'S OFFICE
Dubuque, March 16th, 1852

GEORGE B. SARGENT, *Surveyor General*
Wisconsin & Iowa

TOWNSHIP LINES & SUBDIVISION—LETTER BOOK E: 380. 1852

WILLIAM SHIELDS:

Your contract of the 5th. inst. specifies the Survey of so much of the lines between Ranges 31 and 32; and 32 and 33 of Township 67 as are situated in the State of Iowa, and the subdivision of Township No. 67 of Ranges 32, 33, 37, 38, 39 and 40 situated in the same State, and rendered fractional by the boundary between the States of Missouri and Iowa.

You are also to make the proper connections with the said boundary, not only in the Townships above named, but also in Township 67 of Ranges 34, 35, 36, 41, 42, and 43, which have been subdivided some time since, and prosecute the survey of the whole, in the manner hereinafter directed.

On the North Boundary of Township No. 67, Range 32, you will find the last half of the sixth mile to be 43.00 chains of length. You will commence your survey of this line at the corner to Towns: 63 Ranges 32 and 33, and from thence you will survey the line dividing Ranges 32 and 33 *due South*, establishing the proper quarter section and

Section Corners, thereon at 40 and 80 chs. respectively, until you arrive at the South boundary of the State, where you will establish a corner, observing to make your bearings to said corner stand North thereof, and to give your intersection with the nearest monument established as a mile point of said boundary. You will then proceed to Corner to Ranges 31 and 32 of Towns. 68, and establish the line dividing Ranges 31 and 32 in the same manner.

Having completed the survey of your Range lines, you will commence your subdivisions at Corner to Sections 35 and 36 Towns. 68, Ranges 32 and run due South 80 chs. establishing a quarter section post at 40 chains, and a section corner at 80 chains from which you will random for corner in East Boundary giving the variation, and noting the falling in your field notes. From corner in East Boundary you will then correct back, noting your variation and Topography on the corrected line, and so on to the intersection of your survey with the state line, where you will establish a corner, and note your intersection therewith as directed in the survey of the range lines, and like manner you will proceed with the balance of the Township running South instead of North, and closing to the State line by true lines.

Towns 67, Range 33 is to be surveyed in precisely the same manner with this exception, that as the West Boundary of this Township was surveyed under instructions from the Office at Saint Louis, it has no reference to the present surveys, consequently you will have to notice the intersection and falling of the West tier with the corners already established.

In the survey of the remaining Townships of your District you will continue your survey from the Missouri side, as if there were no State line intervening, with this exception, that the field notes must be separate and distinct; and only that portion belonging to the State of Iowa must be returned to this Office: For instance, commencing in Town 67, Range 37 at corner to Sections 35 and 36 in Missouri you will run North and at 45.60 chains you intersect the State line—Your field notes returned to this Office will read thus:—

Chs.	lks.	Township 67 North, Range 37 West of 5th Mern.
20.19		East of 24th. mile post set post in mound pit 8 links North for corner to fractional Sections 35 and 36; Thence North between Sections 35 and 36 variation 8° 20' East—
34.40		Set post for Corner to Sections 25, 26, 35, and 36, from which a Bur oak 10 ins. in dia. bears N 45° E 60 links and an Elm 14 ins. in dia. bears N 31° W 450 links East Random between Sections 25 and 36-- Variation-----East.
80.06		Intersected Range line 30 links North of Post. West Corrected between Sections 25 and 36. Variation-----East.
30.50		Creek. 50 lks. wide runs S. E.
40.03		Set post for qr. Sec. Corner in mound of Earth and sod pit East 8 lks.
80.06		Section Corner. (and so on, through the Township).

As the Notes of the Missouri and Iowa sides are entirely disconnected you will see that the complement of the line properly expressed is only what is to be used, and this method has been adopted in order that the Survey of these 4 Townships may harmonize with those East and West of them, which were surveyed before this Boundary was established.

According to the instructions of the Surveyor General of Illinois and Missouri, you are to random and correct the lines between the 10 mile cast iron posts, west of the Old North West Corner, setting mile posts on the *True* line, before making any connections therewith. The notes of this process, it is necessary to repeat in the returns furnished this Office, and of course in making your connections with the Townships already subdivided, you will use great care to establish monuments on the true line, and have the bearings to the same, as before directed all stand North thereof; and in making said connections in Township already subdivided, you are to begin at the nearest corner, that can be positively identified North of the State line, and run South on a random to the nearest corner South of it, correcting this random you will make your corner at the inter-

section of the true line, with the State line, and report the same precisely as performed in the field.

The field Notes of each Township must be returned in a separate Book, and each book must be signed by your Assistants and sworn to by you before some Officer, qualified to administer the Oath.

You are empowered as Deputy Surveyor to administer the oath to your assistants—None of the streams in your district are to be meandered.

Standard paragraph Nos. 14g, 9g, 10g. [See pp. 361, 362]

SURVEYOR GENERAL'S OFFICE

Dubuque, March 25, 1852

GEORGE B. SARGENT

Surveyor General, Wisconsin & Iowa

TOWNSHIP LINES & SUBDIVISION—LETTER BOOK E: 383. 1852

WILLIAM DUNN:

Your contract of this day specifies the survey and establishment of the lines between Ranges 25 and 26 to 30 and 31 of Township 67 and the subdivision into Sections of Township 67 of Ranges 25 to 31 inclusive, rendered fractional by the Boundary recently established between the States of Missouri and Iowa.

You are also to make the proper connections with the said boundary, and prosecute the survey in the manner hereinafter directed. The base line of this State is the North Boundary of your district, and you will find the last half of the closing mile in each Township to be 43 chains of length; commencing in the line at Corner to Sections 31 & 36, Towns. 68 Ranges 25 and 26, you are to run due South, establishing quarter section and section corners at 40 and 80 chains respectively, until you intersect the Boundary line between Missouri and Iowa, on which you are to establish your corner, observing to have the bearings thereto all stand North thereof, and to carefully measure and note your intersections with the nearest corner established by the Commissioners who surveyed the said Boundary. This you will be readily enabled to do from the notes of the said line, being herewith furnished you. In this manner you proceed with each successive Range line, reversing the regular order of survey, and throwing the fractions to the South instead of the North.

Having completed the Survey of the Range lines, you will commence at the corner to Sections 1, 2, 35 and 36 in your North Boundary and run South 80 chains establishing quar. Sec. & Sec. Corners as above directed. From thence you will random East for corner in Range line, and correcting back in the manner laid down in my printed instructions, and so on to the intersection of your lines with the State line, where you will establish a corner and note the intersection as directed in the Survey of the Range lines.

Standard paragraph Nos. 14g, 9g, 10g. [See pp. 361, 362]

SURVEYOR GENERAL'S OFFICE

Dubuque, April 19th, 1852

GEORGE B. SARGENT

Surveyor General, Wisconsin & Iowa

EXTERIOR TOWNSHIP LINES—LETTER BOOK E: 385, 1852

GEORGE R. STUNTZ

The District of Township lines contracted for by you on the 5th inst. was let in compliance with Special Instructions from the Commissioner of the General Land Office.

Since your contract was drawn up, it has been deemed advisable to make the West Boundary of your District the line dividing Range 13 and 14. You are therefore to consider so much thereof as lies *West of said Range line revoked*.

Herewith you will receive my printed General Instructions, which are to be your sole guide in the execution of this work, also all the requisite diagrams books, papers &c. that are necessary in order to enable you to progress with the survey.

By the terms of your contract, you will perceive that you have been authorized to select and subdivide into sections a number of Townships in your District not to exceed in amount, 480 miles.

As this Office is in possession of but little accurate information in relation to the character of country, through which your lines will pass, & as the season would be too far advanced for a party to take the field, after the reception of your field notes; in order to meet the views of the Department, I have concluded after mature deliberation to allow you to make selection of such townships as in your opinion will "most readily command the attention of settlers", and it is confidently expected that you will survey none other.

Whenever you subdivide a Township that is rendered fractional by either Lake Superior or the Saint Louis river, of course, the same is to be carefully meandered, and it is also desirable that you should meander, (and return separate notes thereof) the Saint Louis river from the meander post established by you on said river in line of Ranges 13 and 14 to the foot of the first rapids above the Indian Village or the point from which the boundary between Wisconsin and Minnesota will be started.

SURVEYOR GENERAL'S OFFICE
Dubuque June 7, 1852

GEORGE E. SARGENT
Surveyor General, Wisconsin & Iowa

TOWNSHIP LINES & SUBDIVISIONS—LETTER BOOK E: 391. 1852

IRA COOK:

Your contract of this day specifies the survey and establishment of the lines between Ranges 5 and 6, 6 and 7, 7 and 8, and 8 and 9, and the subdivision into sections of Township No. 100 of Ranges 5, 6, 7 & 8.

Herewith you are furnished diagrams exhibiting the bearings to all corners so far as surveyed also the notes of the Northern boundary of Iowa from corner to Ranges 4 & 5 West to Cor. to Ranges 8 & 9, also all the papers necessary to carry on the work.

My printed General Instructions will be your guide in all respects and no deviation whatever from them will be allowed.

In closing to the North boundary of the State you are to close as to a correction line (see printed instructions).

SURVEYOR GENERAL'S OFFICE
Dubuque June 1852

SPECIAL INSTRUCTIONS—LETTER BOOK E: 400. 1852

JOHN S. SHELLER ESQ.

You will observe that the South & North boundaries of Towns. 85, 86, 87 & South boundary of Range 39 deflect from right angle to the true meridian to the extent & in the direction indicated by the diagrams furnished you.

This deflection you will be compelled to carry with your work in order that your corners may stand in line with those upon the township exteriors & that the harmony & uniformity of the Surveys may be preserved. Your Meridian lines however are to conform strictly to the true Meridian. The field notes of your East and West lines in the townships above named will first state the true magnetic variation immediately underneath which & upon a Separate line you will give the course at which the same are run observing in each instance to change the course instead of the variation in correcting your lines & to place all topography on the connected line thus:

East connected between Secs. 6 & 7
N. 89° 13 E. Var. 8° 50' East

40.13 Set post at qr. Sc. corner &c.

SURVEYOR GENERAL'S OFFICE
Dubuque Oct. 14, 1852

GEORGE B. SARGENT
Surveyor General, Wisconsin & Iowa

SPECIAL INSTRUCTIONS—LETTER BOOK E: 459. 1852

LEONARD B. HODGES ESQ.

Columbus Allamakee Co Iowa

You are requested to repair immediately to Dubuque to execute the papers pertaining to the contract assigned you.

SURVEYOR GENERAL'S OFFICE
Dubuque, Sept. 15, 1852

Your Obt Servt
GEORGE B SARGENT, Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK E: 462. 1852

ALEXR ANDERSON

Kanesville Iowa

Herewith you will receive triplicate contract and bond which please execute and return to this office without delay & at the same time signify the names of your sureties—

SPECIAL INSTRUCTIONS—LETTER BOOK E: 495. 1852

Jos H D STREET Esq
Ottumwa Iowa

Yours of the 18th inst returning Contract & bond is received with this and you will receive two copies of Instructions to Dep omitted when sending diagrams & Co I also send blanks for your account—which should be signed by yourself & M Warden & accompany your first return of field notes

SURVEYOR GENERAL'S OFFICE
Dubuque Oct 22 1852

Very Resply Your Obt Servant
GEO B SARGENT, *Sur Genl*

SPECIAL INSTRUCTIONS—LETTER BOOK E: 564. 1853

ALFRED HEBARD & THOMAS E. GARSIDES :

Triplicate copies of your Contract & Bond for sub-division of Ten Townships in State of Iowa have been received and approved Herewith you will receive one copy of same. and Books & necessary Papers for your Guidance-you will do well to pay special attention to the Printed General Instructions and to peruse carefully the requirements of your contract, as any material deviation from the rules & regulations of the office may cause the rejection of your Field Notes.

SURVEYOR GENERAL'S OFFICE
Dubuque Jany 27th. 1853

Very Respy Your Obt Servt
GEORGE B. SARGENT, *Surveyor General*

SPECIAL INSTRUCTIONS—LETTER BOOK E: 576. 1853

ADAM PERRY Esq
U S Dep Sur Iowa City Iowa

I have to inform you that the field notes of your survey will be received if presented by the 1st of July The sooner they are placed in this Office however will be the better for yourself as there will be but little field work on hand and they can receive immediate attention.

SURVEYOR GENERAL'S OFFICE
Dubuque Feb 15 1853

I am Yours Very Resp Obt Ser
GEORGE B SARGENT, *Sur. Genl.*

REJECTED SURVEY—LETTER BOOK E: 596. 1853

JOHNSON PIERSON Esq
Burlington Iowa

It is with feelings of extreme regret that I have to return you the field notes of your survey—rejected— They are one series of errors and omissions from beginning to end and there is nothing exhibited by them by which a map could be constructed— In Town 70 R 43 on the line between Secs. 2 & 3 your notes represent you as intersecting 4 links West of the Sec corner—

Now there is no monument within 11 chs—the town line surveyor representing the vicinity as a marshy lake which is not mentioned by you at all— On the line between Secs 16 & 17 and 18 & 19 there is a series of offsets without topography or explanation of why they occur—between Secs 4 & 5 in correcting South, you offset East 2 chains into the middle of a slough— The Bluffs of the Missouri are not noted— Wabonsa Creek with all its tributaries ends in the line between Secs. 10 & 11—Wabonsa Lake is not meandered— Your meanders do not reach the main channel of the River, nor is there a single marsh stream lake or other object of topography that will close or can in any way be connected so as to exhibit the true character of the country

Township 69 Range 43 does not represent anything at all and Town 69 R 44 is about in the same condition—

With respect to the package of papers sent by you to this office—you must be perfectly aware that nothing can be done with them *by me*—

A copy of my instructions is herewith forwarded, and unless your notes conform strictly thereto—they cannot and will not be received— Diagrams representing your field notes with all objects of topography must also accompany the work—

Much inconvenience has already been experienced by the Office in the delay of this

work and time lost in endeavours to plat it, and it is earnestly hoped that it may receive your early attention & be returned in proper form and free of errors—

SURVEYOR GENERAL'S OFFICE
Dubuque, March 29th, 1853

Very respectfully Your Obt Servant
GEORGE B. SARGENT, *Surveyor General*

SPECIAL INSTRUCTIONS—LETTER BOOK E: 598. 1853

JNO W WILLIAMS Esq
Burlington Iowa

Herewith you will receive one copy of your contract & bond approved with all the papers necessary for your guidance in the execution of your survey.

SURVEYOR GENERAL'S OFFICE
Dubuque April 1st, 1853

Very respectfully Your Obt Servant
GEORGE B. SARGENT, *Surveyor General*

EXTERIOR TOWNSHIP LINES—LETTER BOOK F: 18 1853

JOHN T. EVERETT:

Your contract of this date specifies the township exteriors which you are required to survey by the terms of your contract—Commencing at the South West corner of your district you will proceed to survey in the manner directed by my printed instructions under the head of *township lines* the lines between Ranges 19 & 20, 18 & 19, & 17 & 18. Then from corner to townships, 96 & 97 Ranges 16 & 17 you will survey as directed in said instructions the line between Towns 96 & 97 due West and continue on in the same manner until you arrive at the North East corner of Towns 98 Ranges 10 & 11.

The line between Towns 98 & 99 was run as a correction line and the line between Ranges 10 & 11 of Township 98 intersects it 33 chs. East of the South West corner where a post was set & four bearings taken. It is required of you to continue this line due West destroying the bearings and defacing the marks on the trees & at corner to Towns 98 & 99 as the bearings all stand South you will take the new bearings North and give full notes of all that you do preceding the notes of the line between Towns 98 & 99 of Range 11.

In closing to the North boundary of the State you will bear in mind to take all your bearings South of said boundary and to have all your lines closing thereto as well as all others strictly within the limits.

As soon as you shall have closed the line between Towns 97 & 98 to your West boundary you are to return the field notes to this office without delay and as soon as you shall have closed the next tier North you will in like manner make a second return, the remainder you can return when your work is finished which it is hoped you will accomplish as early a day as accuracy will warrant.

SURVEYOR GENERAL'S OFFICE
Dubuque June 6th 1853

WARNER LEWIS
Sur. Genl.

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 19. 1853

MATTHEW CRESSWELL

Bonaparte Van Buren Co. Iowa

I have this day appointed you one of my deputies and forward your Contract & Bond in triplicate for a district of subdivision in Iowa. These papers must be executed in strict conformity to the *printed instructions at the bottom of the Bond*. After executing them you will return them at once to his office when if approved one copy of the contract will be forwarded to you with full instructions as to the manner of executing the work.

The General Oath of a Deputy the form of which is enclosed must be executed before some qualified officer and returned with the contract to this office. The commission of course you retain.

SURVEYOR GENERAL'S OFFICE
Dubuque June 7th, 1853

Your obt Ser
WARNER LEWIS, *Sur. Genl.*

EXTERIOR TOWNSHIP LINES—LETTER BOOK F: 25: 1853

JOHN W. ELLIS:

Your contract of this date specifies the work which you are to execute.

A portion of your lines are rendered fractional by the Des Moines River and all that portion East of the river has already been subdivided. You are to commence your work as directed in the foregoing printed instructions at the S. W. corner of Township 89 R. 33 and after running the range lines as therein directed until you arrive at the South West corner of Town 89 Range 28. From said corner you are to random North for Meander corner on right bank of Des Moines river and returning establish on corrected line the proper corners observing to distribute the excess or deficiency as the case may be equally in each mile. You are then to proceed to the next meander corner on the same bank and in the same line and continue the line to the six mile point where you will set a temporary post. Then from meander corner on Right bank in line between Towns 89 and 90 you will produce said line and in the ordinary manner establish the township corner. From thence you will run West to the West boundary of your district establishing the proper corners as you progress. Precisely the same process is to be used in closing the fractional lines in Township 90 of same Range and in Towns 91 & 92 you will extend the town lines from the meander corners on the Right bank of the river establishing all proper corners as you progress.

You should bear in mind to describe the meander corners & give the bearings in every instance from which you start a line and if any considerable difference should be shown it is required that you remeasure the old line and explain the cause of the discrepancy.

Your attention is particularly directed to the foregoing printed instructions and it is well for you to understand that no excuses or bad work can be received. I have thought it proper to give this caution from the fact that your work will be examined critically on the ground. It is hoped therefore that you will make them your study before setting out for your district and that such work will be returned as will be alike creditable to yourself and to the service.

As soon as you shall have completed the first three tier of townships across your district you will make an advance return of the same; when you shall have completed two tier more you will make a second return the remainder will constitute your final return.

With each return you will send a Report on the character of each township, as to the number of settlers capabilities of settlement and in fact all information pertaining thereto that will enable this office to judge either now or here after which township should earliest be subdivided.

SURVEYOR GENERAL'S OFFICE
Dubuque June 14th 1853

WARNER LEWIS
Sur. Genl.

EXAMINATION OF TOWNSHIP LINES—LETTER BOOK F: 29. 1853

WILLIAM J. NEELY:

I have selected you to fill the important post of Examining Surveys in the State of Iowa & that portion of the Territory of Minnesota West of the Mississippi river. For this service you will paid at the rate of fourteen hundred per annum & three dollars a day will be allowed for expenses use of team &c. whilst actually engaged in the field.

Long experience as a deputy has taught you without doubt that the instructions must be followed to the letter and it is expected that you will enter upon the discharge of your duties without delay.

A copy of my printed General instructions is herewith furnished together with a map designating the townships which you are to examine.

It is required that you will run over with chain & compass at least six miles of the lines of each township which you are directed to examine and return to this office regular notes of every township precisely as though you were making an original survey. You are not only to pay particular attention to the course and measurement of lines but their definition, and the evidence of corners are also to receive strict attention and in every case where there is a failure to conform strictly to the instructions it is expected that you will faithfully report the same to this office.

In these instructions it is not contemplated that you will run up a tier in regular order indeed this is not intended; but you will take up the lines indiscriminately observing that at least two of those closing on the North & West must be exhibited and in addition you will ascertain and state in every instance how the measurement of the subdivider corresponds with that upon the township lines.

In the examination of township lines you will not be confined strictly to this rule as there will be times when it will be out of your power to conform without much inconvenience and expense. You will however at an early day place me in possession of the locality of some P. O. where communications may safely & certainly reach you. Two districts of Township lines have been let this season which are not placed on the diagrams which are bounded as follows: The first includes all the proper Township & and Range lines East of & including the line dividing Ranges 19 & 20; West of the line dividing Ranges 9 & 10; North of the line between Towns 96 & 99 Range 10, Towns 97 & 98 Rs. 11, 12 & 13 Towns 96 & 97 Rs 14 15 & 16 Ts 95 & 96 Rs. 17, 18 & 19 & South of the State line The 2nd district contains all lines measured South of and including the line between Towns 95 & 96 West to line of Ranges 33 & 34 thence South along said Range line to the Second correction line.

SURVEYOR GENERAL'S OFFICE
Dubuque June 1853

WARNER LEWIS
Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 37. 1853

H. M. SHELBY:

You will perceive by the accompanying diagrams that in two of the townships of your district, viz: Towns 83 & 84 of Range 39 the South & North boundaries deflect from a right angle to the true meridian which deflection in order that your corners may stand in line with those upon the township exteriors & that the harmony & uniformity of the surveys may be preserved, it will be necessary for you to incorporate in your own work. Your meridian lines however will conform strictly to the true meridian. The field notes of your East & West lines will first state the true magnetic variation immediately underneath which and upon a separate line you will give the course at which the same are run, observing in each instance to change the course instead of the variation in correcting your lines & to place all topography upon the corrected lines—Thus:

West random between Secs. 25 & 36
var. 8° East-S. 88° 15' W.
Intersect Range line 35 links South of Post
East corrected between secs. 25 & 36

chs Inks		var. 8° East-N. 88° 30' E.
40.00	set qr. sec. post & give bearing	
80.00	corner to secs. 25, 26, 35 & 36	

All the other townships of your district are plain and will be surveyed in strict conformity to the foregoing printed instructions.

No bad work or excuses therefore will be received and with this fact before you it is unnecessary to recommend the greatest care in executing your survey and having every thing fully explained as the slightest deviation will cause a suspension of your work and for examination in the field it is found incorrect the penalty will however disagreeable be strictly enforced.

SURVEYOR GENERAL'S OFFICE
Dubuque, June 27th, 1853

WARNER LEWIS
Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 44. 1853

MATTHEW CRESSWELL:

Your contract & bonds have been reced and are approved.

I send herewith Blank for the General Oath of Deputy Surveyor which you are to sign and swear to before some officer qualified to administer oaths and return it to this office without delay. Herewith you will receive my printed general instructions to Deputy Surveyors which will be your soie guide in the execution of your work. To those parts which are underscored your attention is particularly directed and too much care cannot be exercised by you in this survey as neither bad work nor excuses therefore will be reced. at this office.

I send herewith diagrams of each township of your district upon which are exhibited the variation length of exterior lines &c Blanks for your assistant's oaths Blank books for your returns and all other papers necessary for your guidance.

SURVEYOR GENERAL'S OFFICE
Dubuque July 11th 1853

Your Obt Servt
WARNER LEWIS, Sur. Genl.

EXTERIOR TOWNSHIP LINES—LETTER BOOK F: 50. 1853

CHARLES LEWIS:

Your contract specifies the establishment of certain Township boundaries in the State of Iowa, West of the Fifth Prin. Mer. the North and West boundaries of which are the Parallel of $43^{\circ} 30'$ N. latitude and the main channel of the Big Sioux River.

The act of Congress entitled "an act to define the boundaries of the State of Iowa" approved 4th of August 1846, described a portion of them as follows, "thence up the middle of the *Main Channel of the Missouri river to a point opposite the middle of the main channel of the Big Sioux river*, according to Nicollet. Map, thence up the middle of the main channe of the said Big Sioux River according to said Map until it is intersected by the Paralel of $43^{\circ} 30'$ North latitude thence East along said parallel &c."

You will commence your survey as directed by the accompanying printed instruction at the farthest Range line West of your district and proceed as therein directed until you have finished three tiers of Townships across your District, when you are to make an advance return of the same, you will in like manner make a second and third return as often as you complete three entire tiers of Townships.

You are to ascertain the width of the Big Sioux & Missouri Rivers wherever you lines intersect the same, and give the process by which you obtain the same in your notes. You will also be very careful to designate the *Main Channel* of both rivers in the event of any islands being intersected by your lines as all islands that lie East of said Main Channel in either river belong to the State of Iowa, whilst those to the West will be under the jurisdiction of another office.

Herewith you are furnished the bearings to all the township corners on your South boundary and the bearings to *all corners* on the North. You will be very particular in closing to the North, that you intersect and give your measurement to the nearest section corner. There are bearings on the Parallel to astronomical stations and monuments erected which have not been furnished you as you are in no instance to measure to other than a regular section or quarter section corner.

SURVEYOR GENERAL'S OFFICE

Dubuque, July 16th, 1853

WARNER LEWIS

Sur. Genl

SPECIAL INSTRUCTIONS—LETTER BOOK F: 57. 1853

SAML T CALDWELL

Iowabelle VanBuren Co.

In Township 84 Range 30 on line of Secs 7 & 18 your notes read thus: at 35.00 chs enter marsh at 39.08 or sec corner—Establish witness corner 250 lks East post in mound &c

	46.58 leave marsh—and
in Town 84 Range 31 at	21.85 intersect marsh
	34.35 or corner corner in marsh witness corner
360 lks East post &c-----	43.60 leave marsh—;

You will explain how you could build the mound in the marsh and why the witness corners were not set on either side of the marsh as directed in your instructions:

Your work is all ready and only awaits explanation to be sent off.

SURVEYOR GENERAL'S OFFICE

Dubuque July 25th 1853

Your Obt Sert

WARNER LEWIS, *Sur. Genl.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 58. 1853

CHAS. McDONALD:

Your contract of the 25th inst. specifies the Townships you are required to subdivide. You will perceive that the N. & S. boundaries of the three Towns in Range 39 deflect from a right angle to the true Meridian. In order to have the posts all in range through these townships, it will be necessary for you to carry this deflection into your own work. To do this, you will have to run at a uniform variation and change the course instead of the variation upon said lines Thus:

	East Random between Secs. 25 & 36
	Var. 8° N. 89 E
80 chs	Intersect Range line 80 lks N. of post
	West corrected between Secs. 25 & 36
	Var. 8° S. 88° 26 W.
40.00	Set qr. Sec. post in mound &c
80.00	Section corner

All your meridional lines are to conform to the true meridian. The remainder of the work is plain and will be executed in strict conformity to the foregoing printed instructions and it is here proper to remark that neither bad work nor excuses for the same will be received nor will any deviation from the instructions however slight be allowed.

Your attention is particularly directed to those parts of your instructions which are underscored and it is hoped that your sole guide in your survey will be said instructions.

Herewith you will receive one copy of your contract approved; blanks for your Assistant's oaths; blank books for your field notes; diagrams upon which are expressed the bearings to all corners length of lines variations &c.

The measure of your standard chain can be procured I suppose from some U. S. Dep. in your neighborhood, otherwise you must procure it from this office.

SURVEYOR GENERAL'S OFFICE

Dubuque, July 30th 1853

WARNER LEWIS

Sur. Genl.

EXTERIOR TOWNSHIP LINES—LETTER BOOK F: 60. 1853

JOHN T EVERETT:

Herewith you will receive a Contract in blank for a District of Town lines West of the one which it is presumed you will have completed by the time this reaches you (and the field notes of which you are requested to return to this office forthwith). To enable me to assign you this district I have been compelled to revoke about 60 miles of work assigned to John M Ellis viz Line between ranges 23 & 24 of Towns 94 & 95; Lines between ranges 20 & 21 21 & 22 & 22 & 23 of Town 95; line between Towns 94 & 95 of Range 23 & Lines between Towns 95 & 96 of Ranges 20 to 23 inc of which fact I have informed M Ellis and would request you to forward the enclosed letter or make the fact known to him in some manner as my letter may possibly fail to reach him.

SUR GENERALS OFFICE

Dubuque August 1st 1853

Your Obt Sert

WARNER LEWIS, *Sur. Genl.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 77. 1853

J O BRUNIUS & LEWIS BROCKMAN:

The contract you have this day entered into specifies the subdivision into Sections of Towns 99 & 100 of Ranges 16 17 18 & 19.

The foregoing printed instructions are to be your only guide in the execution of this work, and it is well for you to know that the slightest deviation from them, will not be allowed. Bearing in mind this fact it becomes you to study them carefully and see that your work conforms thereto in every particular as it will be strictly examined in the field before you will be paid for it. Those portions of the foregoing instructions that are underscored or otherwise noted are brought particularly to your attention, and it is hoped your work will be done, and your notes returned in such a manner as will be creditable to yourselves and acceptable to the office.

SUR GENLS OFFICE

Dubuque Augt 22 1853

WARNER LEWIS

Sur Genl

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 85. 1853

MICHAEL BURKE:

Your contract of this day describes the Townships you are to subdivide into sections. You are herewith furnished with diagrams exhibiting the bearings to all corners which you are to visit blank books for your returns, blanks for you assistants' oaths and all papers necessary for the proper execution of your work. In closing to the North boundary of this State you will close as directed in the foregoing printed instructions ob-

serving to place or give the bearings all South of said state line and to have the North & South boundaries of every section as directed in the foregoing instructions.

Said instructions are to be your *only guide* in the execution of this work as the slightest deviation therefrom will not be allowed. As the work will be examined in the field before it is paid for you will at once see the importance of having it faithfully done in order that you may spare yourself much loss and this office the disagreeable necessity of rejecting any portion of it.

SURVEYOR GENERAL'S OFFICE
Dubuque Augt 31st 1853

WARNER LEWIS
Sur General

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 107. 1853

J L SHARP
Glenwood P O

Fremont County Iowa

Herewith you will receive a contract & bond in Triplicate for the subdivision into Sections of a district of 8 Towns in Iowa. You will please execute the papers in strict accordance with the instructions printed at the bottom of the bond and return them to this office, when if approved, one copy will be returned you with full instructions for prosecuting the work.

SURVEYOR GENERAL'S OFFICE
Dubuque Octr 8th 1853

Your Obt Sert.
WARNER LEWIS, *Sur General*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 131. 1853

HENRY ALLEN
Chariton, Lucas Co. Iowa

The foregoing instructions are full in every particular & it is necessary that your work should be done and returned in strict accordance with them. Any deviation therefrom will cause your work to be rejected, which would be painful to me & cause of serious loss to you.

Herewith you will receive blank books for your returns, diagrams exhibiting the variation & length of your township boundaries with the single exception of Town 92 Range 41. You will procure the length of the East, West & North boundaries of said township with the variation on each mile, from Dept. Sur. Lewis, who is now on the ground. You will find also blanks for your assistant's oaths.

It was not contemplated that you should start your work before spring, hence the length of time granted for finishing your work. This is a matter however which is left to your sound discretion but you will bear in mind that after the frost enters the ground, it is impossible to make mounds in accordance with the foregoing instructions and as it is a part of the business of the examiner of Surveys on the ground to report particularly as to the evidence of corners, of course an adverse report from him, would cause your work to be rejected.

SURVEYOR GENERAL'S OFFICE
Dubuque, Octr. 23rd. 1853

WARNER LEWIS
Sur. General

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 141. 1853

DAVID FERGUSON
Bloomfield Davis Co.

Herewith I return one copy of your contract approved, with diagrams of each township of your district exhibiting the variation on each mile and length of closing lines except the East West & North boundaries of Township No. 92 Ranges 42 & 43 which you can obtain hereafter on application to this office, or from Dep Sur Lewis who is now on the ground, but who, as it is probable you will not start out till Spring, will then have finished his work. Also blanks for your assistants' oaths, blank books for your returns, and all papers necessary for your guidance in the execution of your work. The printed instructions which you will herewith receive are to be your sole guide in the execution of your work and unless it strictly conforms to them in all respects; it is needless to say it will be rejected.

You will subscribe and be qualified to the accompanying blank as a U S deputy and return it to this office without delay

SURVEYOR GENERAL'S OFFICE

Dubuque Novr 3rd 1853

Your Obedt Sert

WARNER LEWIS, *Sur General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 144. 1853

Jos S SHARP:

Herewith you will receive one Copy of your Contract & bond approved, also diagrams exhibiting the variation on each mile and length of closing lines of Township 39, 90 & 91 of Range 48 and Township 91 of Range 49; diagrams for the balance of your district, will be furnished you on application by Dep Sur Chas Lewis, who is at present in the vicinity running township lines. You will find also blanks for your Assistant's Oaths, blank books for your returns, and a Copy of my printed instructions to deputy surveyors, which is to be your only guide in the execution of your work and the slightest deviation from which will not be allowed. You will meander the left bank of the Missouri and Big Sioux rivers, so far as the same bounds your district, together with all the islands to the left of the main channel of both rivers and as often as twice in each township you are to ascertain (stating the method in full) the width of said river or rivers.

You will swear and subscribe to the accompanying oath for deputy surveyors and return it to this office without delay.

As the instructions are full in every particular, it is hoped that by strict conformance to them, you will return such notes as will be acceptable to this office.

SURVEYOR GENERAL'S OFFICE

Dubuque Novr 4th 1853

Your Obedt Sert

WARNER LEWIS, *Sur General*

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 192. 1854

JNO. K. COOK:

Herewith you will receive a contract & bond in triplicate for the Subdivision of 5 Townships in Iowa.

These papers you will execute in strict accordance with the printed instructions at the bottom of the bond, and return two of them with your general oath as Deputy Surveyor to this office without delay.

I forward with this my general and special instructions; diagrams upon which are expressed the variation and length of closing lines of each Township of your district, blank books for your returns; blanks for your assistants oaths, & all papers and instructions necessary for your guidance in the execution of your work.

Too much caution cannot be exercised by you, and I would recommend a careful study of your instructions before going to your work, as no deviation from them, however slight, will be allowed, & the whole will be examined in the field before you are paid.

SURVEYOR GENERAL'S OFFICE

Dubuque March 3rd, 1854

Your obt. servant

WARNER LEWIS, *Sur. Genl.*

EXTERIOR TOWNSHIP LINES—LETTER BOOK F: 220. 1854

JNO. W. ELLIS

Boonsboro Boon Co. Iowa

Your papers as requested have been sent to Bloomfield where you will probably find them on your return.

It is expected that you will prosecute this work with all the despatch consistent with accuracy. You are requested to furnish Messrs. Leech & Bell with the notes of all but the East boundaries of Townships No. 93, 94 & 95 of Range 31 and as often as practicable you will make returns of notes as the work progresses—Thus when you have closed the line of Township 95 & 96 to your West boundary you will return the work and the remainder of the district can be returned when you have completed half of it.

You are requested to examine the lines between Rs. 23 & 29 of Towns. 91 set meander post on the river when it touches the line between Towns. 93 & 94 of R. 29 and to correct the line betwn. Ranges 30 & 31 of Towns. No. 95 and return the notes of such corrections properly attested to this office without delay.

SURVEYOR GENERAL'S OFFICE

Dubuque, April 21st, 1854

Your obt. Servt.

WARNER LEWIS, *Sur. Genl.*

SUBDIVIDING INTO SECTIONS—LETTER BOOK F: 220. 1854

JOHN W. CLARK:

Herewith you will receive all the papers necessary for your guidance in the work assigned you. You are to meander the Right bank of the East fork of the Des Moines River and both banks of the West or Main Des Moines so far as the same runs through your district. In the subdivision of T. 89, R. 28 you are to run a random from the meander corner on the left bank in line of Secs. 31 & 32 for meander corner on same bank in line of sections 29 & 30 (endeavoring to make your measure correspond if possible with the old work) and returning correct back distributing the excess or deficiency as the case may equally on both parts of miles; after you have thus established corner to secs. 29, 30, 31 & 32, you will random East of meander corner on left bank & from thence correct your lines to the said sec. cor. The balance of the work in this Township, you will proceed with as usual, randoming from corner on Range line for the meander corner on left bank & correcting back.

In T. 90 R. 28 the River is only to be meandered. In T. 91 R. 28 you will proceed as directed in the first (T. 89 R. 28.) observing to set meander posts at the junction of the two forks on both sides the mouth of the West fork. In Township No. 92 R. 28 you will proceed in the same manner viz: Commencing at meander corner in line of secs. 27 & 28 on left bank, you will random for corner on same bank in line of sections 3 & 4 & returning you will correct back observing to distribute the excess or deficiency equally on all the lines affected.

WARNER LEWIS
Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 228. 1854

THOS McCULLOCK

Abingdon Jefferson Co—Iowa

Herewith you will receive one copy of your contract and bond approved; also all papers necessary for your guidance in the execution of your work.

Standard paragraph No. 2h. [See p. 364]

SURVEYOR GENERAL'S OFFICE

Dubuque May 1st 1854

WARNER LEWIS
Sur General

P.S. You can procure the true length of the Standard Chain from Jno W Ellis Esqr U S Dep. Sur. who is now in the neighborhood of your Survey, or from some other U S Deputy who has it.

EXAMINATION OF SUBDIVISIONS—LETTER BOOK F: 229: 1854

HON JOHN WILSON

*Commsr of Genl Land Office**Washington D-C*

I regret to inform you that the examining Deputy Mr. Neely has reported against the survey of Towns. 87 & 88 Ranges 29 & 30 West of the 5th Mer Iowa as not being made in accordance with instructions. I have learned from Jesse T Jarrett Esqr one of the party interested in the contract for surveying the same that he was compelled to leave the field in consequence of the setting in of Winter and left his brother on the ground to complete it as soon as practicable.—Sickness prevented him from doing the whole of said work, but Mr. Jarrett has signified his willingness to correct the work or pay for so doing, and as he is an honest and competent deputy, I would recommend that he be allowed the privilege, if not inconsistent with the rules of the Department.

SURVEYOR GENERAL'S OFFICE

Your Obedt Sert

*Dubuque May 2nd 1854*WARNER LEWIS, *Sur General.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 232. 1854

GEO BERRY

Ft. Des Moines Iowa

Standard paragraph Nos. 1h, 2h. [See p. 364]

SURVEYOR GENERAL'S OFFICE

Your Obedt Sert

*Dubuque May 3rd 1854*WARNER LEWIS, *Sur. Genl.*

EXAMINATION OF SUBDIVISIONS—LETTER BOOK F: 287. 1854

CHARLES F. LEGATE:

The Commr of the General Land Office has forwarded to this office the copy of a letter from the Regr at Kaneshville complaining of the survey of Town 70 Range 42 surveyed by Johnson Pierson; Town 78 Range 45 surveyed by W. Clement and of the surveys by J H D Street Dep Sur.

You are herewith furnished diagrams of the survey of said township, as also of the work executed by Mr Street, no particular township of which is mentioned—Said diagrams represent the variations at which the lines were run, the length of all lines, and the exact course of the Missouri river as shown by the meandered notes.—You will at once proceed to the ground & after finding how your chaining corresponds with the work of each deputy, you will proceed regularly over a sufficient number of the lines, (say 6 in each or 9 if necessary) to satisfy yourself as to the character of the work. The special notes of said examination in each township you will report precisely as though you were making an original survey. In township No 70 Range 42, you will be particularly careful in your examination and should you find errors sufficient in your judgment to condemn the survey you are critically to examine in addition Towns 71 Range 42 and 69 & 70 Range 40 & 41, 69 & 70 Range 43 & 69 Range 44 have been suspended in this office, these you will also particularly examine & designate as nearly as practicable by triangulating to the upper and lower end of all islands opposite said townships. Township No. 78 Range 45 Section 21 is represented to be fractional on the plat, the South West corner being cut off by the Missouri river, when in fact the corner stake at the South West corner is high and dry, prairie running West from that corner, a qr sec post & bearing trees are found & the river is still West at the point Secs 22 23 are represented on the

26 27

plat as lying in the river while the river does not touch either of these sections. I am informed that the sec line dividing 27 & 34, 26 & 35 has been followed without crossing any water, from the township line West to the S. W. corner of Sec. 27. This may be true and at the same time the original survey may be correct, as it was made in April & May when the water was probably very high. This fact you will of course bear in mind in making your examination, and report whether appearances or marks of water will justify such a conclusion.—The work of Mr Street (see diagram for numbers) on the river you will examine in the same manner, with reference to the stage of water at which it was surveyed, and also as to the accuracy of all course lines and the reported lengths thereof, observing, carefully, to show by your notes, the difference between his lines & your own in order that this office may be enabled to judge whether the difference (if any) is the result of difference of chaining or positive error.

SURVEYOR GENERAL'S OFFICE

Dubuque August 30th 1854

WARNER LEWIS

Sur Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 296. 1854

GEORGE TEMPLE:

Burlington, Iowa.

Herewith you will receive one copy of your contract approved, also diagrams of each township of your district exhibiting the bearings to all corners established on the township lines: books for your returns and blanks for your assists oaths have already been furnished you. My instructions to deputy surveyors (accompanying) are plain and explicit in all respects and the slightest deviation from them will not be allowed.—It is therefore hoped that you will make yourself thoroughly acquainted with them and perform your work in the field and return your notes in strict accordance with their requirements.

SURVEYOR GENERAL'S OFFICE

Dubuque Sept 8th, 1854

Your Obedt Sert

WARNER LEWIS, *Sur. Gen.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 297. 1854

WALTMAN TRIPPITT

Council Bluffs City, Iowa

Enclosed I forward you diagrams of each township of your district on which you will find expressed the length and variation, at which the township lines were run with

the bearings to all corners established thereon; oaths and my General instructions to Dep Surveyors the slightest deviation from which will not be allowed. To such portions as are marked with brackets & notes your attention is particularly directed. Blank books for your returns, assistant's blanks, enclosed.

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Sepr 9th 1854

WARNER LEWIS, *Sur Genl*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 300. 1854

HENRY ALLEN

Chariton Lucas Co, Iowa

Herewith you will receive one copy of your Contract and bond approved; also diagrams, books for your returns and all papers necessary to enable you to prosecute your work.

You are required in the description following the notes of each mile, to note each forty acre tract in the township that is swamp and overflowed land, and therefore belongs to the state of Iowa under the Act of the 28th of Sepr 1850

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Sepr 18th 1854

WARNER LEWIS, *Sur Genl*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 303. 1854

JAMES HANKS

Salem Henry Co Iowa

Standard paragraph No. 1h. [See p. 364]

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Sepr 20th 1854

WARNER LEWIS, *Sur Genl*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 314. 1854

JOHN BALL

Mankato Minna

Your letter of the 17th ult is received. In reply thereto I would state that Mr. Ellis's closing's show an error on the State line to the amt of about 20 chs.; but as he failed to examine & report the Cause I have suspended his work. If either yourself or Mr. Everett corrects the errors and make a satisfactory report, it will of course be received and considered satisfactory; with regard to the examination of the work, Mr. Neely is on the ground at present or will very soon be, but this report should be entirely disconnected from your own or either of the deputies named. I have understood that some hesitancy has been expressed in regard to correcting the State line; why any thing of the kind should exist, I am at a loss to conjecture. For instance suppose there were two mis-tallies on the South Side of Sec 33 would any sane man carry up the error through the whole tier (consisting of Secs 28 21 16 9 & 9) in subdividing? I think not; well whose place is to correct the error? The Township line surveyor of course as he comes to it first, for he must know that he is out of limits & his duty is clear & that is to examine his own work and if that is correct, he is then to find where the error lies, correct it and furnish this office with the notes of said correction properly attested by himself & his assistants.

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Octr 10th 1854

WARNER LEWIS, *Sur Genl*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 397. 1855

JOHN SNOOK

Fairfield Iowa

Your Contracts & Bonds, have been read, but are not approved on account of the instructions at the bottom of the bond not being carried out— You will have the sureties to your bond write their names in full in those herewith sent and return the whole of them for approval. If approved one copy will be returned to you— One of the townships assigned you has been partly surveyed which will if used be a clear gain to you. I herewith forward you diagrams of each township of your district on which you will find ex-

pressed the length of the closing lines variations at which they were run &c also my general printed instructions to Deputy Surveyors which you are implicitly to follow for the slightest deviation therefrom will not be allowed. Such parts as are underscored will receive your particular attention. You are also required to state in descriptions following each mile of your survey every 40 acre tract that is swamp or overflowed land & therefore belongs to the state of Iowa under the act of 28th Sept 1850 You will sign & swear to the accompanying form for an affidavit & return it to this office without delay.

SUR. GENLS. OFFICE

Your Obt. Servant

Dubuque, March 27th 1855

WARNER LEWIS, *Sur. Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 412. 1855

HON JOHN WILSON

Commsr of Genl Land Office

Washington D. C.

I have this day forwarded to your address copies of the original plats of the following townships situated West of the 5th prin Mer in the State of Iowa surveyed by James W Woods Dep Sur under his contract of Aug 23d 1854 Said Towns are numbered as follows

No 94 95 96 & 97 Range 24
 94 96 & 97 Range 25
 96 & 97 Range 26 &
 96 Range 27

Mr Woods requests that a draft for the amt of the enclosed acct may be forwarded to his address Burlington Iowa

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque May 9th 1855

WARNER LEWIS, *Sur Genl*

EXAMINATION OF SUBDIVISIONS—LETTER BOOK F: 413. 1855

JESSE JARRETT:

The examining deputy of this district has reported (to a limited extent) against the work executed by Michael Burke Dep Sur under his Contract of August 31st 1853.

I have therefore selected you to examine and correct the same (where ever required) so as to conform in every respect to my printed General Instructions to Dep. Surveyors. The townships to which your attention is directed are Township 98 Range 12 & Town 99 Rgs. 13, 14 & 15.

For performing this service you will be paid at the rate of two dollars and seventy five cents per mile, for every mile that you correct or re-survey, and it is distinctly understood that wherevèr practicable, the original lines and corners are to be respected. I herewith furnish you with the original diagrams which you are to return without fail to this office.

SURVEYOR GENERAL'S OFFICE

WARNER LEWIS

Dubuque May 5th 1855

Sur. Genl.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 436. 1855

JOHN P BROWN

Portland Van Buren Co Iowa

Herewith you will receive one copy of your Contract & Bond approved also all papers necessary for your guidance in the execution of the work assigned you.

You will be particularly careful to conform to the instructions herewith furnished in every particular otherwise your work will not fail to be rejected.

SUR GENERAL OFFICE

Your Obdt Sert

Dubuque July 14th 1855

WARNER LEWIS, *Sur Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 436. 1855

SETH MILLINGTON:

Standard paragraph No. 14. [See p. 364]

Conform strictly to your instructions otherwise your work cannot be approved & be

particularly careful to note every 40 acre tract that is Swamp or overflowed land in the descriptions following the notes of each mile.

SURVEYOR GENERAL'S OFFICE
Dubuque July 11th 1855

Your Obdt Sert

WARNER LEWIS, *Sur Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 442. 1855

MR. PHILLIP HARVEY:

[See p. 350, Harvey-McMichael]

Herewith you will receive one Copy of your Contract and Bond approved also diagrams of each township of your district. Blanks for your Assists. oaths, and my printed general instructions to deputies which will be your sole guide in the execution of the work. No deviation however slight can be permitted or allowed and as they are perfectly plain it is hoped that your survey on the ground & your field notes (books for which are enclosed) will conform thereto strictly.

SURVEYOR GENERAL'S OFFICE

Your Obdt. Sert

Dubuque Aug. 8th 1855

WARNER LEWIS, *Sur. Genl.*

PS You will swear to & return the enclosed general oath of a deputy surveyor without delay. Mr. McM. has one already on file.

SPECIAL INSTRUCTIONS—LETTER BOOK F: 460. 1855

SAML W DURHAM

Marion Linn. Co.

I regret to inform you that your notes have been suspended in this office for the following reasons viz the books in which the notes are written are not of a size to file; they are also to badly written to be received; the East and West lines should be course lines in all the Townships in Range 40, and lastly you have omitted to note each 40 acre tract of swamp land in your descriptions.

Your early attention to the above is requested.

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Sept 1855

WARNER LEWIS, *Sur. Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 462. 1855

JOHNSON PIERSON:

Standard paragraph No. 1h. [See p. 364]

To the instructions herewith furnished and to the *marginal* notes in the same your attention is specially directed, and you are hereby warned that unless they are strictly complied with the work will not be received. It will also undergo examination on the ground with all other work in Iowa before being paid for.

SURVEYOR GENERAL'S OFFICE

Your Obdt Sert

Dubuque Sep 20 1855

WARNER LEWIS, *Sur. Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK F: 464. 1855

HON. THOS. A. HENDRICKS

Commsr. of Genl. Land Office

Washington, D. C.

I have the honor to acknowledge the receipt of your letter of the 24th inst. informing me of the suspension of the account of John Parker, Dep. Sur., and requesting to be informed if there is not an error in said acct. or contract. I would state that on the 20th of July last, I entered into Contract with Mr. Parker to continue his survey to the boundary of the State. He accordingly commenced the work & completed in full the lines bounding Town. 97, Ranges 34 to 40 inc., & whilst engaged in the field he was attacked by the Sioux Indians, and a part of his team killed; they became further so troublesome, that his men refused to continue with him, consequently he was compelled to abandon the work. As Mr. P. has been absent in Missouri, I was unable to obtain a relinquishment of his Contract, and, therefore, included the few lines surveyed in the acct. furnished you with my letter of the 15th ult. I herewith forward the Contract, and as he is expected to return daily I will obtain the relinquishment and forward it without delay.

Under these circumstances, if you will be good enough to pass the acct. you will confer a special favor.

SURVEYOR GENERAL'S OFFICE
Dubuque, Oct. 1st, 1855

WARNER LEWIS
Surveyor General

SPECIAL INSTRUCTIONS—LETTER BOOK F: 551. 1856

L'HILIP HARVEY & A McMICHAEL

I regret to inform you that I have been compelled to suspend four of the townships returned by you Town 90 Range 24 the traverse of the Lake will not close by over 12 chs; Town 100 Range 30 in running the line between secs 9 & 10 closing to the north boundary, you say you intersect 14.90 chs East of corner to secs 35 & 36 *There is no such corners* The place for said corner is in a lake 40 chs wide, and there are meander posts on each side of it and it is meandered in the township North in Minnesota. In addition to this the lake meandered by you in sec 17 dont begin to close.—Township 100 Range 31 How do you intersect the boundary in running the line bet secs 10 & 11, 22, 50 chs East of corner to secs 31 & 32 of Town 101 R 30, when the whole line of sec 32 is in a lake & the Meander post is 9.20 chs West of corner to secs 31 & 32: Town 100 Range 32 is outrageously wrong in the intersection besides the meanders of lake in secs 10 11 & 12 do not close by nearly 9 chains. You will be good enough to explain the foregoing or examine & correct in the field with as little delay as practicable

SURVEYOR GENERAL'S OFFICE
Dubuque May 27th 1856

WARNER LEWIS, *Sur Genl*

EXAMINATION OF SUBDIVISION—LETTER BOOK G: 133. 1858

OSCAR F DAVIS:

Enclosed you will find copy of a petition from certain citizens for the survey of land claimed to be unsurveyed in Towns. 77 to 80 inc. West of Range 44; also a copy of part of a letter from the Register at Kanesville in relation to Town 78 Range 45 which has been examined and in some respects found to correspond to the said Register's report. I herewith furnish you diagrams of Townships No. 75, 76 & 77, R 44; Townships 77, 78, 79 & 80 of R. 45. These are exact copies of the original plats on file in this office, and it will be your duty to retrace such of the lines as are represented thereon as are necessary, and from the corners thus found to carefully survey & extend, in accordance with the enclosed printed instructions, the lines to the actual margin of the river.

It will also be necessary for you to report in the case of each township how, in your opinion, the errors originate, and obtain and give all the information possible in relation to any change that may have occurred in the channel of the river.

I have not deemed it necessary to specify minutely the particulars in these cases, the plats speak for themselves, and the verbal and general instructions you have received, with your knowledge of the public surveys, must in a great measure be your guide.

It is expected however that you will use the greatest care in this survey and return your notes with such full explanations that I may have no difficulty in satisfying the department of the correctness of the work.

Your compensation for this service will be \$5 per day whilst engaged upon the work, with a reasonable allowance for assistants & their bills must be regularly made out & certified by you as to their correctness.

SURVEYOR GENERAL'S OFFICE
Dubuque March 2nd 1858

Your Obt Sert

WARNER LEWIS, *Sur. Gen.*

SPECIAL INSTRUCTIONS—LETTER BOOK G: 253. 1859

HON THOS A HENDRICKS
Commsr of Genl Land Office
Washington D. C.

I have the honor to acknowledge the receipt of your letter of the 16th inst., notifying me of the reception of my letter of the 12th inst., with certain contracts & bonds & calling my attention particularly to those of C A Estes & L A Smith.

I would respectfully state in reply that though totally unacquainted with the regulations of your office in relation to apportionments, I supposed that when instructions

were issued authorizing the expenditures of a specified amount for surveying in a designated district, that full authority was given thereby to enter into contract for such surveys at the first suitable moment, and that the funds thus placed at my disposal would not be withdrawn without notice being given to the effect; Acting on this supposition & in conformity to your instructions of 25th of June 1858 for the subdivision of two districts in the State of Iowa, I entered into contract with Charles A. Estes & Thos. A. Smith on the 3d & 21st of October, 1858, for the subdivision of two districts in the State of Iowa.

Now you will observe by examination of the dates that but little over ninety days had elapsed after the reception of your said instructions before the contracts were let, and the reason that they were not let sooner was that it was not expedient to do so. The Sur. Genl. is, I presume, authorized to exercise his own judgment in conducting the public surveys, unless specially instructed in particular cases, and the following will, I think, render it apparent that I acted in this case in accordance with the dictates of prudence. The original contract (which is on file in your office) for the survey of the township lines was let in Sept. 1856, to John P. Brown, whose work after long delay & numerous corrections, this office felt bound finally to reject; his contract was annulled, and the work was relet to Wm. B. Yerby in April, 1858. On the receipt of your instructions of the 25th of June, 1858—Mr. Yerby's survey had not been accepted, and as it is unusual to let work for subdivision (except in urgent cases) before the approval of the Township lines, I did not deem it proper to do so in this instance particularly in view of the trouble already experienced. The result proved the correctness of this course for Mr. Yerby's work was also suspended and he was required to return to the field and you are aware that his case is even now before your office on appeal from my decision—As soon as practicable after being satisfied of the correctness of his work which, as already remarked, was little over ninety days after the date of your said instructions the contracts in question were let under the authority of your said letter, and a portion of it was returned & would have been forwarded long since had it not been for some imperfections which required the deputies' presence to correct before it could be allowed to pass; indeed, I am now daily expecting the return of the whole work. I hope the above remarks will satisfy you that the work has been let in good faith & without the least idea of entering into contracts in "anticipation of an appropriation" which you cannot but see was entirely unnecessary and is a thing which I never even thought of.

I regret exceedingly that these contracts were not forwarded as soon as entered into & I can only account for it, that they were by accident filed with the originals & in the press of business overlooked until it was necessary to send the others to you as directed in your circular of the 31st of March, 1858.

SURVEYOR GENERAL'S OFFICE

Dubuque July 27th 1859

Your obt Servt

WARNER LEWIS, *Sur. Genl.*

SPECIAL INSTRUCTIONS—LETTER BOOK G: 258. 1859

Jos. S. WILSON ESQR.

*Acting Comr of the Gen. Land Office
Washington D. C.*

In reply to the last clause of your letter of the 6th inst. I have to state that the Contract for Subdivision in Iowa dated the 3rd Oct. 1858 and the 14th May 1859 were let to the *Same Person*. How the omission of the letter *M* occurred in that of 3rd Oct '58 I am at a loss to explain. Mr. Estes is now in the field & so long a time has elapsed since the contract was entered into that the probability is he would recollect no more about it than I do. The only possible explanation that occurs to me is that the whole name was not understood in the first place & Mr. E was required as is usual, to be very particular in Signing just as it was written in the Bond.

SURVEYOR GENERAL'S OFFICE

Dubuque Augt. 23rd 1859

Your Obt. Servant

WARNER LEWIS, *Surveyor General*

SPECIAL INSTRUCTIONS—LETTER BOOK G: 609. 1864

HON. J. M. EDMUNDS:

*Commissioner of the General Land Office
Washington City, D. C.*

I have the honor to forward the enclosed contract & Bond, dated March 5th, 1864, of Nathaniel McCullough, Deputy Surveyor, for the survey and subdivision of six islands

in the Mississippi River in Lee County, Iowa, not previously included in the survey of Township 68, North, Range 3 West, and Townships 67 and 68 North, Range 4 West, of the 5th Principal Meridian, for your approval.

The application for this survey is made by J. M. Casey Esqr, a duly authorized agent appointed by the Board of Supervisors of Lee County, Iowa, conformably to your instructions of 2d of April last, touching surveys provided for in the 10th section of the act of May 30th, 1862.

Mr. Casey has made a deposite of One Hundred and Fifty Dollars in the office of the Depository of public moneys at Chicago Ill, to meet the expenses incident thereto as estimated by this Office, the certificate of which is herewith transmitted.

SURVEYOR GENERAL'S OFFICE
Dubuque, 16th March, 1864.

Your Obt. Servt.
HENRY A WILTSE
Surveyor General

STANDARD PARAGRAPHS IN LETTERS OF INSTRUCTION

ROBERT T. LYTLE (SURVEYOR GENERAL)

OCT. 6, 1836, TO NOV. 30, 1837

- (1a) As it is probable that the next session of Congress will pass an Act granting Pre-emption to actual settlers on these lands, it is very desirable to ascertain as near as may be, the exact location of the *houses* and *improvements* already made, and the names of the respective settlers. This you will please attend to and note them in your field books, and mark them on your diagrams; so that from them the improvements may be correctly shewn on maps for the use of the land Offices.
- (2a) A manuscript supplement to the "General Instructions," to be considered as a part thereof, accompanies this.
- (3a) As often as you shall have completed the survey of one or two townships, you will transmit copies of the field notes thereof by mail to this office.
- (4a) In the subsequent pages are the notes of all the section corners on town lines which are surveyed, and the meander posts.
- (5a) You will reperuse your General Instructions, to refresh your memory, and you will see that every part thereof as well as these Special Instructions are *faithfully* executed.
- (6a) You will be careful to note in your field notes and accurately mark on your diagrams, the bluffs in rear of the bottom lands, of the Mississippi and other rivers in your district.
- (7a) These several Townships are to be subdivided into sections in the manner prescribed in the General Instructions to Deputy Surveyors and the manuscript supplement thereto, which will accompany this.
- (8a) A large portion of your district is open prairie. You will have to be provided with the means to carry stakes of the required size; and the implements to make mounds.
- (9a) The accompanying plat embraces the townships comprising your district; on which are laid down the length of each line, in miles, chains, and links, with the variation by which they were run, together with the principal prairie, streams, etc.
- (10a) You will likewise determine, and note in your field books the *width* of the Mississippi river, at several points; and also by trigonometrical intersections or otherwise, the exact position, extent and figure of all the Islands opposite your district, with a particular description of each.
- (11a) You will get the measure of the Standard chain from some of my Deputy Surveyors.
- (12a) The Iowa River is to be meandered on both sides throughout your district; together with such Islands therein as may appear to be worth the expense, or saleable.
- (13a) You will take care that you thoroughly understand and recollect *every part* of your Instructions, and that they be faithfully *executed*.

- (14a) The foregoing pages contain the descriptions of the section corners on the township lines; so that if any post be destroyed or misplaced, you can replace it at the proper points.
- (15a) You will give, by course and distance, in the best way you can, an *accurate connection* with some known corner of the public surveys on the east side of the river from at least four or five points along the river, in your district; and always if practicable at the termination of a section line. You will also determine and note in your field books, the *width* of the Mississippi river, at as many points as you can; and also by intersections (trigonometrical or otherwise,) the exact position, extent and figure of all the Islands, with a description of each.
- (16a) The entire Township will be surveyed on the plan pointed out in the General Instructions.
- (17a) From as many points as you conveniently can—not less than one in each fractional township, you will give by course and distance, in the best way you can, accurate connections with some known corners of the public surveys on the left bank of the Mississippi river, in Illinois.
- (18a) The Wapsipinecon River is to be meandered on both sides within your whole district.
- (19a) Advise me at what Post Office is will be most convenient for you to receive letters.
- (20a) Situate north of the Base line and East & West of the Fifth principal Meridian, in Wisconsin Ter. as shewn on the accompanying diagram, on which is shewn the length and variation of the Compass on each town line, with the principal streams, prairies, etc.
- (21a) You will also meander the Mississippi river on the right bank, with all the navigable bayous (or slues) thereof in your district.

GEORGE W. JONES (SURVEYOR GENERAL)

OCT. 16, 1840, TO JULY 27, 1841

- (1b) In the performance of this duty, you are to be guided Strictly by the *Printed General Instructions*; you will therefore make yourself fully acquainted with all its requirements, and execute the trust now reposed in you, in conformity to the Same.
- (2b) Upon the subsequent pages you will find a description of the Section & Meander corners upon the township lines.
- (3b) You are also particularly required to note all appearances of Mineral which may be found or come to your knowledge, upon your district.
- (4b) Finally upon the completion of your surveys, you will return without delay the field notes thereof to this office, and with them these special Instructions with the diagram attached to it.
- (5b) Upon the subsequent pages you will find a description of the Section corners upon the township line.
- (6b) In the execution of the surveys now committed to your charge, you are to be governed *Strictly* by the *Printed General Instructions* which are furnished you by this office.
- (7b) The district assigned to you is Represented in *Red Ink* upon the Accompanying diagram; the adjoining lines already Run are drawn in black ink with the length of lines And the variation of the Compass Represented thereon.
- (8b) Accompanying this you will have a copy of the field notes of the west boundary of the late purchase as taken by Chas. Brakin; be particular not to extend your lines over the Same, if unexpectedly you should intersect it, you will stop and establish Corner in the usual manner.
- (9b) The practice of making advances is prohibited by the Commissioner of the Gen. Land Office, no money can be paid until the whole work is Received, platted, and approved.
- (10b) On the following pages you will find the Corner trees to the Townships already Run, from which you are to take your departures.
- (11b) It is too much the practice of deputies to make loose Returns and bad field books; also neglect marking the lines faithfully not Raising proper Mounds, not making

- legible letters and figures on the witness trees, setting very small posts in the mounds, careless Chainings and loosing outs &c &c. which can no longer be countenanced by this Office.
- (12b) The district assigned to you for Subdivision into sections, embraces the following described Townships in Iowa Ter. West of the 5th Prin. Meridian, viz—
- (13b) With this you will have a diagram of the township lines of your district, upon which is represented the length of the lines, the variation of the compass at which they were run, also the Streams crossing them & the leaving & entering of prairies &c.—
- (14b) Upon the diagrams furnished you to accompany your field notes, you will find noted the length of the Township lines, the variation of the compass at which they were run, the crossing of Streams, the entering & leaving of prairies, &c.

JAMES WILSON (SURVEYOR GENERAL)

MAY 26, 1842, TO JULY 14, 1845

- (1c) You are required in the first place, and I shall insist upon it, that you employ men of good moral character only, as chain-carriers and assistants, as I am required by the instructions from the Gen. Land Office to certify without hesitation, and upon my own official responsibility to the correctness of your returns in every particular after applying all the test in my power.
- (2c) You will frequently report to this office the progress which you are making, as well as the health and condition of yourself & your party, as I shall at all times feel anxious to hear from you. And if *safe conveyance* offers & *not otherwise*, you may from time to time send to this office your original field notes of such portions of your work as you may have completed.
- (3c) Upon the subsequent pages you will have the witness trees to the section corners upon the township lines, also the variations of the compass at those points, as reported by the Town line Surveyors.
- (4c) With this you will have a diagram of each township of your district drawn to the scale of one inch to the mile, upon which you will find the Topography & the length of the Township lines.
- (5c) As regards chain-carriers and other assistants, I shall insist upon your employing men of good moral character only, as I am required by the instructions of the Genl. Land Office, to certify without hesitation and upon my own official responsibility, to the correctness of your returns in every particular, after applying all tests in my power.
- (6c) With this you will receive a diagram of each township of your district, upon which you will find the Topography and the lengths of the lines.
- (7c) With this you will receive a diagram of your district; the lines which you are to run & mark, are represented thereon in Red Ink. The contiguous lines already surveyed, are represented in the black ink, with their lengths and the variation at which they are run, also noted thereon.
- (8c) You are also required to establish meander posts, if you should encounter in the progress of your work any large stream which you may deem navigable, and you must be the judge, or of Lakes of sufficient magnitude;—and the original, particularly if Indian names of the streams and places, are to be preserved in your field notes.
- (9c) You are particularly required to note all the appearance of lead and other mineral ores which you may discover upon your district.
- (10c) You are likewise required to note without fail all appearance of copper & lead ore, Coal beds or banks and Salines, or any valuable mineral, near your lines.
- (11c) In the execution of these surveys and the balance of the surveys contacted by you May 25, 1843, you are to be governed by the printed general instructions for the manner of running & marking the lines and the keeping of field notes, and observing all the requirements therein contained.
- (12c) With this you will have a diagram of your district with lengths of the township lines & etc. The red lines represent the Section lines which you are to run and mark with great care.

- (13c) In the Subdivision of which, you are to be governed Strictly by the printed General Instructions which have been furnished you.
- (14c) There are forty-five townships South of the 1st correction line to be subdivided. Therefore in the selection of these townships for Subdivision I must avail myself of the information to be derived from you, as to the lands which from their quality and relative position will most readily sell when brought into Market; upon this subject you are particularly required to report.
- (15c) In the Subdivisions of which, you are to be governed Strictly by the Printed General Instructions which have been furnished you.
- (16c) You will therefore take the necessary observations and notes, to enable this office to have said improvements correctly designated upon the official Township plats, if the same should lie within or near your district.
- (17c) You are required to note the variation of the Compass, at which you run the *true lines*, the *randoms* and *corrected lines* in their proper places, in your field notes.
- (18c) In the following pages, you will find a description of the legal monuments, to identify the true position of the section corners, upon the Township lines of your district, with the variation of the Compass at those corners as reported by the Town line Surveyor.
- (19c) You are to subdivide strictly by the printed General Instructions, with the following Additions.
- (20c) The following Oath or affirmation is to be affixed to your field notes at the close of each township viz:

I-----Deputy Surveyor do solemnly swear (or affirm) that in pursuance of the contract with James Wilson, Surveyor Genl. of the United States, for the territory of Wisconsin and Iowa, bearing date the -----day of November 1844, and in strict conformity to the Laws of the United States, and the instructions of the said Surveyor General, I have regularly surveyed and subdivided into sections, Township No.-----North of Range No.-----West of the 5th Principal Meridian, Iowa Territory. And I do further solemnly swear (or affirm) that the foregoing are the true and original field notes of the said survey, and the subdivision executed as aforesaid.

Deputy Surveyor

A----B---- } Chainman
C----D---- } Marker
E----F---- }

- Subscribed by said-----Deputy Surveyor, and sworn before me, this -----day of-----, 1844, G. H. Justice of peace, (or any other person, duly qualified to administer Oaths)
- (21c) Surveying and marking the following township lines in the Sac & Fox cession of 1842, to Wit:
 - (22c) For Subdividing the following described townships, Situated West of the 5th Prin- Mer. Iowa Territory, to Wit:
 - (23c) For subdividing the following described townships, to wit:
 - (24c) One Section of Land to include the Indian Agency house, the enclosures around and about or near it, and the graves of Wapello a Chief and General Joseph M. Street late agent, is reserved for the widow of the latter, Mrs. Eliza M. Street, for which the United States have agreed to grant said Eliza one or more patents, said land to be selected in such legal subdivisions as will include the said burial ground, agency house and improvements around and near it, in good convenient form:
 - (25c) The remaining four townships you are required to subdivide in strict conformity to the printed General Instructions which are furnished you herewith.
 - (26c) You will please report to this office frequently, and state the progress you are making in the field, as well as the health of yourself and your party, as I shall at all times be pleased to hear from you. Upon the subsequent pages you will have the witness trees to the section corners upon the town lines of your district, also the variation of the compass.
 - (27c) You are particularly required to note, without fail, all the appearance of lead & other mineral ores, which may be discovered or come to your knowledge, upon your district, while surveying the same.

- (28c) You are particularly required to note without fail, all the appearance of Leads and other Metallic Ores, which may be discovered by you, or may come to your knowledge, in the progress of your work, if within or near your district.
- (29c) You are required to employ men of good moral characters only, and I shall insist upon it, as I am required by the instructions from the General Land Office, to certify without hesitation, and upon my own official responsibility, as to the correctness of your returns in every particular, after applying all the tests in my power.
- (30c) The survey of the above Townships into sections are to be executed in strict conformity with the printed General Instructions which have been furnished you from this Office on a former contract.
- (31c) The requisitions, as to the moral characters of your assistants, is still enjoined upon you, as required of you in your late instructions.

GEORGE W. JONES (SURVEYOR GENERAL)

JULY 14, 1845, TO DEC. 11, 1848

- (1d) In subdividing the same you are to be governed strictly by the printed "General Instructions" and the "Appendix" thereto, which are herewith furnished you.
- (2d) With this you will receive a *diagram* of each Township of your district upon which you will find the topography the length of lines and the variation of the compass, at which they were run, as reported by the Town line Surveyors.
- (3d) Upon the following pages are given a description on the Witness trees and monuments to the section corners on the Town lines of your district.
- (4d) The "General Instructions" should be frequently read by you, that you may be familiar with all its requirements.
- (5d) Herewith you are furnished a full description of all the meander and section corners upon the exterior boundaries of each township of your said district.
- (6d) The Township boundaries of your district were surveyed under instructions, requiring but two bearing trees to be taken at Section Corners thereon, and those to stand upon the West side of Range and upon the North side of the township lines; consequently in closing to the North and West boundaries of each township, you will, if practicable, take two bearing trees from each of the Section Corners thereon with which you close, both of which must stand within the township which you are, at the time surveying.
- (7d) And when such corners are located in prairie and signalized by a post in mound, you are to mark the squared sides of the post, facing the respective sections upon the South or East with the appropriate numbers of such sections.
- (8d) You are hereby required to make the return of your field notes of the said survey, in person.
- (9d) This accompanying triplicate contract and Bond for the subdivision of five townships into Sections are to be severally and properly executed on your part with two sufficient sureties and returned to this office before entering upon the said survey.
- (10d) Your Oath as deputy surveyor a form for which is herewith sent you must be executed and returned with the said triplicate contract and Bond.
- (11d) A commission of deputyship is enclosed.
- (12d) The said triplicate Contract is to be executed on your part by signing, sealing and swearing to the same, observing to have two witnesses to your signature over "Dep. Sur." and that the officer who administers the oath & Certifies to your signature thereto states the location as well as style of his office.
- (13d) Your triplicate bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount must be a matter of personal knowledge with me. The signatures & seals of the said sureties must follow your own, all to be attested by two Witnesses whose residency must also be stated. The Bond must be dated the day it is executed. Your said Contract and Bond must be thus executed and returned to this Office before you enter upon your said survey.
- (14d) You will compare & adjust your chain to a standard measure which you will find

- with any one of the U. S. Dep. Surveyors who have been employed by this office.
- (15d) Your triplicate bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount if not a matter of personal knowledge with me, must be certified by one of the U. S. Judges of the U. S. Courts or by a U. S. Atty. The signature & seals of the said sureties must follow your own all to be attested by two witnesses, whose residence must also be stated.
- (16d) The Bond must be dated the day it is executed & returned to this office before you enter upon your said survey.
- (17d) Herewith you will receive six diagrams on which are noted the topography, variation of the compass upon each mile, and the length of the exterior lines of each township of your district.
- (18d) Your account for that portion of your Surveys executed under instructions from Silas Reed, Surveyor General of Illinois and Missouri dated April 3d, 1845, lying north of an extension by protraction of "Sullivan's line" and West of the Fifth Principal Meridian was this day transmitted to the Hon. Commissioner of the General Land Office.
- (19d) It is expected that you will enter upon this survey as soon as it is possible for you to complete your arrangements, and that you will prosecute the same with the utmost diligence.
- (20d) Each and every one of your assistants must be men of strict integrity and your chainmen should also have been previously engaged as such if possible.
- (21d) In all respects where it is possible for errors to occur without detection as for instance in marking lines and establishing corners the utmost caution and care must be exercised; and such portions as are not executed by yourself should be if practicable immediately & personally inspected by you.
- (22d) You are to establish meander corners upon all such Lakes, rivers, ponds, bayous, sloughs & Islands as will subserve the public interest by being meandered or that will thereby facilitate the sale of the adjoining lands.
- (23d) The manner of executing this Survey and keeping of the field notes thereof, are fully described in the Printed "General Instructions," and the "Appendix" thereto which are furnished you.
- (24d) Your attention is particularly directed to the article of subdividing townships into sections, of the "General Instructions."
- (25d) Your attention is particularly directed to the *faithful perusal* of the "General Instructions."
- (26d) Your said triplicate bond is to be filled up with the names and residence of two sureties whose ample sufficiency for the amount if not a matter of personal knowledge with me must be certified to, upon each respective Bond, either by the U. S. District Judge for the State of Iowa, or by the U. S. Dist. Atty. therefor. The signature & seal of the said sureties must follow your own all to be attested by two witnesses whose residence must also be stated. The Bond must be dated the day it is executed. Your said triplicate Contract & Bond must be returned to this office as soon as it is executed (and before you enter upon the said re-survey). One copy of which will be returned to you as soon as it receives my signature.

HENRY A. WILTSE, CHIEF CLERK
DEC. 15, 1848, TO JAN. 24, 1849

- (1e) Your contract time is the longest that can possibly be given; as all surveys out of the last appropriation must be closed and transmitted to Washington by the 30th of June next.
- (2e) It is highly important that you make return of this work in person.
- (3e) In all other respects than the foregoing, you will be governed by my printed, general instructions herewith sent you, following which you will find a full description of all the corners upon the township lines of your district.
- (4e) For the corners which you establish upon the first correction line all bearing trees and the pits of mounds must stand South thereof.
- (5e) Your oath as U. S. Deputy Surveyor, a form for which is enclosed, must be executed and returned with your said triplicate contract and Bond.

- (6e) If you can obtain the measures of the standard chain from any one of the deputies who have surveyed public lands under authority of this office, and who can vouch for its accuracy, you are at liberty to do so, otherwise you must obtain it from this office.
- (7e) The Bond must be dated upon the day of its execution and the whole returned to this office for approval, and if correct, one copy thereof will be immediately returned to you.
- (8e) You will perceive that these townships of your district, situated in Range 26, have oblique lines for their Northern and Southern boundaries. The Eastern boundary, also, of the same township, is understood to deflect to the West to the amount indicated by the difference between the length of the South boundary of Section 31 and the North boundary of Section 6, as expressed upon the accompanying diagrams of the said townships, upon which is also expressed the true magnetic variation, as well as *course* of the said oblique lines.
- (9e) The Eastern boundaries of the townships under consideration were either measured with a chain out of adjustment, or else the manner of using it was seriously incorrect; as the distances thus taken, are in fact greater than they purport to be. The existence of this difficulty will render it impossible for you to establish your section corners in a line with the corresponding corners upon the respective Range line, as it is always desirable to do, and as can easily be done in your other townships. You will, therefore, institute a survey made to conform as nearly as is practicable with the course and measurement of the township lines, and one that will also show the true bearing and relative position of those lines. With this view you will apply your "test of township lines" to the *West* boundary in place of the *East*, as three of the boundaries of each one of the townships in question (the South, West & North) were measured by the same chain. With your chain and compass adjusted to run parallel to the Western boundary, your survey will show a heavier deflection in the *East* and *West* lines of the first tier which will increase as you go Northward than of any subsequent one, but will enable you to close upon the Western boundary without any material change of variation, and will also place all your own section corners in a line with those upon the Western boundary. Of course, your *East* and *West* lines will all be oblique to some extent, the amount of which must be stated thus:
- (10e) Stating the true magnetic variations and the course of the line separately, and immediately preceding the field notes both of random and corrected lines.

C. H. BOOTH (SURVEYOR GENERAL)

FEB. 9, 1849, TO MAY 30, 1850

- (1f) Stating the true magnetic variation and the course of the line separately & immediately preceding and field notes both of random and corrected lines.
- (2f) In all other respects than the foregoing, you will be governed by my printed, general instructions herewith sent you, following which you will find a full description of all the corners upon the township lines of your district.
- (3f) Your contract time is the longest that can possibly be given; as all surveys out of the last appropriation must be closed and transmitted to Washington by the 30th of June next.
- (4f) It is highly important that you make return of this work in person.
- (5f) You are to provide yourself with marking irons of the most approved description and which are to be used only by experienced & skillful markers. In the marking of your lines in timber & the establishing & marking of your course whether in timber or prairie, particular care is to be taken, and such parts as are not executed by yourself, are to be, if practicable, personally inspected by you. The importance of this caution will be manifest when you reflect that it is upon this evidence alone that the settler usually depends in locating and entering his land.
- (6f) Your field notes must be written in black ink of the most durable quality and every figure & letter of your field notes must be plainly & fairly written. You will report, in your general descriptions, the whole number of residences and as nearly as practicable the extent of improvement within each township, when you

- cannot determine these important facts accurately without leaving your lines you must specify the smallest legal subdivision or subdivisions upon which such residence or other improvement exists.
- (7f) By these instructions you will observe that you are required to close your sections, except in the North & West tiers, respectively, within given limits. This limitation, however, applies both to the difficult running in Wisconsin & Minnesota as well as to that upon the unobstructed surface in Iowa. As this limit is not to be exceeded under any state of circumstances, it is presumable that under the most favorable state of circumstances, such as are supposed to exist in your case, a much narrower limit would be expedient. This fact should be born in mind in deciding upon the accuracy of your closings.
- (8f) The Township boundaries of your district were surveyed by competent & faithful deputies & are believed to be faithfully & accurately established, both in respect to course and measurement. You will, therefore, endeavor to conform to them (unless you detect an error therein), especially in measurement, in order that your corners may stand in line with those upon the respective township boundaries of your district.
- (9f) You will perceive that those townships of your district, situated in Range 26, have oblique lines for their Northern & Southern boundaries. The Eastern boundaries, also, of the same townships are understood to deflect to the West to the amount indicated by the difference between the length of the South boundary of Section 31 and the North boundary of Section 6, as expressed upon the accompanying diagrams of the said townships. Upon which is also expressed the true magnetic variation, as well as *course* of the said oblique lines.
- (10f) The eastern boundaries of the townships under consideration were either measured with a chain out of adjustment, or else the manner of using it was seriously incorrect; as the distances thus taken are, in fact, greater than they purport to be. The existence of this difficulty will render it impossible for you to establish your section corners in a line with the corresponding corners upon the respective Range lines, as it is always desirable to do, and as can easily be done in your other townships. You will, therefore, institute a survey made to conform as nearly as is practicable with the course and measurement of the township lines and one that will show the true bearing and relative position of these lines. With this view you will apply your "test of township lines" to the West boundary in place of the East, as three of the boundaries of each one of the townships in question (the South, West & North) were measured by the same chain.
- (11f) With your chain and compass adjusted to run parallel to the Western boundary, your survey will show a heavier deflection in the East & West lines of the first tier which will increase as you go northward than of any subsequent one, but will enable you to close upon the Western boundary without any material change of variation, and will also place all your own section corners in a line with those upon the Western boundary. Of course, all your East & West lines must be oblique to some extent, the amount of which must be stated thus:
- chs lks Township 74, R. 26 West 5th Mer. Iowa
 East random between Secs. 29 & 32
 Var. 10° East
 N. 84° 21' East
 80.09 Intersected 20¼ lks S of Sec. corner
 West corrected between Secs. 29 & 32
 Var. 10° East
 40.04½ Set a post at ¼ Sec. cor. in a mound of earth & sod pit 8 lks East.
 80.09 Section corner
- (12f) Your guide in the execution of this survey will be the printed general instructions heretofore furnished you, and these special instructions.
- (13f) Your survey is to be executed by yourself, personally—that is, you are personally to inspect the progress of every part of the work. Each & every one of your assistants must be men of strict integrity. Particular care should be exercised in marking lines & establishing corners as in these respects errors are very likely to occur which it is impossible to detect in this office.
- (14f) You are required to distinguish clearly between prairie, barrens, bush, openings and timber. This can be readily done by stating in every case, what you *leave* as well as what you enter.

- (15f) The diagrams herewith furnished you, are not to be pasted, or otherwise attached to your field books, but are to be returned separate therefrom, and as nearly as possible in the same condition as you receive them.
- (16f) In writing your field notes you will please use blotting paper in place of sand for the purpose of absorbing the ink, as the latter cuts the threads of the binding.
- (17f) Your field notes must be written in black ink of the best quality; hereafter no field notes will be received unless every figure, letter, word & sentence, are plainly & fairly written.
- (18f) You are to provide yourself with marking irons of the most approved description which are to be used only by experienced and skillful markers, as the record thus made is that upon which settlers & purchasers usually depend in entering land.
- (19f) Any departure from the foregoing instructions, by whatever authentic means it may come to the knowledge of this office, will be deemed a sufficient cause for the appointment, as provided in your contract, of a disinterested deputy to examine and correct your work.
- (20f) In marking lines and establishing corners, great care must be exercised, and such parts thereof as are not executed by yourself should, if practicable, be personally inspected by you. The importance of this caution will be manifest when you reflect that it is upon this evidence alone that the settler usually depends in locating and entering his land.
- (21f) You are to establish meander corners upon the respective margins of all bodies of water that will subserve the public interest by being meandered, or that will thereby promote the sale of the adjoining lands.
- (22f) Herewith you are furnished a diagram of the lines you are to run, also of all previously established, which adjoins your district. Upon the latter is represented their magnetic variation, topography, closing and bearings or other evidences of the respective township corners.
- (23f) With your field notes of this survey, you will please to submit a report upon the extent and character of settlement upon & within the vicinity of your district; giving as nearly as possible the whole number of settlers and the number within each township. You will also report upon the general character of your district in respect to the distribution and proportionate quantities of prairie and timber, with the general depth and productiveness of the soil. You will further report a list of such townships as, in view of their inducements to settlement and purchase, should be earliest subdivided. A faithful attention to the subjects to be embraced in this report, will be of great service to this office in directing future surveys within the region of your work.
- (24f) This work is to be executed upon the plan laid down in detail in the accompanying General Instructions.
- (25f) To your corners in the second correction line, all bearing trees and pits and mounds are to stand south thereof. Posts at these corners are to be marked only with the township & range in which you are surveying at the time, and with the sections between which you are running.

GEORGE B. SARGENT (SURVEYOR GENERAL)

MAY 8, 1851, TO APRIL 1, 1853

- (1g) Your chain carriers must be reversed at every tally so that one may be ahead upon the odd, and the other upon all the even tallies. The discrepancies of measure likely to arise from unequal strength in chainmen, are thus rendered compensative; a check is instituted upon the accuracy of the tally and the labor of recollecting and reporting objects is divided. As the chainmen pass each other, the pins must be in every instance counted by each of them.
- (2g) You are to return the distance at which you strike and that at which you leave, in addition to the right angled width, every stream or other body of water that exceeds one hundred links of width at an ordinary stage of water.
- (3g) You will report in your general descriptions and indicate upon your diagrams the whole number of residences or other edifices, and as nearly as practicable the extent of improvement within each township. Where you cannot determine these

- important facts accurately without leaving your lines, you must specify the smallest legal subdivision or subdivisions, upon which such residence or other improvement exists.
- (4g) Witness corners should be established in the obstructed line, and unless the obstacle is very narrow, upon both margins thereof at quarter section corners, and the four sides of section corners.
- (5g) You are to provide yourselves with marking irons of the most approved description, and which are to be used only by experienced and skillful markers. In the marking of your lines in timber, and the establishing and marking of your corners, whether in prairie or timber, particular care is to be taken and such parts thereof as are not executed by yourselves are to be personally inspected by you. The importance of this caution will be manifest, when you reflect that it is upon this evidence alone that the settler depends in locating and entering his land.
- (6g) Your chain adjusted to the standard in this office must be carefully guarded against all injury, and by it you will compare and adjust your measuring chain every morning after the latter has been in service, and note the difference between them (if none state that fact also) in your field books.
- (7g) Herewith you are furnished diagrams of each of the townships of your district upon a scale of two inches per mile, upon which are accurately laid down the respective boundaries of each township, the length of each of the closing lines, the magnetic variation of each mile, and at least two of the bearing trees at all the section corners thereon, where bearing trees were taken. P. in M. signifies post in mound, the pits to which, unless it is otherwise stated, are in the direction, and at the distance prescribed in the General Instructions.
- (8g) Wherever practicable, you will deposit a stone at the centre of the bottom of your mounds three inches below the natural surface, and give in each case the name, shape and contents of the same in your field notes. Where this is impracticable, you should if possible take the bearing of some notable object, a boulder, lone tree, or other conspicuous object and enter the same in your field notes. Where one and but one tree exists within ten chains of a corner the same should be taken as a bearing, in addition to a mound and pit; and where two trees stand within ten chains of a corner, both should be taken, in which case no mound will be required, or in lieu of mounds and posts of wood, you may insert a stone—giving name, shape and contents of same in your field notes—endwise into the ground to a depth of seven or eight inches; the contents of which must equal a length of 14, a width of 12, and thickness of three inches, and the edges of which must be set north and south on Meridian and East & West on East and West lines. These stones, must, in every instance, be distinctly "notched" (with a chisel or other proper instrument) as directed in your printed instructions for posts. At quarter section corners $\frac{1}{4}$ must be plainly cut upon the opposite sides of the stone, and these sides set facing the two sections between which such quarter section corner exists.
- (9g) By an Act of Congress approved Sept. 28th 1850 all of the swamp and overflowed lands made thereby unfit for cultivation, which were unsold at the date of the passage of the said Act, were granted to the State or Territory in which said lands are located. In order that the field notes of surveys may hereafter clearly present the quantity and locality of the lands thus granted, you will, in addition to the objects of topography required by your general instructions note the point upon which you enter and leave all lands which are clearly the subject of the above grant, stating the character of the land thus noted, and whether it is a swamp or marsh, or subject from other cause to inundation, to an extent that would in the absence of artificial means render it uncultivable. The depth of inundation in timber may be easily determined from the marks upon the trees, and its frequency may be ascertained either from your knowledge of the general character of the stream which overflows or from the testimony of those residing upon or near the locality under examination. The usual phraseology for entering and leaving a swamp or marsh may be employed with the addition of "unfit for cultivation"; but if the margin of bottom, swamp or marsh in which uncultivable land exists, is not identical with the margin of such uncultivable land, then a separate entry must be made for each opposite the marginal distance at which they respectively occur.
- (10g) The four per cent of the gross proceeds of your surveys as per stipulation of your

contract, will be applied to a rigid and detailed examination in the field, of your own, and all other work assigned this season. The recent discovery of imperfections and even frauds in the public surveys, heretofore supposed to have been faithfully and accurately executed, imposes upon this office the necessity of applying all the tests in its power, and of subjecting both the notes of surveys and the surveys themselves, to the most rigid scrutiny, before payment is made. You should therefore acquaint yourself, minutely and thoroughly with your instructions as a violation of them in any *particular* will cause a suspension of your work, and unless such violations are satisfactorily explained will result in the rejection of the whole.

- (11g) The three per cent of the gross proceeds of your surveys, as per stipulation of your contract, will be applied to a rigid and detailed examination in the field of your own, and all other work assigned this season. The recent discovery of imperfections and even frauds in the public surveys, heretofore supposed to have been faithfully and accurately executed, imposes upon this office the necessity of applying all the tests in its power and of subjecting both the notes of surveys, and the surveys themselves to the most rigid scrutiny before payment is made. You should therefore acquaint yourself minutely and thoroughly with your instructions, as a violation of them in *any particular*, will cause a suspension of your work, and unless such violations are satisfactorily explained, will result in the rejection of the whole.
- (12g) Full notes of every line, and part of a line, which you retrace; of every one which you re-establish; of every random line which it is necessary for you to run, whether measured of not; of every corner which you re-establish, alter or perfect; of every offset; of the elements of every distance obtained by triangulation, are to be carefully entered at the time in the proper place in your field books. The second page in each field book must contain the names and duties of assistants then engaged upon your lines. Whenever you employ a new assistant, or change the duty of one, the fact with the cause thereof must be given in an entry immediately preceding the notes taken under the new arrangement.
- (13g) The notes which you take in the field are to be returned to this office. You are not to swear to, nor are your assistants to attest any other than your original or the *notes taken upon the spot*. With this view you will enter your notes, taken as above directed in books containing a number of pages that will admit of their being entered in every particular in strict conformity to the accompanying printed instructions. These books must be of regular form, size, and material. If, after the notes of any one or more Townships are thus taken, the Book or Books are too much soiled, worn, or defaced to be returned in conformity to the fore-named Printed Instructions you will make out and submit *with the original*, a fair handed and neat copy of the same, you are to use no other than Black ink of the best quality. No erasures are to be made, if mistakes occur the Pen may be drawn across the erroneous entry but always in such a manner that the words can be read afterwards. No leaves are to be cut, torn or otherwise taken from your Field Books, as reason is thus given for the suspicion that there was something upon the missing leaves, which it was not for the interest of the deputy to have known.
- (14g) With your field notes you are to return a map of each township of your district, upon a scale of a half inch per mile, upon which is to be expressed the length and variation of each of your lines with all the topography neatly laid down. With a view to the completeness of these maps, you should make sketches of the topography as you progress with your lines, that you may be able to present, not only the as you progress with your lines, that you may be able to present, not only the points upon your lines at which the same occurs, but also its direction and position between the lines, or within each section, as every object of topography is to be properly closed or connected. These maps form the basis of all the official plats and are by law denominated the *original*; as such they are carefully preserved in this office, where they are much referred to, and examined.
- (15g) With your field notes, you are to return a connected diagram of your district upon a scale of a half inch per mile, upon which all your lines are to be laid down at their proper length, and which is to receive as full and accurate a delineation of the objects of topography, edifices, and other improvements of your district, as neat and careful work will permit upon that scale.

- (16g) With your field notes of this survey, you will please to submit a report upon the extent of settlement and character of improvements within each township of your district; giving if possible the number and character of habitations and edifices of every kind, and a description of the improvement thereunto belonging. For the purpose of this report and in order that full information may be thus communicated, you should from day to day make in a book kept for that purpose, an entry of every fact that comes to your eye or knowledge, bearing upon your duty in this particular, as a full and faithful report upon these subjects will be of great service in the future operations of this Office.
- (17g) Each township of the district, which you have contracted to subdivide is plain, and is to be surveyed upon the plan laid down in my General Instructions to Deputies. By these instructions you will observe that you are required to close your sections except in the north and west tiers respectively within given limits. This limitation, however, applies to the difficult running in Wisconsin and Minnesota, as well as to that upon the unobstructed surface of Iowa. As this limit is not to be exceeded under any state of circumstances, it is presumable that under the most favorable, such as are supposed to exist in your case—a much narrower limit would be expedient. This fact should be born in mind in deciding upon the accuracy of your closings.
- (18g) The township boundaries of your district were surveyed by faithful and competent deputies, and are believed to be faithfully and accurately established both in respect to course and measurement. You will therefore endeavor to conform to them (unless you detect an error therein) especially in measurement, in order that your own corners may stand in line with those upon the respective township boundaries of your district, and that each section may contain six hundred and forty acres.
- (19g) The object in closing *at* the corners upon the north and west boundaries of the respective townships of your district is accomplished *only* when your variation and measurements show such closings to be natural and not forced. Your lines must be so run that you will necessarily intersect at, or very near these corners, in which case the variation at which your aforesaid lines are run will coincide *very nearly* to that employed upon the tier of lines, of which such closing lines are a part.
- (20g) In closing to the East and West boundaries of each township you will say intersect *range line*: in closing to your own work you will say intersect *meridian section line*, and of the lines closing upon the north boundary you will use the term North boundary.
- (21g) The material of which your mounds are made must be stated in each case. If of earth and sod, the earth is first to be heaped upon the spot, and neatly covered with sod, grass side up.
- (22g) Your general instructions will be your guide, as to the order in which you are to take up lines, the method of running the same, and the limits within which you are to close your respective townships.
- (23g) Every respective mile upon a township or range line is to be full, except the West half of the last or closing mile of the former, and the north or closing half mile of the latter; that is, all fractions are to be carried to the North and West in each township, unless otherwise specially directed.
- (24g) You are to establish meander corners upon all such rivers, lakes, ponds, islands, bayous, and sloughs, as will subserve the public interest by being meandered, or that will thereby tend to facilitate the sale of the adjoining lands.
- (25g) These Townships are plain and are to be surveyed upon the plan laid down in my General Instructions to Deputies. By these Instructions you will observe, that you are required to close your sections, except in the North and West tiers respectively within given limits. This limitation, however, applies to the difficult running in Wisconsin and Minnesota, as well as to that upon the unobstructed surface in Iowa. As this limit is not to be exceeded under any circumstances, it is presumable, that under the most favorable, such as are supposed to exist in your case, a much narrower limit would be expedient. This fact should be borne in mind in deciding upon the accuracy of your closings.
- (26g) It is observed that mistallies have been heretofore of rather frequent occurrence; as neither excuse nor apology for such blunders can, by possibility be suggested, should one or more occur in your work, the whole cost of correcting the same

- will be at your expense, and must be paid by you upon presentation of the account therefor certified by the Surveyor General for the time being.
- (27g) You are to meander the left bank of the Missouri River, so far as the same adjoins your district, also all Islands, between said Bank, and the main Channel of said river.
- (28g) In the survey of the fractional Townships specified in your Contract, you will pay particular attention to your printed instructions. Each of the remaining Townships are plain and are to be surveyed upon the plan laid down, in my General Instructions to deputies. By these instructions you will observe that you are required to close your sections, except in the North and West tiers respectively, within given limits. This limitation however applies to the difficult running in Wisconsin and Minnesota, as well as to that upon the unobstructed surface of Iowa. As this limit is not to be exceeded under *any state of circumstances*, it is presumable that under the most favorable, such as are supposed to exist in your case, a much narrower limit will be expedient. This fact should be borne in mind in deciding upon the accuracy of your closings.

WARNER LEWIS (SURVEYOR GENERAL)

JUNE 6, 1853 TO JULY 27, 1859

- (1h) Herewith you will receive one copy of your contract and bond approved; also all papers necessary for your guidance in the execution of your work.
- (2h) You will pay particular attention to your *Instructions* and see them carried out to the letter, as the slightest deviation cannot be allowed.

Chapter V

SPECIAL EXAMINATIONS AND RESURVEYS

It was inevitable that some errors should creep into the surveys. During the early period of the work there was no systematic method for checking their accuracy. When such errors were discovered (if sufficiently extensive) instructions were issued for the resurvey of the offending lines. The following special instructions have been taken from their chronological place in the "Special Instructions to Deputy Surveyors" and have been set up here separately.

SURVEYOR GENERAL'S OFFICE

Cincinnati Aug 4th 1837¹

SIR:

I herewith transmit to you a contract, in duplicate, for subdividing a district in Wisconsin Territory, west of the Mississippi River which you will please sign on your part with two responsible securities to the bond, and return one of the duplicates by mail to this office without delay.

I transmit to you herewith, also, Special Instructions concerning your district, diagram, notes of corners, deputation, and a printed copy of the "General Instructions to Deputy Surveyor" with a manuscript supplement thereto.

ROBT. T. LITTLE

MR. WILLARD BARROWS

Davenport, Wisconsin Ter

*Special Instructions to Willard Barrows for Subdividing in
Wisconsin Territory²*

SIR:

The district allotted to you comprises

Towns 82,83 in Range 1 East
Towns 82,83 in Range 1 West
Towns 82,83 in Range 2 West
Towns 82,83 in Range 3 West
Towns 82,83 in Range 4 West

Situate north of the base line and east and west of the fifth principal meridian, in Wisconsin Ter. as shewn on the accompanying diagram, on which is shewn the length and variation of the compass on each town line, with the principal streams, prairies, &c.

These several townships are to be subdivided into sections in the manner prescribed in the "General Instructions to Deputy Surveyors" a printed copy of which with a manuscript supplement, is sent herewith for your government, with the requirements of which, you will make yourself perfectly acquainted, and faithfully observe in the execution of your work.

¹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 224, Aug. 4, 1837.

² Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 224-5, Aug. 7, 1837.

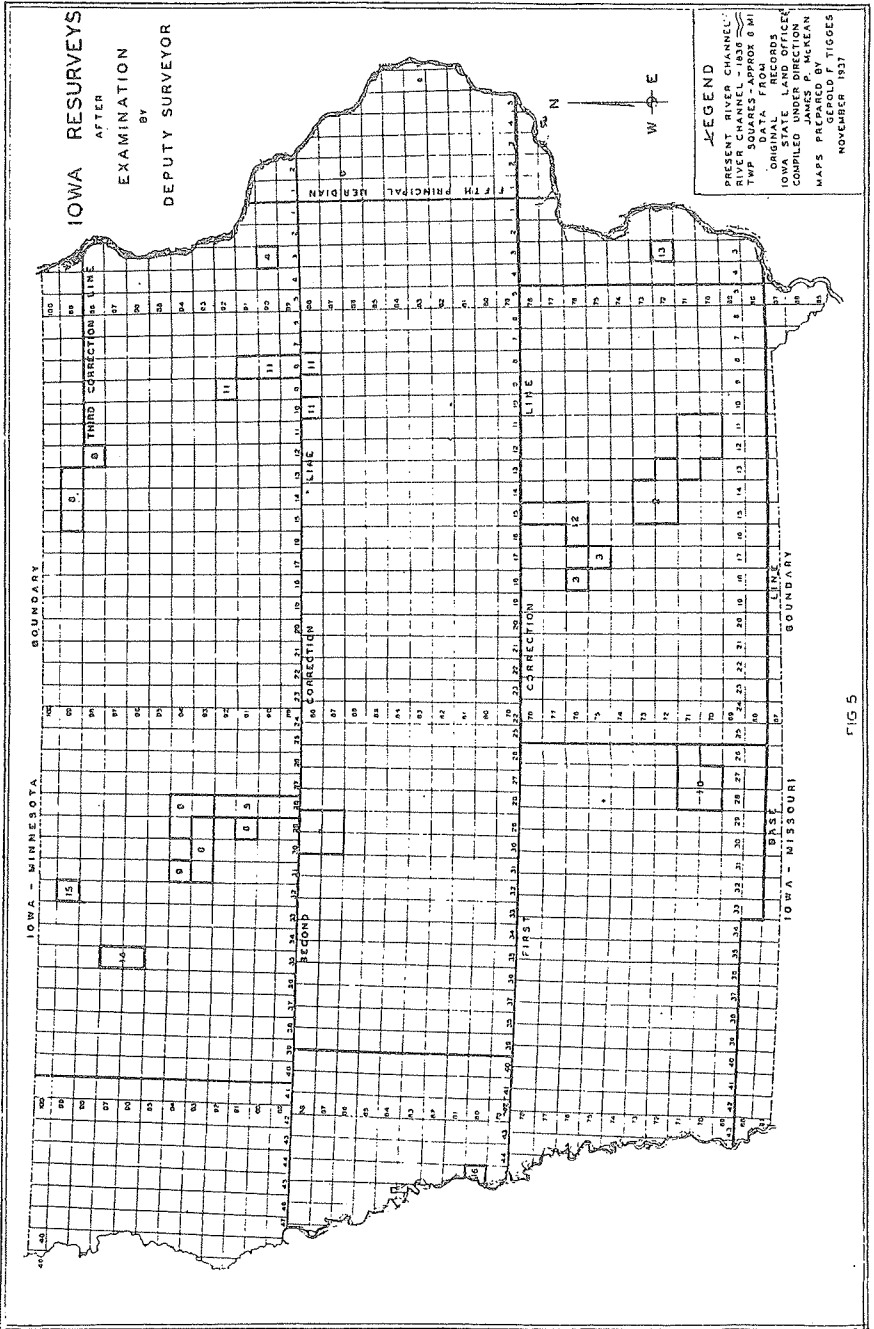


FIG 5

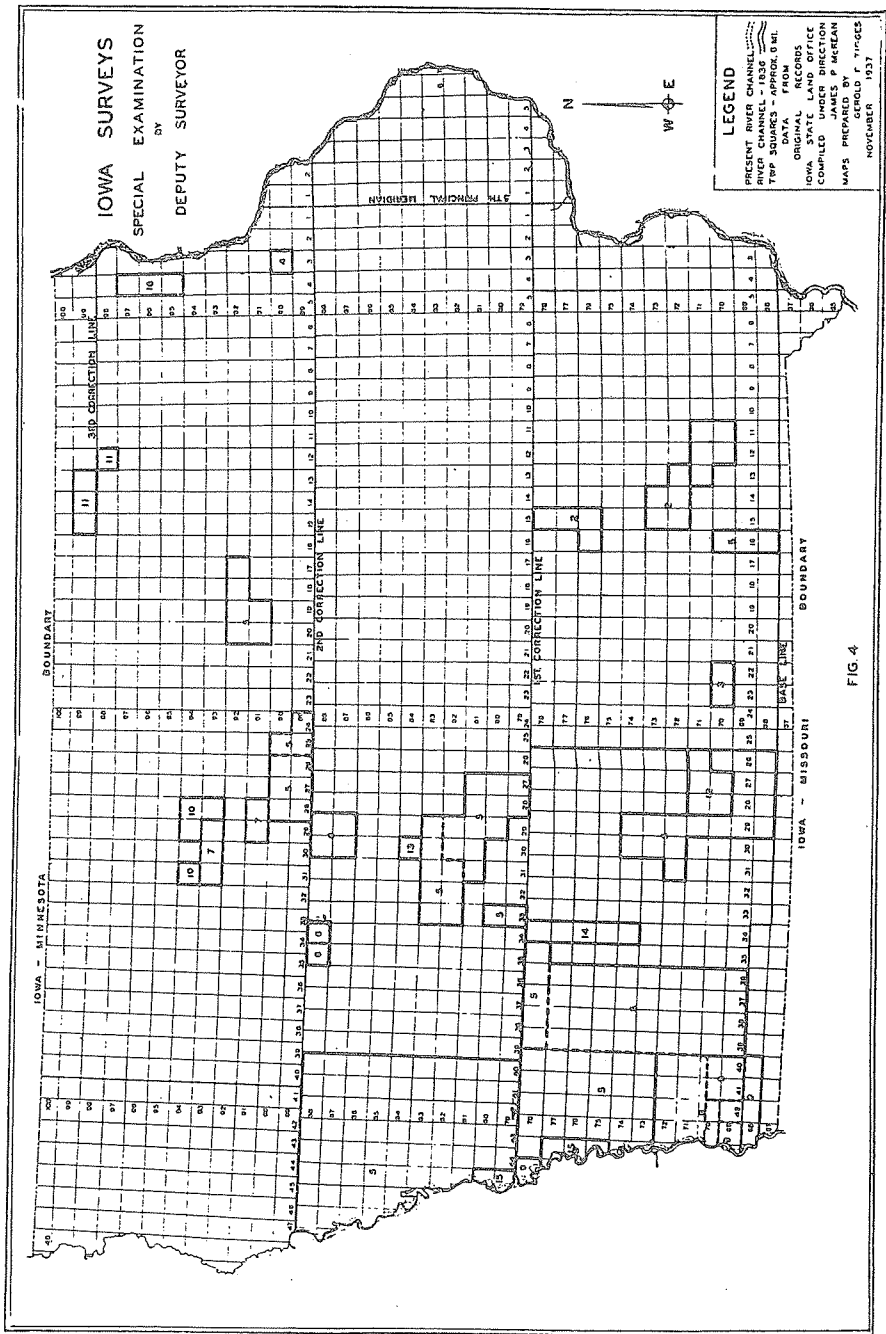


FIG. 4

The Wapsipinecon River is to be meandered on both sides within your whole district.

You will be particular to note in your field books and mark on your diagrams, the bluffs in rear of the bottom lands on the river.

The foregoing pages contain the descriptions of the section corners on the township lines; so that if any post be destroyed or misplaced you can replace it at the proper points.

You will get the measure of the standard chain from some of my deputy surveyors.

You are to keep me advised of your progress in the work; and to send copies of your field notes, as often as you shall finish one or two townships. Advise at what Postoffice to address you while out.

ROBT. T. LYTLE

SUR. GENL'S. OFFICE

Cincinnati Aug 7th 1837

SURVEYOR GENL'S OFFICE

Cincinnati Oct 19 1837^a

SIR:

About the 7th or 8th of Aug. last, there was mailed here, for your office, a packet addressed to "Williard Barrows," the receipt of which he has not yet acknowledged; and which packet it is supposed, has either been lost in the mail, or has not been called for. If it still remains in your office, be pleased to deliver it to the bearer,

I am sir, your Obed. Servt.,

(Signed) SAML. WILLIAMS,

Chf. Clk.

THE POSTMASTER

Davenport, Wisconsin Ter.

SURVEYOR GENL'S OFFICE

Cincinnati Oct 19 1837^a

SIR:

You have been appointed a Deputy Surveyor of public land under the direction of this office; and you will herewith receive a deputation as such, with a printed copy of the "General Instructions to Deputy Surveyors."

A district of ten townships, to be subdivided into sections, was assigned early in August last, to Mr. Williard Barrows, of Davenport, Wis. Ter. but nothing has since been heard of or from him.

Your father (Revd. A Brunson) has been requested to call at the postoffice in Davenport, and enquire for a packet addressed to Mr. Barrows from this office, containing his contract, special instructions, &c. If the packet should be found there still, you are hereby authorized to open it, and consider the instructions therein as addressed to yourself; and you will in that event, proceed to execute the survey of the townships therein allotted to the said Barrows, and in the manner prescribed in the said instructions.

To provide for the contingency before mentioned and that no time may be lost, I here send you a contract for the same district, filled up with your names,

^a Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 235, Oct. 19, 1837.

⁴ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 236, Oct. 19, 1837.

to be signed by you as Mr. Barrows was directed to do on relation to his, and one duplicate returned to this office immediately.

I am, very respectfully sir, your Obed. Servt.

MR. IRA B. BRUNSON, *Dep. Sur.*
Prairie du Chien, Wis. Ter

SURVEYOR GENERAL'S OFFICE
Cincinnati Nov 21st 1837⁶

SIR:

By some mistake, it appears your contract dated 29th of July last had been misplaced and put upon a packet addressed on the same day to another Deputy—John T. Haight of Oak Creek, Wisconsin Ter., who has but lately received it by mail, and returned it to this office. And I presume *his* contract had been, by the same inadvertence put up in your packet which the postmaster at Davenport informs has but lately arrived at his office, and which you have no doubt received. This packet however, contains, I expect your own proper instructions, plat, notes of corner, &c., for the district intended for you.

I now enclose a contract bearing the date of this letter, which you will please sign on your part, with two good and sufficient securities on the bond, and return one of the duplicates by mail to this office without delay.

As there has been so much delay, by the circumstances above mentioned, in commencing the survey of your district, you will please lose no time in executing the work.

I am very respectfully Sir, Your Obedt. Servt.

(Signed) ROBT. T. LYTLE

MR. WILLARD BARROWS, *Deputy Surveyor*
Davenport, Wisconsin Ter.

SURVEYOR GENERAL'S OFFICE
Cincinnati Dec. 5, 1837⁶

SIR:

Your letter of 10th ult. has been handed by Mr. Sullivan, together with the written contract, in duplicate made out and signed on your part.

The return of *your* contract by Mr. Haight (to whom, by the same inadvertence, it had been sent) led to the conclusion that his had been put up in your packet.

On the 21st ult. a new contract was made out, signed on the part of the Surveyor General, and forwarded to you at *Davenport*, where you will please apply for it, and sign it and return one of the duplicates to this office, as requested in the letter of that date.

Should the ground at any time be so hard frozen that you cannot raise mounds, in such case, I suppose, the marking of the mounds may be omitted until the frost is out of the earth in the prairies, in the spring. This must then be immediately attended to; and the fact of their erection be inserted in the field notes, at every corner where mounds had been omitted. But this must be, in all such cases, attended to by yourself *in person*.

Very respectfully Sir, Yr. Obedt. Servt.,

MR. WILLARD BARROWS, *Dept. Sur.*
Rockingham, Wisconsin Ter.

(Signed) SAM'L WILLIAMS

⁵ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 246, Nov. 21, 1837

⁶ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 250-1, Dec. 5, 1837.

Special Instructions to Willard Barrows, D. S., for closing the public surveys around the towns of Ft. Madison, Burlington, Belleview, Dubuque, and Peru, in Iowa Ter.⁷

SIR:

At the time the surveys of the public lands adjoining these several towns were made, the towns had not been laid out. It was therefore impracticable for the deputies to connect their work with the boundary lines of these towns.

This service is committed to you; and you are hereby authorized and instructed to execute this unfinished portion of the surveys, for which you will be allowed and paid, on the completion thereof and approval of the work, at the rate of three dollars per mile, and any additional allowance which may be authorized by the Commissioner of the General Land Office.

You will apply to the Commissioners for laying off these towns, for authenticated copies of the *field notes* and *plats* of the *boundary lines* of the several towns laid off and surveyed by them.

Having obtained these copies, you retrace these boundary lines, and close thereon all the sectional and township lines of the public surveys which may be intersected thereby; and at each such intersection, set posts, and take bearings, where there are any to be had, and also make conspicuous mounds of earth, covered with sod, and constructed with a view to their durability.

From each intersection of the lines of the public surveys with the boundary lines of the towns aforesaid, you will measure along each of those sectional or township lines, to the nearest section or quarter section corners thereon, beyond the town boundaries. And you will likewise measure the distance from each angle in the boundary line of each of the towns to the nearest intersections thereon of the lines of the public surveys. From the upper and lower corners of each of the towns on the Mississippi or other river, or bayou, you will take the meanders to the first meaner post of the public surveys, above or below such corners.

You will take full and minute *field notes* of all the corners established by you and of all measurements made and meanders taken, in pursuance of the foregoing instructions; which field notes, together with the copies of the field notes and plats of the boundary lines of the several towns which you may obtain, are to be returned to this office, as early as practicable after completing the work here assigned to you. For the execution of this work, and return of the field notes thereof, you are allowed until the 10th of Sept. next; but it is enjoined on you to make the surveys and returns in as much shorter time as may be practicable.

SURVEYOR GENERALS OFFICE

Cincinnati July 11, 1838

(Signed) E. S. HAINES,

Sur. Genl.

SURVEYOR GENERAL'S OFFICE

Cincinnati July 11, 1838⁸

GENTLEMEN:

I have appointed Mr. Willard Barrows, the bearer hereof, to close and connect the lines of the public surveys on the boundary lines of the towns of Ft. Madison, Burlington, Belleview, Dubuque, and Peru; and will thank you to furnish him with

⁷ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 273-4, July 11, 1838.

⁸ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A: p. 275, July 11, 1838.

a copy of the field notes and plats of the boundary lines of the said towns as surveyed under your direction.

I am very respectfully Gent., yr. Obdt. Servt.

(Signed) E. S. HAINES

MESSRS. WM. CORIELL, M. M. MCCARVER, AND GEO. CUBBAGE

Comrs. for laying off the towns of Ft. Madison &c in Iowa Ter.

SURVEYOR GENERAL'S OFFICE

Cincinnati Aug. 18, 1838^o

SIR:

I annex a copy of a communication addressed to me by John Pope and others, alleging the existence of errors and omissions in the survey of Town. 82 R. 1 E. 5th Mer. in your late subdivision district.

After you shall have completed the closings of the surveys on the boundary lines of the towns, and transmitted the notes thereof, you will please examine into the matter set forth in the communication of these gentlemen, and make corrections of any errors or omissions which you may find to exist, and report them to this office.

I am, very respectfully Sir, your obedt. Servt.

E. S. HAINES

MR. WILLARD BARROWS, *Dep. Sur., Iowa Ter.*
Rockingham

Sur. Genl.

SURVEYOR GENERAL'S OFFICE

Cincinnati Sept. 19, 1838^o

SIR:

I have to acknowledge the receipt of your letter of 30th ult. with copies of field notes of the subdivisions of certain townships in Chas. H. Fish's contract, to wit: Ts. 70 Rs. 1, 2, 3, 4, and Ts. 71 Rs 1, 2, 3, 4 W.; the copies of Ts. 70 Rs. 3 and 4 had been sent in some months ago, and also copies of Ts. 70 Rs 5 and 6. The field notes of *Ts. 71 Rs. 5 and 6 W.* have never been received, and are now urgently wanted; and if not sent off before you receive this, you will please lose no time in forwarding the copies thereof, by mail, if no direct private conveyance is found. You will also seek an early opportunity of forwarding the *original* field notes of Mr. Fish's work, after procuring his certificate thereto, which is essential.

I thank you for your exertions and promptitude in the procurement and transmission of Mr. Fish's work. His order in your favour has been accepted, and passed to your credit, and will be payable to you so soon as his work is platted and his acct, ready for settlement.

The unexpected delay in completing the surveys around the towns is much regretted. There was reason to hope that there would have been every practicable facility afforded you by the Commissioners, to bring this work to a close.

I rely confidently on your continued efforts to execute this work with all practicable dispatch; as the townships in which the towns are situated must of necessity be kept back until the surveys of the towns are received.

The sum of one hundred dollars which you wish sent, by draft on St. Louis,

^o Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A : p. 283, Aug. 18, 1838.
¹⁰ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book A : p. 291-2, Sept. 19, 1838.

will be forwarded so soon as funds shall be received from the Government—having paid out all that had been furnished to me.

Very respectfully sir, your obedt. Servt.

MR. WILLARD BARROWS, *Dep. Sur.*
Rockingham, Iowa Ter.

E. S. HAINES
Sur. Genl.

SURVEYOR GENERAL'S OFFICE

Dubuque November 12, 1845¹¹

SIR:

You will receive herewith a copy of a letter from the Commissioner of the General Land Office, dated October 24, 1845, stating that satisfactory evidence had been furnished said office, that the meanders of the River Des Moines in Sec. 12 T, 70 N. R. 12 W. 5th prin. mer. are erroneous;—It is found by replatting the said meanders by the field notes thereof, that the plat of said township is in strict conformity to the same;—I shall therefore in compliance with the Commissioners instructions, immediately appoint and instruct a deputy in whose skill and fidelity I can place confidence, to make a resurvey of your work as instructed.

Very Respectfully Sir, your obt. Servt.,

WILLARD BARROWS ESQ., *Deputy Surveyor,*
Rockingham, Scott County I. Ter.

GEO. W. JONES,
Surveyor General

Special Instructions to Isaac N. Higbee, deputy surveyor to resurvey the Des Moines River upon both sides, through Township No 70 N., Range No. 12, west of the 5th prin. mer.¹²

You are particularly required to note the location of the improvements and especially where the house of John Willsey stood in January 1845; you will also give the necessary connections with the section corners, and make such other examinations, as will enable you to report the character of the work executed by Willard Barrows, the deputy who surveyed this township.

You are furnished herewith, the field notes of said Barrows, as returned to this office, and executed in pursuance of a contract dated September 4, 1843, to wit: Townships 70 N. of Ranges 11 and 12 west, and of Townships 71 N. of Ranges 11, 12, and 13 west of the 5th prin. mer.; which notes you are to return to this office upon the completion of this resurvey and examination.

You will also receive herewith a diagram of Sections 1, 2, 11 and 12 Town. 70 N. Range 12 W. 5th prin. mer., it being a copy from the original plat on file in this office, with the bearings to the section, quarter section and meander corners, upon the exterior township lines of said diagram.

Likewise a copy of a communication from the General Land Office dated October 24, 1845; the requisition as contained in said communication, so far as regards the resurvey and examination, you are to consider a part of these instructions. For the faithful performance of which, you will be allowed such compensation as is given for like services, with the approbation of the Commissioner of the Genl. Land Office.

SURVEYOR GENERAL'S OFFICE

Dubuque, November 12, 1845

GEORGE W. JONES,

Surveyor General.

¹¹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 380, Nov. 12, 1845.
¹² Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 380, November 12, 1845.

SURVEYOR GENERAL'S OFFICE,
Dubuque, Iowa T., December 5, 1845.¹³

SIR:

In compliance with your letter of the 24th of October, and my instructions, to him of the 12th ultimo, Isaac N. Higbee, an experienced and faithful Deputy Surveyor, has made an examination of the field work of Willard Barrows as executed under a contract with my predecessor, dated September the 4th 1843, and has returned to this office his report of that examination and resurvey, a copy of which, including a plat of so much thereof as represents the true position of the Des Moines River in T. 70 N., R. 12 W., is herewith enclosed; together with his account of charges for the same, accompanied by the usual certificates.

Mr. Higbee requests that a draft, made payable at the Dubuque land office, may be sent him at this place.

The resurvey and examination of the said work of Mr. Barrows, as executed by Mr. Higbee, in addition to his verbal statements as well as the testimony relative thereto as furnished by the Register and Receiver at Fairfield, leave no doubt in my mind, of the necessity of a resurvey of the whole district assigned Mr. Barrows, under his said contract, and the propriety of instituting suit against him and his securities.

The expenditure of the whole or nearly all of the funds apportioned to this office for surveys during the present year, together with your instructions dated the 18th of April last, requiring me not to "contract for a greater amount of surveying than will be covered by your (my) apportionment" in connection with the doubt which exists in my mind as to the propriety of the step, have induced me not to contract for the resurvey of this work, but to submit the matter to you, for such directions as you may see proper to give.

Another consideration operating to induce the postponement of a resurvey of the work of Mr. Barrows referred to above, is contained in a letter just received by the hand of Mr. Higbee from Bernhart Henn, register of the land office at Fairfield, calling my "attention to the survey made by William Vandever of Township 72 of Ranges 13, and 15 west, and Township 73 of Ranges 14 and 15 W., and to suggest the propriety of having the work examined as to its general character."

I also enclose you a copy of the letter of Mr. Henn, and respectfully suggest the propriety of having an immediate examination made, and, if found necessary by the deputy appointed for that purpose, of directing a thorough resurvey of the whole as has been done, within a few days past, in the case of Mr. Boyd.

I am Sir very Respectfully your obt Servt.

HON. JAMES SHIELDS, *Comr. Genl. Land Office*
Washington, D. C.

GEO. W. JONES,
Surveyor General.

Special Instructions to Paul C. Jeffries for resurveying the field work executed by Willard Barrows, deputy surveyor, under his contract, dated Sept. 4, 1843, for the subdivision into sections of the following townships: viz.: Township 70 N., Ranges 11 and 12 west, and Township 71 N., Ranges 11, 12 and 13, west of the 5th. prin. mer., Iowa Territory.¹⁴

Before entering upon the discharge of the duty assigned you above, you will carefully compare your compass with the one used by Uriah Biggs, D. S., upon his

¹³ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 389-9, December 5, 1845.

¹⁴ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 413, April 21, 1846.

recent contract of township lines in Wisconsin, and if a disparity of variation exists, you will adjust your own so that it will exactly correspond with Mr. Biggs'. You will also adjust your chain to a standard measure furnished Mr. Biggs prior to his entering upon that survey, and which is now in his possession.

In the execution of this work you will proceed precisely as though no survey thereof had been previously made, being guided strictly by the printed, *General Instructions*, and the appendix thereto attached, for the subdivision of a township into sections, a copy of which is furnished you herewith.

You will obliterate all the lines and corners and evidences of corners established by Mr. Barrows, except those that can be re-established by you.

You will carefully meander the right and left banks of Des Moines River through your district.

Herewith you will receive diagrams representing the township lines of your district, with their length, variation and topography marked thereupon; also a copy of Mr. Barrows' Special Instructions, which will guide you in the matter of a certain reservation, therein named.

Upon the subsequent pages you will find the witness trees or other monuments to the section and meander corners upon the township lines of your district; also the variation of the compass upon every mile thereof.

SURVEYOR GENERAL'S OFFICE

Dubuque, April 21, 1846.

GEORGE W. JONES,

Surveyor General.

SURVEYOR GENERAL'S OFFICE.

Dubuque, April 21, 1846¹⁵

SIR:

I have assigned to you the resurvey of the townships embraced in a contract with Willard Barrows, dated September 4, 1843, to wit:

Township 70 north, Ranges 11 and 12 west, and Township 71 north, Ranges 11, 12 and 13 west of the 5th meridian in Iowa Territory.

With this you will receive a commission of deputyship; a copy of the printed General Instructions to Deputies, with an appendix to which your attention is specially directed; my special instructions to you, together with an extract from the special instructions to Willard Barrows, furnished him, prior to his execution of the said work.

You will also receive herewith a contract and bond in triplicate, which you are required to execute on your part severally and properly, before entering upon the execution of the aforesaid resurvey and return the same to this office, without delay. The sufficiency of the sureties upon your bond must be certified to, either by one of the judges of the supreme court of Iowa Territory or by the U. S. dist. atty, for the same. In filling up the bonds, the residence of the sureties must be stated.

Your oath as U. S. deputy surveyor, and also the oaths of your assistants (see page 4, General Instructions) must accompany the said bonds to this office.

Accompanying the return of said contracts and bonds, you will please send your signature to the enclosed blank, inserted over "Deputy Surveyor," to be used here in making out your account. You will state also at the same time where you desire to have your draft made payable.

¹⁵ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 414, April 21, 1846.

When the said contracts have received my signature one of them will be returned to you

PAUL C. JEFFRIES, *Esqr., Dep. Sur.*
Ottumwa, Wapello Co., Iowa Ter.

GEORGE W. JONES,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
Dubuque, April 22, 1846.¹⁶

SIR:

Pursuant to your instructions, bearing date the 27th of March 1846, I have assigned for resurvey, to a competent and faithful deputy, the work embraced in Willard Barrows' contract with my predecessor, of the 4th of September 1843.

I have the honor to transmit, herewith a copy of my special instructions to Paul C. Jeffries, of Ottumwa, Wapello Co. Iowa, the deputy aforesaid, together with a diagram of his district.

Triplicate contracts and bonds have been sent Mr. Jeffries for execution, a copy of which will be sent you upon the return thereof.

Very respectfully, Sir, Your Obt. Servt.,

HON. JAMES SHIELDS, *Comr. Genl. Land Office,*
Washington

GEORGE W. JONES,
Surveyor General.

Special Instructions to Joseph Moorehead for examining and reporting the work executed by Willard Barrows under his contract of November 16, 1844, for the survey and subdivision into sections of the following townships, viz.: Townships 76, 77 and 78 north, Range 15 west of the 5th principal mer. in Iowa Territory; also of the work executed by William Vandever under his contract of Sept. 5, 1843, for the survey and subdivision into sections, of the following townships, viz.: Township 72 north, range 13, 14 and 15 west, and Townp. 73 north, Ranges 14 and 15 west of the 5th prin. mer. in Iowa Territory.¹⁷

Before entering upon the discharge of the duties, assigned you above, you will carefully compare your compass with the one used by James Grant, dep. sur., in his recent execution of a contract for subdividing in Iowa Territory and if a disparity of variation exists, you will adjust your own so that it will exactly correspond with Mr. Grant's. You will also adjust your chain to a standard measure furnished Mr. Grant at this office, prior to his execution of the work aforesaid.

In your examination of this work you will inform yourself, from surveyors and others residing upon or in the vicinity of the said districts of the location of all frauds or errors complained of, and also of all, known or supposed to exist, all of which you are, separately and severally to examine and report.

Your other examinations should be chiefly confined to the last mile of each tier of sections, in other words, to the lines closing upon the north and west boundaries, as errors would be largest, and frauds be most likely to be perpetrated in the measure variation, or closing of such lines.

You will remeander a portion of both banks of the Des Moines River which traverses your last mentioned district, that you may be able to report upon that part of the work also.

You will state, clearly, in your field notes, the point at which you commence, all corners with which you close or connect; the magnetic variation which you

¹⁶ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 414, April 22, 1846.

¹⁷ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 415-6, April 23, 1846.

employ: the length of every line which you remeasure; how, and the point at which you terminate each and every examination—taking care, always, to specify the township and range thereof.

You are in no case to make any change or alteration of the work executed by either of the contractors aforesaid, but simply to examine until you are fully informed of the character and condition of the same, which you will report to this office at the earliest practical day: which report must be accompanied by the field notes of your said examination.

Herewith you will receive a copy of the printed, General Instructions to Deputy Surs. for the subdivision of a township into sections, together with the additional or special instructions, furnished each of the said contractors, as their guide in the execution of the said contracts; also the original field notes of each of the said surveys, as returned by said Barrows & Vandever, which you are to preserve with great care, and certainly return to this office, along with the report and field notes of your examination.

In employing your assistants, and particularly your chain-carriers, you will be cautious to select men of skill and experience as such, in order to render your own work uniform and to avoid, as much as possible, frequent errors and discrepancies in measurement, arising from the carelessness or incapacity of chainmen. The following from the Commissioner of the General Land Office, in reference to this subject, will prepare you to meet with slight, but unavoidable discrepancies, while it will also materially aid you in deciding whether the work does or does not require resurvey and correction:

In making these examinations, if the lines and corners are found to be clearly and distinctly marked, and the bearing trees properly given a slight discrepancy in measurement or error in bearings, should not justify the expense of a resurvey. This suggestion grows out of the fact, well known to you, that two sets of chain-carriers will not and cannot report the same measurement exactly; and that deputies frequently differ slightly in arriving at the variation of the needle.

At the end of your field notes, you will insert an affidavit, properly subscribed and sworn to (see appendix to General Instructions) of the following form:

I, Joseph Moorehead, deputy surveyor, do solemnly affirm, that, in pursuance of instructions from George W. Jones, surveyor general of the Territories of Wisconsin and Iowa, dated April 23, 1846, and in strict conformity thereto, I have faithfully executed the remeasurements & examinations therein directed; and I do further solemnly affirm, that the foregoing are the true and original field notes of the said remeasurements and examination, executed as aforesaid.

Upon the following pages you will find the witness trees or other monuments to the section and meander corners upon the township lines of the said district; also the variation of the compass upon every mile thereof.

SURVEYOR GENERAL'S OFFICE,
Dubuque, April 23, 1846.

GEORGE W. JONES,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
Dubuque, April 21, 1846.¹⁰

SIR:

I have appointed you to the important and responsible duty of examining and reporting the work executed by Willard Barrows, deputy surveyor, under his con-

¹⁰ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 416-7. April 21, 1846.

tract of November 16, 1844, for the survey and subdivision into sections, of Townships 76, 77 and 78 north, of Range 15 west, and of Township 76 north, of Range 16 west of the 5th principal meridian, in Iowa Territory, and of the work executed by William Vandever, deputy surveyor, under his contract of September 5, 1843, for the survey and subdivision into sections of Townships 72 north, of Ranges 13, 14 and 15 west of the 5th prin. mer., and Townships 73 north of Ranges 14 and 15 west of the same mer. in Iowa Territory.

Herewith enclosed, you will receive my special instructions to you, together with other data therein mentioned.

The special instructions to Willard Barrows, referred to in the said special instructions to yourself, have been omitted in consequence of their similarity with the "appendix" to the printed General Instructions, to which your attention is directed instead thereof. Accompanying the return of your report and field notes to this office, you will send your bill of services and expense; also your oath as U. S. dep. sur. (see page 4 of printed General Instructions) which you will execute prior to taking the field.

Your signature to the enclosed blank, inserted over "Deputy Surveyor," to be used in making out your account, and the return of the same with the above papers, together with the name of the office at which you desire to have your draft, in payment of the said services and expenses made payable, will both be required before your account can be approved or transmitted.

I must again direct your attention to the importance of using great care and caution in preserving and returning the accompanying original field notes of said Barrows and Vandever, as their loss would be followed by the most embarrassing consequences.

Very respectfully, Sir, Your Obt. Servt.

JOSEPH MOOREHEAD, *Deputy Surveyor*
Davenport, Iowa.

GEORGE W. JONES, *Sur. General*,
By ELISHA DWELLE, *Chief Clerk*.

SURVEYOR GENERAL'S OFFICE,
Dubuque, April 23, 1846.¹⁹

SIR:

I have the honor to inform you that, pursuant to your instructions of March 27, 1846, I have appointed a deputy surveyor to examine and report the work executed by Willard Barrows under his contract of Nov. 16, 1844, and also of the work executed by William Vandever under his contract of September 5, 1843.

A copy of my special instructions to Joseph Moorehead of Davenport, Iowa, the deputy above mentioned is herewith enclosed.

Very respectfully, Sir, Your Obt. Servt.,

HON. JAMES SHIELDS, *Comr. Genl. Land Office*,
Washington, D. C.

GEORGE W. JONES,
Sur. General.

SURVEYOR GENERAL'S OFFICE,
Dubuque, May 16, 1846.²⁰

SIR:

By your letter of March 28, 1846, I was required to advise Mr. Isaac N. Higbee, dep. surveyor, that his account for examining and reporting the surveys executed by Willard Barrows under his contract of September 4th, 1843, was, on the

¹⁹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 417, April 23, 1846.

²⁰ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book B: p. 422, May 16, 1846.

said day, "sent to the First Comptroller of the Treasury for decision and remittance." Your letter was received on the 16th ultimo, making a draft due—conformably to the time usually intervening the reception of a notice and draft—six days thereafter.

No draft or notice thereof to the land office at this place, has been received; leaving it extremely probable that both are lost.

Very Respectfully, Your Obt. Servt.,

HON. JAMES SHIELDS
Comr. Genl Land Office,
Washington, D. C.

GEO. W. JONES,

SURVEYOR GENERAL'S OFFICE,
Dubuque, June 12, 1846.²¹

SIR:

Pursuant to my letter to you of April 22, 1846, I have the honor to send you herewith, the contract and bond of Paul C. Jeffries, dep. sur., for the resurvey of the work executed and returned to this office by Willard Barrows, under his contract therefor of Sept. 4, 1843.

In his letter to me, accompanying the return of the said contract and bond, in triplicate, this day received, Mr. Jeffries states that he is progressing in the said resurvey.

Very respectfully, Your Obt. Servt.,

HON. JAMES SHIELDS, Comr. Genl. Land Office,
Washington, D. C.

GEORGE W. JONES, Sur. Genl.

SURVEYOR GENERAL'S OFFICE,
Dubuque, June 12, 1846.²²

SIR:

With this you will receive one copy of your triplicate contract and bond, received with your letter of the 25th ultimo, executed on my part and approved.

Very respectfully, Your Obt. Servt.,

PAUL C. JEFFRIES, Dep. Sur.
Ottumwa, Wapello Co., I. T.

GEORGE W. JONES, Sur. Genl.

SURVEYOR GENERAL'S OFFICE,
Dubuque, June 30, 1846.²³

SIR:

It was my design to have finished at this time, my surveying account for the fiscal year just closed; but I have been contravened in this design by the following causes:

1st. The great amount of correcting and resurveying both of old and new work that has been required within the last eight months, rendering a vast amount of labor in this office abortive.

2nd. The ill health, inability and misconduct of my late chief clerk, Elisha Dwelle, during my absence last winter.

The following is the condition of the unfinished part thereof, both in the field and office:

Frac. T. 21 N., R. 19, E. of the 4th P. M. W. T. embraced in a contract with John Banister, dated August 16, 1843, and surveyed and resurveyed by him has not

²¹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 3, June 12, 1846.

²² Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 3, June 12, 1846.

²³ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 8-9, June 30, 1846.

yet been executed in an admissible manner. Mr. Bannister has been repeatedly written to upon this subject; but has, since Oct. 1845, made no reply. I shall immediately contract with another deputy for the survey thereof.

James Fanning's, Theodore Conkey's, Andrew Burnside's, and Albert G. Ellis' field notes, under contracts of 1845, are severally received. The two first are platted and partly copied, the third has been up to this day suspended and the last is undergoing its first examination.

The resurvey of Barrow's work by Mr. Jeffries, will be returned shortly. Of the progress made by Mr. Moorehead, in his examination of Vandever's and Barrow's last work, I am unaware, not having heard from him since he took the field; however I am expecting his returns daily.

The survey of the Porlier lot west side of Fox River W. T. will doubtless be received in a few days.

The work in the office will be put forward with all possible dispatch; and I entertain no fears of being ready for the new work, tho I sincerely regret the delay of the old.

Very Respectfully, Your obt. Servt.,

HON. JAMES SHIELDS, *Commr. Genl. L. O.*
Washington City, D. C.

GEORGE W. JONES,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
*Dubuque, July 24, 1846.*²⁴

SIR:

On the 23rd of April last, I appointed you to examine and report the character of the surveys executed by Willard Barrows under his contract of November 16, 1844, and those of Wm. Vandever, under his contract of Sept. 5, 1843, and furnished you with full instructions, and data therefor. Owing to the nature of this work and placing the most implicit reliance upon your promptitude and faithfulness, no precise limit was placed to the time within which you were to complete its execution, though there was no ground for believing that you could, consistently, occupy more than four weeks therein.

More than three months have expired since the date of the said appointment and instructions, during the last six weeks of which time I have been constantly and confidently expecting your return. I am astonished at this delay and still more astonished at your protracted and unaccountable silence.

You will please report to this office immediately, the progress made by you in the said examination, and explain at length the causes of its delay and of your remarkable silence thereupon; as I am responsible and shall be called upon to satisfy the Department at Washington, that you have acted in good faith in this matter and that your apparent neglect and misconduct have been unavoidable.

Very Respectfully, Your obt. Servt.,

JOSEPH MOOREHEAD, *U. S. Dept. Surveyor,*
Ottumwa, Iowa Terr'y.

GEO. W. JONES,
Surveyor Genl.

SURVEYOR GENERAL'S OFFICE,
*Dubuque, August 19, 1846.*²⁵

SIR:

Pursuant to my instructions to him of April 23, 1846, Joseph Moorehead,

²⁴ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 22-3, July 24, 1846.

²⁵ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 26-7, Aug. 19, 1846.

deputy surveyor, has just reported to this office the character of the work executed by Willis Vandever under his contract of Sept. 5, 1843, and that executed by Willard Barrows under his contract of Nov. 16, 1844, a copy of his report upon each of which, I have the honor to enclose.

Mr. Moorhead's returns have been delayed considerably longer than was anticipated at the date of his instructions, owing, I am satisfied to the unusual care he has taken to be accurate, and a determination not to report until he was fully informed of the character of the work. His field notes show a great amount of labour performed in each township of both the said districts, leaving no doubt of the precise character of the surveys therein, nor the fact that his examination has been faithfully and promptly conducted.

The result of the examination of Vandever's work is to discover clearly that his survey was executed without reference to or care for his instructions any farther than was necessary to give to the work the general features of a survey. The corners throughout the whole district are either missing altogether, or are so obscurely and imperfectly established as to render it impossible they should ever be recognized as corners any further than by common consent of the settlers. The lines appear to have been very loosely and hastily ran as there is very little accuracy or uniformity either in their length or variation. A greater error still, however, and one which in my opinion condemns the work, is the universal and often wide disparity between the work as it was executed and as it exists in the field and his (Vandever's) return thereof in this office. I see no way in which the rights and interests, of the settlers and the character of the public surveys can be sustained except in a complete resurvey of this district.

The character of the survey executed by Mr. Barrows under his contract aforesaid according to Mr. Moorehead's examination thereof is extremely defective. The length and variation of his lines appear to have been in most instances correctly reported although that fact cannot be ascertained with much certainty in consequence of a general absence of corners. His east and west lines appear never to have been ran at all, except in timber, and there but half way, or just far enough to establish the quarter section points. The blazing where it has not been omitted altogether, is so obscure as to be traced with difficulty, scarcely a corner exists or was ever established in the prairie parts of his district, and his descriptions are in almost every instance totally wrong.

It is manifest that justice to the settler requires a more complete and perfect survey than the one above described. I would recommend an entire resurvey of the district as the surest means of obtaining an accurate survey at the least expense, a continuation or rather carrying out of what is already done in that district, could only be done at the expense of a greatly increased amount of labor over the plan which I recommend instead.

I am very Respectfully,
 HON. JAMES SHIELDS, *Comms. Genl. L. O.,*
Washington, D. C.

Geo. W. Jones,
Surveyor Genl.

P. S. Enclosed you will also receive Mr. Moorehead's account for executing my said instructions, to the amount of which I have to request you to make a requisition upon the Treasury Department in his favor. He prefers a draft upon St. Louis, Mo., if practicable otherwise upon Dubuque, Iowa Territory, sent to him through the postoffice at Davenport, Iowa Territory.

Geo. W. Jones, *Surveyor Genl.*

SURVEYOR GENERAL'S OFFICE,
Dubuque, August 19 1846.²⁶

SIR:

In explanation of the accompanying account, I have the honor to state that no limit, can, in view of the nature of the work, be fixed as to the time within which an examination shall be made, nor of the amount of service, required thereto. Mr. Moorehead was instructed to examine until he was fully informed and satisfied of the character of the work in each of the said districts and his field notes are evidence of a diligent and energetic execution of those instructions. Considering the great amount of work actually performed by him and his expenses consequent upon its performance, I think his bill extremely reasonable.

I am, very Respectfully, Your obt.-Svnt.,

HON. JAMES SHIELDS, *Comms. Gen. L. O.*
Washington, D. C.

GEO. W. JONES, *Surveyor Genl.*

SURVEYOR GENERAL'S OFFICE,
Dubuque, December 22, 1846.²⁷

SIR:

The corrected field notes of your resurvey under contract of the 21st of April last, together with all the papers mentioned in your letter of the 3d instant, are received.

The earliest attention of the office will be directed to an examination of your said work, the result of which will be communicated to you.

The language of my letter to you of the 16th ultimo, which you have construed into a reprimand, grew out of the following state of facts:

The district your resurvey had been "proclaimed" for sale before it was known that the original survey was fraudulent, which, added to the more important fact that portions of the same were densely settled and that those settlers were extremely desirous both for the adjustment of their lines and the entry of their land, rendered it of the first importance that your survey thereof should be prosecuted with as great despatch as was consistent with accuracy. Under these circumstances a contract was sent you, into which you entered without qualification or demur, fixing the time of the return of your field notes on the 15th of the following July. The time, thus fixed, and agreed to was deemed to be, and was amply sufficient for the purposes specified.

The said contract was transmitted to you for execution on the 21st of April last, but delayed by you without assignable cause or even apology to the 19th of the following month—six days after which it was *mailed* for return without any expression of doubt as to your ability to preform the work within the time fixed upon. Upon the very day that your returns were due, your letter of the 28th of June, reached me, in which you stated that you might not be able to complete your job within the limits of your contract. From that time your field notes were daily expected, up to the reception of your letter of the 2d of Sept. in which you informed me, to my astonishment, that you were still in the field. It was mortifying to me to reflect that, out of the multiplicity of applicants for this work, I had selected one whose remissness could not but expose me to the reproach and just reproach, of the department. I had then the alternative, only, of declaring your contract forfeited

²⁶ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 27, Aug. 19, 1846.

²⁷ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 33-4, Dec. 22, 1846.

or of exercising a questionable indulgence towards you. I decided upon the latter course and waited in anxious expectancy of the return of your work till the reception thereof with your letter of the 6th ultimo. What could have surprised me more, after all this unprecedented and unexplained delay, than to find your returns deficient in the most important point and in complete disregard of your instructions.

Your work now comes into the office simultaneously with that put under contract more than five months later, with the succession and despatch of which it must unavoidably and seriously interfere—causing me to be impugned by the deputies here and censured by the Department.

These were the facts that prompted my letter to you of the 16th ultimo, which, if you are pleased to construe into a reprimand, be pleased also to consider it deserved in the highest degree.

Very Respectfully, Your Obt. Servt.,

PAUL C. JEFFRIES, *Esq.*, *U. S. Deputy Surveyor,*
Ottumwa, Wappello Co., Iowa.

Surveyor General.

SURVEYOR GENERAL'S OFFICE,
*Dubuque, December 28, 1846.*²⁵

SIR:

By your letter of the 24th of October last, I am authorized to contract for the resurvey of the survey by Willard Barrows under his contract of November 16, 1844, and of that by William Vandever under his contract of September 5, 1843, both of which were examined and reported upon by Joseph Moorehead, in compliance with my instructions to him of April 23, 1846. The exercise of this authority involves difficulties which I beg to present to your consideration.

In order to accommodate the price per mile to the character of the different surveys to be executed out of the last apportionment to this district, I had, prior to the reception of your said letter, placed it out of my power to pay more than two dollars and fifty cents per mile for subdividing in Iowa Territory—a compensation at which I am unable to engage the services of a competent deputy upon the said resurvey, to a number of whom I have offered the work.

The greater portion of the district in question is prairie, rendering it impossible to establish any other corners than mounds of earth. The difficulty in the way of constructing sizable or permanent mounds when the earth is frozen to the consistency of rock for several feet beneath its surface is so obviously great as to have decided me to let as few contracts as possible during the winter season. These difficulties are more than doubled in a resurvey, in which new mounds are not only to be built, but the old ones—now frozen to a solid mass and the pits, from which they were taken and into which they must be thrown, filled with ice—demolished.

The price per mile that is requisite to ensure an accurate, original survey, is quite insufficient to the execution of a resurvey, upon which it is only important that all the lines and corners should be distinctly marked, but that all the old ones should be as perfectly cancelled. This adds vastly to the labor of an ordinary survey for, in order to be cancelled, they must be searched for and found. This has been found out to the severe cost of the deputy who has just closed his resurvey of Barrows work, and who warmly petitions this office for an increase of com-

²⁵ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 95-96, Dec. 28, 1846.

pensation in consequence thereof. If the old and new lines coincided very nearly, the labor of cancelling would measure the difference of cost between an original and resurvey. But the disagreement, where the original lines were actually run, will in most instances, be very great, while, in cases when the same were not run, still more time will be required to establish that fact. Your instructions require that all the original work that can be used shall be adopted and carried to the credit of the original surveyor. This judicious requisition is greatly in the way of contracting for the said resurvey; for all the work that is thus found available, lessens the compensation without lessening in the slightest degree, the labor of the deputy. It is my belief that the resurvey under consideration, cannot be executed properly, even at a favorable season of the year for a compensation less than four dollars per mile.

In view of the above facts I respectfully ask to be advised: 1st, whether the said survey can be deferred until spring; and 2d, whether the cost of the same is to come out of the aforesaid apportionment, and also whether the price per mile is to be regulated by the maximum for ordinary or original surveys.

Very Respectfully, Your Obt. Servt.,

HON. JAMES SHIELDS, *Commissioner Genl. L. O.*,

Washington City, D. C.

Surveyor General.

P. S. Am I correct in understanding your said letter to mean that the work, passed to the credit of the original contractor in consequence of its having been properly executed, cannot be charged for by the deputy resurveying the same. I ask because of the fact that all the work thus adopted has actually to be resurveyed before its character can be known.

G. W. J.

SURVEYOR GENERAL'S OFFICE,
*DuBuque, December 29, 1846.*²⁹

SIR:

In reply to your letter of the 23d instant I have to state, that the surveys by W. Barrows in T. 76 of Ranges 15 and 16 have been rejected, and that, unless otherwise advised by the Hon. Commissioner of the Genl. Land Office, those townships will not be resurveyed before early spring; in which event, returns of the same cannot be completed and ready for transmission to yours and the Genl. L. O. earlier than the middle of May or first of June next.

Very Respectfully, Your Obt. Servt.,

DR. ENOS LOWE, *Receiver of L. O.*,

Iowa City, Iowa

GEO. W. JONES,
Sur. General.

SURVEYOR GENERAL'S OFFICE,
*DuBuque, Jan'y. 5, 1847.*³⁰

SIR:

The minutes of your resurvey of Township 70 north of Ranges 11 and 12, and of Townships 71 north of ranges 11, 12 and 13 west of the fifth prin. mer., Iowa, pursuant to your contract therefor of April 21, 1846, require explanation and correction in the following respects:

1st. The variation at which your random and corrected lines were respectively run, do not appear to bear such a relation to each other as the distances of

²⁹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 97, Dec. 29, 1846.

³⁰ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 99, Jan'y. 5, 1847.

your intersections demand. You will please, therefore, furnish me with the process by which you arrived at the true variation of your closing lines.

You will also return to this office a resurvey of the line between Secs. 23 and 33, 20 and 29, and 19 and 30 of T. 71, R. 12; and between Secs. 23 and 26, and 22 and 27, of T. 70, R. 11, showing the whole length of those lines precisely as though no obstacle existed to obstruct the survey thereof. You will observe by the tablets of the said survey, in your possession, that the section lines above named are only partially run—leaving it impossible to decide: 1st, whether your meander corners upon the same are in line with the adjacent section corners upon the east and west; 2d, whether the $\frac{1}{4}$ sec. corners are in the centre of those lines; and 3d, the width of the river at the points where it is crossed by those lines.

The earliest possible return of the above is required that the progress of your work in my office may not be delayed.

Very Respectfully, Your Obt. Servt.,

PAUL C. JEFFRIES, ESQ., *U. S. Dep. Sur.,
Ottumwa, Wappello Co., I. T.*

GEO. W. JONES,

P. S. You will also remeasure that part of the line between Secs. 13 and 14 of T. 71, R. 13, between the last meander corner on the right bank of Des Moines River and the corner of Secs. 11, 12, 13 and 14, and make return of the same as above required.

SURVEYOR GENERAL'S OFFICE,

Dubuque, January 22, 1847.³¹

SIR:

I have this day received, from the Acting Commissioner of the General Land Office, a communication (a copy of which is enclosed) advising me: for reasons given, that your account, for examining and reporting the surveys executed by Barrows and Vandever, respectively, is suspended in the office of the First Comptroller of the Treasury.

With the view of obviating the objections of the Comptroller, it will be necessary for you to procure the vouchers of your assistants and that those vouchers should specify the amount of service rendered in the examination of each of said contracts, and that you accompany the said vouchers to this office with your own, stating the whole time consumed by you in your examination of each of the said districts, the whole amount of work performed or number of miles examined with a detail of your incidental expenses upon each.

These several vouchers will be embodied in a new account, over your signature now in this office, and transmitted to the General Land Office as directed by the communication of the acting Commissioner.

JOSEPH MOORHEAD, ESQ., *U. S. Dep. Surveyor,
Davenport, Iowa.*

GEO. W. JONES,
Surveyor Genl.

SURVEYOR GENERAL'S OFFICE,

Dubuque, Feby. 27 1847.³²

SIR:

I have the honor to transmit herewith copies of the original plats of five townships, showing the resurvey by Paul C. Jeffries, dep. sur., pursuant to his con-

³¹ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 104-5, January 22, 1847.

³² Secy of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 118, Feby. 27, 1847.

tract therefor of April 21, 1846, of the work executed by Willard Barrows, deputy surveyor, under his contract of Sept. 4, 1843, viz.:

Towns. 70 north of Ranges 11 and 12 west of the 5th prin. mer., Iowa

Towns. 71 north of Ranges 11, 12 and 13 west of the 5th prin. mer., Iowa

Also Mr. Jeffries account in full, for the execution of the said resurvey, to the amount of which I have to request you to make a requisition in his favor. He desires a draft on the Receiver of Public moneys at Fairfield, State of Iowa sent to him through the Post Office at Ottumwa, Wappello County, State of Iowa.

Owing to the extremely difficult and embarrassing nature of this work and the severe illness of the Contractor during a great portion of the summer season the field notes thereof were not returned until the 19th of Dec. last; since when corrections to a considerable extent have been found requisite, the field notes of which reached this office on the 18th instant.

I am very respectfully, Your Obt. Servt.,

COL. JAMES H. PIPER, *Act. Commr. of Genl. L. O.*
Washington City, D. C.

GEO. W. JONES,
Surveyor General.

P. S. Mr. Barrows and his sureties refuse to settle the said account of Mr. Jeffries.

SURVEYOR GENERAL'S OFFICE,

*Dubuque, Febr'y. 27, 1847.*³³

SIR:

With this you will receive copies of the original plats of the resurvey of five townships, situated west of the 5th prin. Mer. in the State of Iowa, viz.:

71 north of Ranges 11, 12, and 13 of of

70 north of Ranges 11 and 12

Please to acknowledge the receipt of the same.

Very Respectfully, Your Obt. Servt.,

BERNHART HENN, ESQ., *Register of L. O.,*
Fairfield, Iowa.

GEO. W. JONES,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,

*Dubuque, March 5, 1847.*³⁴

I have the honor in compliance with your communication of the 6th of January last, to forward herewith, the account of Joseph Moorehead for his examination of the surveys executed by William Vandever and Willard Barrows under their respective contracts. This account is made to conform, as nearly as possible to the requirements of your said communication, which were:

SIR:

1st, to furnish vouchers of actual disbursements.

2d, that the work done should be stated in detail and a reasonable appropriate charge made therefore.

3d, that the account specify the amount chargeable to the surveys of the aforesaid contractors, respectively.

The first requirement is fully complied with in his own and the vouchers of his assistants. The nature and location of the work rendered it necessary for him to live in camp and be provided with a team and to furnish himself and party with provisions and his team with food.

³³ Secy. of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 118, Febr'y. 27, 1847.

³⁴ Secy of State of Iowa, Land Office, Surv. Gen. Letter Book C: p. 122-3, March 5, 1847.

The second requirement is certainly complied with so far as the justness of the charge is concerned; for there is not a deputy in my service, competent to the execution of the work of this character whose services can be had at a less per diem pay, while the field notes of his examination are convincing proof that no time was squandered. The field notes of his examination of Vandever's work, testify to the actual resurvey so far as course and measurement go, of 87 miles, and those of Barrows to the actual resurvey of 81 miles. This alone at \$4 per mile—a rate lower than it could have been contracted for—would exceed the amount of his account. But when it is remembered that in work of this character, a great portion of the surveyor's time, is occupied in examining his own work in cases of great discrepancy between his own and the original lines and much time lost in searching for corners which may or may not exist, it appears to me that his account for his own services, cannot but be considered reasonable in the extreme.

In view of the above facts I have earnestly, but respectfully to request, that his account be released from suspension.

He prefers a draft upon St. Louis, Mo., sent to him through the post office at Davenport, Iowa.

I am very respectfully, Your Obt. Servt.,

COL. JAMES H. PIPER, *Acting Commr. Genl. L. O.,*
Washington City, D. C.

GEO. W. JONES,
Surveyor General.

Chapter VI

RESTORATION OF LOST AND OBLITERATED CORNERS

The problems which arise in this Middle West area in land surveying are those which naturally follow attempts to retrace surveys made a century or so ago under a remarkable system inadequately executed.

The laws and rules under which surveys were made must govern the acts of the surveyor of today who is trying to restore the old survey. It is therefore important to know the instructions under which the surveys were made. It is also necessary for the competent surveyor to know the laws in force at the time of the surveys and the purchase of lands surveyed thereunder. Furthermore, it is a part of the fundamental education of the practical land surveyor to be familiar with the judicial decisions relating to surveys.

There have been gradual changes in the instructions. There have been changes in the laws and there have been variations in the legal decisions handed down during the development of the law and practice relating to land surveying.

The Land Office circular, No. 1452, *Restoration of Lost and Obliterated Corners*, if read with care and discrimination will prepare the earnest student for most of the pitfalls which lurk in unsuspected parts of the land surveyor's practice.

The Michigan committee report of 1885 which appeared in 1891 as Hodgman's surveying manual contains the result of five years' work by a committee of active civil engineers and surveyors. Mr. Hodgman was the committee chairman. In his preface he states:

The perplexing questions which meet the surveyor are not questions of mathematical calculation or of the use of instruments. On the contrary they are for the most part, questions of how to apply the principles of common law and statutory enactment to the location of boundary lines. These are the controlling considerations in all resurveys; a class which comprises probably nine-tenths of all the land surveys which are made. Scarcely an allusion to these principles was to be found in any of the works on surveying extant. In 1880 the Michigan Association of Surveyors and Civil Engineers appointed a committee on manual, to prepare a work which would give authoritative answers to the many questions of practice which came up before them. The committee spent their spare time for five years in an exhaustive research of the laws and the decisions of the highest courts in the land. The chairman attended the meeting of various surveyors' associations and collected

their reports. From the great mass of material thus collected, the leading points in the laws of the United States and the decisions of the courts of last resort were selected, covering, as nearly as possible, all the points relative to surveys and boundary lines which arise in the land surveyor's practice. The legal decisions quoted are a part of the Common law of the whole country and apply wherever the Common law prevails, whether in Canada, England, or the United States. It should be remembered, however, that different courts do not always expound the law alike, and sometimes a court reverses its own decisions. Whenever there appears to be a conflict of authorities, the Surveyor should follow the latest decisions in his own State if there be any. It seemed to the committee to be important that the student in land surveying should be taught these things; that they were as necessary for the beginner to know as for the older practitioner, and hence might properly be incorporated in the text book.

Professor J. B. Johnson's book, *Surveying*, which came out in 1886 contained an appendix on the Judicial Functions of the Surveyor by Justice Cooley which has not been improved upon since. Professor Johnson shows the author's scorn for land surveying in these words, "In treating of the trite subject of Land Surveying . . .," and "The subject of surveying, both in the books and in the schools has been too largely confined to Land Surveying."

The practicing surveyor would do well to secure Patton on *Land Titles* and read the cases referred to there on nearly every point of surveying practice. The case, *Moreland vs. Page*, 2 Iowa 139, is a classic. It is extensively quoted by Clark.

Many erroneous ideas have been held by surveyors at various times in spite of ample authority covering the correct procedures. In 1856, Thomas A. Hendricks, then Commissioner of the General Land Office, gave the following incorrect rule for locating the center of a section: "Run a true line from the quarter-section corner on the east boundary, to that in the west boundary, and at the equidistance between them establish the corner for the center of the section." This was in harmony with an opinion previously given by the Surveyor General of Missouri and Illinois, and was very generally followed by the surveyors in those states. This rule has not been sustained by the courts, nor by any other ruling of the Land Office, so far as we can learn. It was expressly overruled by the Secretary of the Interior in 1868. Many county surveyors followed the erroneous instruction quoted above.

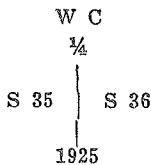
Professor Raymond, in his book, gave another incorrect rule for establishment of the center of a section. He directed that the north and south quarter line be divided in the middle.

Every land surveyor has access to some good law library, where the state code, the Federal statutes, and the court decisions are available. A few hours a month spent reading the fascinating material contained in a good law library will soon convert a confirmed golfer into a surveying bookworm. The court decisions which are puzzling because they upset sound previous practice are usually traceable to some clever lawyer's

brief in which a part of a rule is quoted which seems to fit the case when the whole rule which should apply would give a reverse meaning. Such bad decisions get into the records when a poor lawyer and a poorly equipped surveyor are found on the losing side. The clever lawyer rarely relies upon a surveyor for his material but searches the cases for precedent which can be twisted his way without disclosure to the legal and technical counsel on the opposition. In *Hootman vs. Hootman*, 133 Iowa 632, the court states that while the excess or deficiency is placed in the north and west tier of sections in a township this does not apply to the quarter quarters in such tiers and then he quotes a rule for the placing of corners of half and quarter sections midway between existing corners when not originally set by the government. Of course, he was wrong but a lawyer and a surveyor of the opposing side permitted the error to go unchallenged.

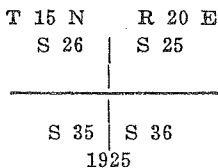
Text book writers have improved their books from one edition to another until a land surveyor can hardly get the type of information he needs, to learn what to expect in the field when retracing a survey in the Middle West. I quote a set of specimen field notes from a recent book:

- Chains I commence the subdivisional survey at the cor. of secs. 1, 2, 35, and 36, on the S. bdy. of the Tp., which is a sandstone, 8x6x5 ins. above ground, firmly set, marked and witnessed as described in the official record.
 N. 0°01' W., bet. secs. 35 and 36.
 Over level bottom land.
 20.00 Enter scattering ash and cottonwood.
 29.30 SE. cor. of field; leave scattering timber.
 31.50 A settler's cabin bears West, 6.00 chs. dist.
 39.50 Set an iron post, 3 ft. long, 1 in. diam., 27 ins. in the ground, for witness ¼ sec. cor., with brass cap mkd.



- dig pits,
 18x18x12 ins.; N. and S. of post, 3 ft. dist.
 Enter an ungraded road, bears N. along section line, and E. to Mound City.
 40.00 True point for ¼ sec. cor. falls in road.
 Deposit a sandstone, 14x8x5 ins., mkd. X, 24 ins. in the ground.
 50.50 NE. cor. of field.
 51.50 Road to Bozeman bears N. 70° W.
 57.50 Enter heavy ash and cottonwood, and dense undergrowth, bears N. 54° E and S. 54° W.
 72.00 Leave undergrowth.

80.00 Set an iron post, 3 ft. long, 2 ins. diam. 27 ins. in the ground, for cor. secs. 25, 26, 35, and 36, with brass cap mkd.



from which

A green ash, 13 ins. diam., bears N. 22° E., 26 lks. dist. mkd. T 15 N R 20
E S 25 B T.

A green ash, 23 ins. diam., bears S. 71¼° E., 37 lks. dist. mkd. T 15 N R 20
E S 36 B T.

A green ash, 17 ins. diam., bears S. 65° W., 41 lks. dist. mkd. T 15 N R 20
E S 35 B T.

A cottonwood, 13 ins. diam., bears N. 21¼° W., 36 lks. dist. mkd. T 15 N
R 20 E S 26 B T.

Land, level bottom; northern 20 chs. subject to overflow. Soil, alluvial, silt
and loam; 1st rate.

Timber, green ash and cottonwood; undergrowth, willow.

The above set of notes is probably quoted from a recent survey such as one made since 1910. Compare this with the actual notes quoted below for three surveys in 1840:

List of hands employed in the execution of the following Surveys:

- Andrew Leonard—Hind Chainman
- Albert W. Brush—For Chainman
- Peter B. Beer—Flagman
- Thomas Tayne—Axeman.

At a compensation of \$22.50 per month and preparatory to the operations in the field—I administered the oaths appropriate to the several employees. The oaths follow which were sworn to and subscribed before Geo. W. Harrison, Deputy Surveyor.

July 9, 1840

By an observation taken on the South side of Section 34 T 44 N R 11 E, 3d principal Meridian I ascertained the Variation of the Needle to be 3° 40' E. but to enable me more correctly to make the subdivision of this Township (T 44 N R 11 E) I retrace the South half mile on the East boundary of Section 36 T 44 N. R 11 E. and find the East boundary of this Township to have been run at a variation of 5° 35' E. I therefore adjust my compass to that variation and having adjusted my chain to a correct length I then run . . .

- North* Between Sections 35 & 36, Township 44 N. R 11 E. 9d. P. M.
- 13 93 White Oak 12 inches in diameter.
 - 32 20 Burr Oak 20 inches diameter.
 - 40 00 Set a post for quarter Section corner from which a Black Oak 15 inches diameter bears N. 72° W. 108 links and a White Oak 18 in. diam. bears N. 48° E. 130 links distant.
 - 60 08 Black Oak 10 inches diameter.

- 80 00 Set a post for corner to Sections 25, 26, 35 and 36, from which a White Oak 16 inches diameter bears N. 16° W. 14 links distant—an Ironwood 10 inches diameter bears S. 54° W. 33 links—a Red Oak 18 inches diameter N. 81° E. 33 links and a White Oak 14 inches diameter bears S. 61° E. 53 links distant. Land level and wet. Soil thin—Timber White, Burr, and Black Oak, Hickory, & c.
- East* On a Random line between Sections 25 & 36 Township 44 N R 11 E. 3d P.M.
- 40 00 Set a post for Temporary quarter Sec. cor.
- 79 87 Intersected East boundary of the Township 13 links North of corner to section 25 and 36 on the Range line and from which corner I run . . .
- West* On a true line between Sections 25 & 36 Township 44 North Range 11 East of the 3d P.M.
- 39 93½ Set a post for quarter Section corner from which a White Oak 18 inches diameter bears S. 25° . . . links and a white oak 12 inches diameter N. 2° E. 20 links distant.
- 79 87 Corner to Sections 25, 26, 35 & 36.
Land level, Soil thin—Timber White, Burr and Black Oak and Hickory.

Or the following:

T 78 N R 3 E 5th Mer.

- North* Between Sections 5 & 6
- 40-00 Set qr section post and made mound.
- 80-73 Intersect N. boundary 8.42 W. of cor. of Sects. 31 & 32 T. 79 N. R 3 E.
Set post and Made Mound.
Land Rolling, 2d Rate
Prairie.

Or this description:

- "*North* Between Sections 17 & 18 T 44 N. R 11 E 3d.
- 30 00 left Timber and Enter Prairie.
- 40 00 Set a Post and raised a mound for quarter section corner.
- 80 00 Deposited 2 quarts of charcoal 3 inches below the natural surface of the Earth over which raised a mound in which set a post for corner to Sections 7, 8, 17 & 18. Land level—Soil good—with Red, Burr & White Oak Timber on 1st ½ mile."

The field notes are quoted at length above to show how difficult it really is to learn from a textbook what to expect when going into the field to retrace a land survey made perhaps 100 years ago.

What is more to the point, copies of the original field notes are frequently not available to the practicing surveyor. In many counties the notes have been carried away. In many, an abstract only is on file which gives only distances and bearing trees. The abstract did not give line trees or stations of natural objects.

This book is intended as an inspiration to better legal and practical preparation on the part of those who make land surveys in the Middle West and those who teach surveying. The material contained herein is not available in the principal current text books.

The quotations from Judge Cooley and the Hodgman report are so well written that no revision is deemed proper. They outline procedures which, if used by the surveyor on retracements, will help him arrive at proper solutions of his problems and will aid in preserving valuable land title evidence which ordinary ignorance and carelessness will destroy.

The surveyor who has access to these original instructions will, in preparation for resurveys, note the date of the original survey, following the procedure suggested in the preface determine what general instructions, what special instructions and what special examinations and resurveys, if any, are applicable to the area.

Then working from this information and that in the original notes, as well as that to be found upon the official plats, he will outline his plan of operation.

With the aerial survey photographs as an extra aid today, and keeping in mind the long line of resurveys probably intervening, the surveyor will try to piece together a lot of conflicting material which will make the resurvey true and reliable.

The sort of aids to be developed from a preliminary study of this kind is varied. The actual post recorded in the original notes is the best possible evidence of location. But a study may show that there is no probability that the original post remains after the lapse of so many years.

The time of year of the original survey is important. For example, if the survey were run in winter, in northern latitudes, probably no original stake remains. The stake was probably driven through snow to refusal in frozen ground. In the spring the snow would melt and the stake would fall over and be destroyed in the first grass or brush fire. Under the same conditions the blazes on the bearing and other marked trees will be high on the trunks indicating depth of snow at the time of the survey.

In prairie regions the surveys were generally conducted in the summer time to facilitate and simplify the camping problems and the digging of pits and building of mounds. Stakes were actually set in summer but usually undersized. Careful search will uncover many of them.

In areas containing meanderable lakes and streams, the section and township lines were frequently run in the summer and the meandering left until winter when ice made meandering simple. Winter surveys were responsible for many erroneous reports as to soil conditions. A township in Northern Minnesota surveyed between Christmas and New Years in 1883 showed sandy soil for example in the timber, when in fact the trees stood upon solid igneous rock ledges and there was barely enough soil for the tree roots. Fancy setting corner posts under such conditions. Of course, any posts set were driven through snow to solid rock. No such

posts remain today but the bearing trees are nearly all available although many are dead as the result of fire and scanty soil support.

In the quotations from the Hodgman report, many suggestions appear to assist the surveyors in the interpretation of original surveys. These suggestions should be read again and again in preparation for corner searches.

The General Land Office Circular No. 1452 is so necessary to the proper understanding of the surveyor's problems that extensive extracts applicable to work in the Middle West are included in this chapter by permission of the Commissioner. Many helpful suggestions are given under the head of "Retracements" in articles 1054 to 1080.

Extracts from an address, *The Judicial Functions of Surveyors*, by Justice Cooley of the Michigan Supreme Court:

When a man has had a training in one of the exact sciences, where every problem within its purview is supposed to be susceptible to accurate solution, he is likely to be not a little impatient when he is told that under some circumstances he must recognize inaccuracies, and govern his action by facts which lead him away from the results which theoretically he ought to reach. Observation warrants us in saying that this remark may frequently be made of surveyors.

In the State of Michigan all our lands are supposed to have been surveyed once or more, and permanent monuments fixed to determine the boundaries of those who should become proprietors. The United States, as original owner, caused them all to be surveyed once by sworn officers, and as the plan of subdivision was simple, and was uniform over a large extent of territory, there should have been, with due care, few or no mistakes; and long rows of monuments should have been perfect guides to the place of anyone that chanced to be missing. The truth unfortunately is that the lines were very carelessly run, the monuments inaccurately placed; and, as the recorded witnesses to these were many times wanting in permanency, it is often the case that when the monument was not correctly placed it is impossible to determine by the record, with the aid of anything on the ground, where it was located. The incorrect record of course becomes worse than useless when the witnesses it refers to have disappeared.

It is, perhaps, generally supposed that our town plats were more accurately surveyed, as indeed they should have been, for in general there can have been no difficulty in making them sufficiently perfect for all practical purposes. Many of them, however, were laid out in the woods; some of them by proprietors themselves, without either chain or compass, and some by imperfectly trained surveyors, who, when land was cheap, did not appreciate the importance of having correct lines to determine boundaries when land should become dear. The fact probably is that town surveys are quite as inaccurate as those made under the authority of the general government.

It is now upwards of fifty years since a major part of the public surveys in what is now the State of Michigan were made under authority of the United States. Of the lands south of Lansing, it is now forty years since the major part were sold and the work of improvement begun. A generation has passed away since they were converted into cultivated farms, and few if any of the original corner and quarter stakes now remain.

The corner and quarter stakes were often nothing but green sticks driven into the ground. Stones might be put around or over these if they were handy, but often they were not, and the witness trees must be relied upon after the stake was gone. Too often the first settlers were careless in fixing their lines with accuracy while monuments remained, and an irregular brush fence, or something equally untrustworthy, may have been relied upon to keep in mind where the blazed line once was. A fire running through this might sweep it away, and if nothing were substituted in its place, the adjoining proprietors might in a few years be found disputing over their lines and perhaps rushing into litigation, as soon as they had occasion to cultivate the land along the boundary.

If now the disputing parties call in a surveyor, it is not likely that anyone summoned would doubt or question that his duty was to find, if possible, the place of the original stakes which determined the boundary line between the proprietors. However erroneous may have been the original survey, the monuments that were set must nevertheless govern, even though the effect be to make one half-quarter section ninety acres and the one adjoining but seventy; for parties buy or are supposed to buy in reference to those monuments, and are entitled to what is within their lines, and no more, be it more or less. *McIver v. Walker*, 4 Wheaton Reports 444; *Land Co. v. Saunders*, 103 U. S. Reports 316; *Cottingham v. Parr*, 93 Ill. Reports 233; *Bunton v. Cardwell*, 53 Texas Reports 408; *Watson v. Jones*, 85 Penn. Reports 117.

While the witness trees remain there can generally be no difficulty in determining the locality of the stakes. When the witness trees are gone, so that there is no longer record evidence of the monuments, it is remarkable how many there are who mistake altogether the duty that now devolves upon the surveyor. It is by no means uncommon that we find men whose theoretical education is supposed to make them experts who think that when the monuments are gone, the only thing to be done is to place new monuments where the old ones should have been, and where they would have been if placed correctly. This is a serious mistake. The problem is now the same that it was before; to ascertain, by the best lights of which the case admits, where the original lines were. The mistake above alluded to is supposed to have found expression in our legislation; though it is possible that the real intent of the case to which we shall refer is not what is commonly supposed.

An act passed in 1869, Compiled Laws, p. 593, amending the laws respecting the duties and powers of county surveyors, after providing for the case of corners which can be identified by the original field notes or other unquestionable testimony, direct as follows:

Second. Extinct interior-section corners must be re-established at the intersection of two right lines joining the nearest known points on the original section lines east and west and north and south of it.

Third. Any extinct quarter-section corner, except on fractional lines, must be re-established equidistant and in a right line between the section corners; in all other cases at its proportionate distance between the nearest original corners on the same line.

The corners thus determined, the surveyors are required to perpetuate by noting bearing trees when timber is near.

To estimate properly this legislation, we must start with the admitted and unquestionable fact that each purchaser from the government bought such land as was within the original boundaries, and unquestionably owned it up to the time when the monuments became extinct. If the monument was set for an interior-

section corner, but did not happen to be "at the intersection of the two right lines joining the nearest known points on the original section lines east and west and north and south of it," it nevertheless determined the extent of his possessions, and he gained or lost according as the mistake did or did not favor him.

It will probably be admitted that no man loses title to his land or any part thereof merely because the evidences become lost or uncertain. It may become more difficult for him to establish it as against an adverse claimant, but theoretically the right remains; and it remains as a potential fact so long as he can present better evidence than any other person. And it may often happen that, notwithstanding the loss of all trace of a section corner or quarter stake, there will still be evidence from which any surveyor will be able to determine with almost absolute certainty where the original boundary was between the government subdivisions.

There are two senses in which the word extinct may be used in this connection; one of the sense of physical disappearance; the other the sense of loss of all reliable evidence. If the statute speaks of extinct corners in the former sense, it is plain that a serious mistake was made in supposing that surveyors could be clothed with authority to establish new corners by an arbitrary rule in such cases. As well might the statute declare that if a man lost his deed he shall lose his land altogether.

But if by extinct corner is meant one in respect to the actual location of which all reliable evidence is lost, then the following remarks are pertinent:

1. There would undoubtedly be a presumption in such a case that the corner was correctly fixed by the government surveyor where the field notes indicated it to be.

2. But this is only a presumption, and may be overcome by any satisfactory evidence showing that in fact it was placed elsewhere.

3. No statute can confer upon a county surveyor the power to "establish" corners, and thereby bind the parties concerned. Nor is this a question merely of conflict between state and federal law; it is a question of property right. The original surveys must govern, and the laws under which they were made must govern, because the land was bought in reference to them; and any legislation, whether state or federal, that should have the effect to change these, would be inoperative, because disturbing vested rights.

4. In any case of disputed lines, unless the parties concerned settle the controversy by agreement, the determination of it is necessarily a judicial act, and it must proceed upon evidence, and give full opportunity for a hearing. No arbitrary rules of survey or of evidence can be laid down whereby it can be adjudged.

The general duty of a surveyor in such a case is plain enough. He is not to assume that a monument is lost until after he has thoroughly sifted the evidence and found himself unable to trace it. Even then he should hesitate long before doing anything to the disturbance of settled possessions. Occupation, especially if long continued, often affords very satisfactory evidence of the original boundary when no other is attainable; and the surveyor should inquire when it originated, how, and why the lines were then located as they were, and whether a claim of title has always accompanied the possession, and give all the facts due force as evidence. Unfortunately, it is known that surveyors sometimes, in supposed obedience to the state statute, disregard all evidences of occupation and claim of title, and plunge whole neighborhoods into quarrels and litigation by assuming to "establish" cor-

ners at points with which the previous occupation cannot harmonize. It is often the case that where one or more corners are found to be extinct, all parties concerned have acquiesced in lines which were traced by the guidance of some other corner or landmark, which may or may not have been trustworthy; but to bring these lines into discredit when the people concerned do not question them not only breeds trouble in the neighborhood, but it must often subject the surveyor himself to annoyance and perhaps discredit, since in a legal controversy the law as well as common sense must declare that a supposed boundary line long acquiesced in is better evidence of where the real line should be than any survey made after the original monuments have disappeared. *Stewart v. Carleton*, 31 Mich. Reports 270; *Diehl v. Zanger*, 39 Mich. Reports 601; *Dupont v. Starring*, 42 Mich. Reports 492. And county surveyors, no more than any others, can conclude parties by their surveys.

The mischiefs of overlooking the facts of possession most often appear in cities and villages. In towns the block and lot stakes soon disappear; there are no witness trees and no monuments to govern except such as have been put in their places, or where their places were supposed to be. The streets are likely to be soon marked off by fences, and the lots in a block will be measured off from these, without looking farther. Now it may perhaps be known in a particular case that a certain monument still remaining was the starting point in the original survey of the town plat; or a surveyor settling in a town may take some central point as the point of departure in his surveys, and assuming the original plat to be accurate, he will then undertake to find all streets and all lots by course and distance according to the plat, measuring and estimating from his point of departure. This procedure might unsettle every line and every monument existing by acquiescence in the town; it would be very likely to change the lines of streets, and raise controversies everywhere. Yet this is what is sometimes done; the surveyor himself being the first person to raise the disturbing questions.

Suppose, for example, a particular village street has been located by acquiescence and use for many years, and the proprietors in a certain block have laid off their lots in reference to this practical location. Two lot owners quarrel, and one of them calls in a surveyor that he may be sure that his neighbor shall not get an inch of land from him. This surveyor undertakes to make his survey accurate, whether the original was, or not, and the first result is, he notifies the lot owners that there is an error in the street line, and that all fences should be moved, say, one foot to the east. Perhaps he goes on to drive stakes through the block according to this conclusion. Of course, if he is right in doing this all lines in the village will be unsettled; but we will limit our attention to the single block. It is not likely that the lot owners will allow the new survey to unsettle their possessions, but there is always a probability of finding someone disposed to do so. We shall then have a lawsuit; and with what result?

It is a common error that lines do not become fixed by acquiescence in a less time than twenty years. In fact, by statute, road lines may become conclusively fixed in ten years; and there is no particular time that shall be required to conclude private owners, where it appears that they have accepted a particular line as their boundary, and all concerned have cultivated and claimed up to it. *McNamara v. Seaton*, 82 Ill. Reports 498; *Bunce v. Bidwell*, 43 Mich. Reports 542. Public policy requires that such lines be not lightly disturbed, or disturbed at all after the lapse of any considerable time. The litigant, therefore, who in such a case pins his

faith on the surveyor, is likely to suffer for his reliance, and the surveyor himself to be mortified by a result that seems to impeach his judgment.

Of course nothing in what has been said can require a surveyor to conceal his own judgment, or to report the facts one way when he believes them to be another. He has no right to mislead, and he may rightfully express his opinion that an original monument was at one place, when at the same time he is satisfied that acquiescence has fixed the right of parties as if it were at another. But he would do mischief if he were to attempt to "establish" monuments which he knew would tend to disturb settled rights; the farthest he has a right to go, as an officer of the law, is to express his opinion where the monument should be, at the same time that he imparts the information to those who employ him, and who might otherwise be misled, that the same authority that makes him an officer and entrusts him to make surveys, also allows parties to settle their own boundary lines and considers acquiescence in a particular line or monument, for any considerable period, as strong, if not conclusive, evidence of such settlement. The peace of the community absolutely requires this rule. *Joyce v. Williams*, 26 Mich. Reports 332. It is not long since that, in one of the leading cities of the state, an attempt was made to move houses two or three rods into a street, on the ground that a survey under which the street had been located for many years had been found on more recent survey to be erroneous.

From the foregoing it will appear that the duty of the surveyor where boundaries are in dispute must be varied by the circumstances. 1. He is to search for original monuments, or for the places where they were originally located, and allow these to control if he finds them, unless he has reason to believe that agreements of the parties, express or implied, have rendered them unimportant. By monuments in the case of government surveys we mean of course the corner and quarter stakes: blazed lines or marked trees on the lines are not monuments; they are merely guides or finger-posts, if we may use the expression, to inform us with more or less accuracy where the monuments may be found. 2. If the original monuments are no longer discoverable, the question of location becomes one of evidence merely. It is merely idle for any state statute to direct a surveyor to locate or "establish" a corner, as the place of the original monument, according to some inflexible rule. The surveyor, on the other hand, must inquire into all the facts; giving due prominence to the acts of parties concerned, and always keeping in mind, first, that neither his opinion nor his survey can be conclusive upon parties concerned; second, that courts and juries may be required to follow after the surveyor over the same ground, and that it is exceedingly desirable that he govern his action by the same lights and rules that will govern theirs. On town plats if a surplus or deficiency appears in a block, when the actual boundaries are compared with the original figures, and there is no evidence to fix the exact location of the stakes which marked the division into lots, the rule of common sense and of law is that the surplus or deficiency is to be apportioned between the lots, on an assumption that the error extended alike to all parts of the block. *O'Brien v. McGrane*, 29 Wis. Reports 446; *Quinnin v. Reivers*, 46 Mich. Reports 305.

It is always possible when corners are extinct that the surveyor may usefully act as a mediator between parties, and assist in preventing legal controversies by settling doubtful lines. Unless he is made for this purpose an arbitrator by legal submission, the parties, of course, even if they consent to follow his judgment, cannot, on the basis of mere consent, be compelled to do so; but if he brings about an

agreement, and they carry it into effect by actually conforming their occupation to his lines, the action will conclude them. Of course it is desirable that all such agreements be reduced to writing; but this is not absolutely indispensable if they are carried into effect without.

I have thus indicated a few of the questions with which surveyors may now and then have occasion to deal, and to which they should bring good sense and sound judgment. Surveyors are not and cannot be judicial officers, but in a great many cases they act in a quasi-judicial capacity with the acquiescence of parties concerned; and it is important for them to know by what rules they are to be guided in the discharge of their judicial functions. What I have said cannot contribute much to their enlightenment, but I trust will not be wholly without value.

Extracts from a paper by F. Hodgman:

It often happens that one surveyor will fail utterly in finding the marks of an original corner, while another, more apt in discovering the evidences, will strike upon it readily. These evidences are of various kinds, some of which it is the principal aim of this paper to discuss.

I take it that the best possible evidence of the location of an original corner is the monument fixed at that corner when the survey was made (*vide McClintock v. Rogers*, 11 Illinois 279; also *Gratz v. Hoover*, 16 Penn. State Rep. 232; 16 Ga. 141). After this come witness trees, fences, distant corners of the same survey and the testimony of persons.

All these latter kinds of evidence only go to corroborate the first, and may take the place of the first only so far as they may any of them seem to have weight in any particular case.

Many of the corners of the United States survey were marked by planting a post or stake in the ground. These stakes had notches cut in them, were squared at the top, and set in certain regular positions in the ground. These marks tended to distinguish them from other stakes that might chance to be driven in the ground for any purpose. When trees stood conveniently near, two of them were marked, and their directions and distances from the corner were given in the field notes. When no trees were near, a mound was sometimes raised about the post.

Some of the posts have been entirely destroyed, but the bottoms of a great many of them still remain, much decayed, but plainly visible when the surface earth is removed from about them.

To find them, careful manipulation is required. The surveyor first determines as nearly as he can, from extrinsic evidence, the point where the corner post should be looked for. He then, with a shovel, spade or hoe, carefully removes the surface earth, a little at a time, being particular not to strike deep at first into the earth at the level as it was when the stake was set. The best and sometimes the sole evidence of a corner has often been destroyed by an ignorant person striking deep into the ground, expecting to find a sound stake, and casting away the decayed wood and filling up the hole of a rotten one without observing it. If the surveyor is looking in the right place, and the earth has not been previously removed, he will soon come upon the object of his search; but he must be careful lest he mistake it. If the soil is a stiff clay, packed hard, as in a road, or covered with a sward, he will presently find a hole of the size and shape of the stake which made it. This hole will contain the decayed wood of the stake, and a marking pin may be readily thrust to the bottom. By carefully scraping or cutting away

the earth from the top, or cutting down at one side of the hole, its size, shape and direction may be readily discovered. Thus it often happens that the position of a corner is as well and satisfactorily marked by the decayed stake as it was by the sound one. It sometimes happens that new stakes have been driven beside the original stake, so that several different ones will be found by the surveyor. He will seldom have any difficulty in deciding which is the true corner by its appearance, for the first stake will be more completely decayed and of a darker color. As a rule, it will be driven deeper and straighter down than the newer stakes. Then, too, the original stakes were generally round, being cut from whole timber, while the later ones were often cut from rails or other split timber, the sharp corners of which can be readily seen in the holes made by them.

There is thus in the appearance of the stakes of the United States survey such peculiarities and such likeness to each other, even when far gone in decay, that the experienced surveyor will be impressed with the appearance of truthfulness pervading them, and will seldom be deceived. This appearance of truthfulness about a stake, which to a surveyor is one of the most valuable parts of the testimony of these silent witnesses, is something that courts and juries can seldom take cognizance of, because, first, they speak in a language that courts and juries do not understand, and secondly, the evidence is itself destroyed by the surveyor in the taking, and does not come before the court or jury in all its freshness, truth and purity. These decayed stakes may be best observed in the light-colored subsoil after the black surface mould has been removed. In sandy soil, the cavity made by the stake is gradually filled by the falling sand as the wood decays, but rotten wood discolors the sand so that where it has been disturbed the position, size and shape of the stake may be readily traced. In the black muck of our marshes and river bottoms it is more difficult to distinguish the stake near the surface, but as the ground is soft and wet, the stakes were driven deep, and we may sometimes find in the wet, peaty subsoil the bottom of the stake so perfectly preserved that even the scratches made in the wood by nicks in axe are plainly to be seen. When the stakes are constantly wet, they do not decay.

Next we consider the bearing or witness trees. These are marked and their direction and distances noted, in order to assist in finding the corner posts set on the survey. These bearing trees are marked with a blaze and a notch near the ground on the side facing the corner. The measures were taken from this notch. At this time most of the living trees have grown to such an extent that only a scar remains in sight, to indicate the point where the notch was cut. In order to get at the notch, the superincumbent wood, which is in some cases a foot in thickness, will have to be cut away. It will not often be necessary to do this, as we can come sufficiently near the correct point to find the stake without it. But if the stake has been destroyed, or there are several stakes near, we shall need to be exact, and measure from the notch. If the tree has been cut down, and a sound stump remains, the marks will be easily exposed. Sometimes the mark is gone, but a part of the stump is left. At others the stump is gone, but a dish-like cavity remains in the earth to show where the tree once stood. We can almost always find under and around these cavities places where the large roots have penetrated the subsoil, and thus be able to locate within a foot or so the position of the bole of the tree when standing. In looking for a corner post, we may frequently assume for the time being that a certain stump or a cavity where a tree has stood was the stump or the place occupied by a bearing tree. If we then measure the required direction

and distance, and find a stake, we may reasonably conclude that our assumption was correct. Such assumptions are frequently of great assistance in finding corners. There may be, and I know there are cases, where the original corner stakes have been destroyed, and can be more nearly restored to their original position by measurements from old stump bottoms or holes in the ground than in any other way. But bearing trees, however good their condition, are by no means infallible witnesses as to the location of a corner. Mistakes in laying down their direction or distance, or both, are not rare. (See *McClintock v. Rogers*, 11 Illinois 279). A direction may be given as north instead of south, east instead of west, or vice versa. The limb may have been wrongly read 64° or 56°. The figures denoting the bearing may have been transposed in setting down, as 53 for 35. So, too, the chain may have been wrongly read, as 48 for 52, the links having been counted from the wrong end. Or they have counted from the wrong tag, as 48 for 38. Mistakes of the nature of these mentioned are common, so that in working from a bearing tree to find a corner, and not finding the stake at the place indicated in the notes, it will be well to test all these sources of error before giving up the search, for as I have said before, the post planted at the time of the original survey is the best evidence of the corner it was intended to indicate.

I next consider fences in their relation to corners. (*Potts v. Everhart*, 26 Penn. St. Rep., 493.) Whether any particular fence may be depended on to indicate the true line will depend on the particular circumstances attending that case. In a general and rough way, a fence will indicate to the surveyor where to begin looking for his corner. But the practice has been, and still is common, for the first settlers on a section to clear and fence beyond the line in order to have a clear place on which to set their permanent fence when they get ready to build it. Afterward they forget where the line is and set the new fence where the old one stood. Many fences, too, were set without any survey or any accurate knowledge where the line was and left there to await a convenient time to have the line established. So, too, where the land has been long settled and occupied, it is a common custom for adjoining land owners by consent to set the fence on one side of the true line, there to remain until they are ready to rebuild, the one party to have the use of the land for that time in consideration of clearing out and subduing the old fence row. The original parties frequently sell out or die, and the new owners have no knowledge of the agreement and suppose the fence to be on the true line. For these reasons, fences should be looked on with suspicion, unless corroborated by other evidence, and the surveyor should enquire pretty closely into the history of a fence before placing any great reliance on it to determine the position of a corner. It may be the best of evidence, or it may be utterly worthless.

It not unfrequently happens that there are no trustworthy marks near a corner to direct the surveyor in his search for the post or from which to replace it if it be destroyed. In these cases, he must visit the nearest corners he can find in each direction (varying with the circumstances whether it be section corner or quarter post he wishes to find or restore), go through the process of identification with each of them, and then make his point so that it will bear the same relation to these corners as did the original corner post. Many very intelligent gentlemen suppose that if the surveyor can but find one of the corners of the original United States survey he can readily determine the position of all the rest from it. They were never more mistaken in their lives. The continual change in the direction of the magnetic needle, the uncertainty as to what its direction was when any

particular line was run, the difference in the lengths of chains, and the difference in the men who use them, introduce so many elements of uncertainty into the operation as to render it one of little value, and not to be resorted to except in the absence of trustworthy evidence nearer at hand.

If it be a section corner you desire to find or replace, and have adjacent quarter posts in each direction to work from, you will not be likely on the one hand to fall more than a rod or two out of the way, and on the other hand will not be likely to come within a foot or two of the right place. This method will assist you in searching for the original stake, and if that be destroyed, and no better evidence presents itself, may be used to determine the point where the corner stake shall be placed. The chief difficulty in applying this method to determine corners arises from the fact that the measurements made on the original surveys were not uniform in length on different sections, and frequently not on different parts of the same section. I have measured sections 22 and 23 on a level prairie, along the line of highways, where no obstacles of any kind interfered to prevent accurate work. I took the greatest possible care in the chaining to have it as accurate as chain work can be done. On the north line of section 22 my chaining tallied exactly with that of the United States Survey, viz., 79.60. On the north line of section 23, my measure was 80.96, that of the United States survey, 80.40—a difference of 56 links. Fortunately, all the corners of the original survey on this two miles of line were well preserved, and the distance between quarter post and section corner was uniform on the same section in both sections. But suppose that a part of them had been lost, and it was required to restore the middle section corner (n. e. of 22) from the remaining ones. Omit all consideration of corners, north or south, and there remain four different solutions of the problem, depending on which corners were lost and which preserved. Of these different solutions, one would place the corner $9\frac{1}{2}$ links, one 14 links, one $18\frac{3}{8}$ links and one 28 links, all east of the true corner. This is not by any means an extreme instance, as I have observed discrepancies twice as great. It is given simply to show how unreliable is the evidence drawn from distant corners of the United States survey.

Lastly, I shall consider the evidence of living persons. (*Weaver v. Robinett*, 17 Missouri 459; *Chapman v. Twitchell*, 37 Maine 39; *Dagget v. Wiley*, 6 Florida 482; *Lewen v. Smith*, 7 Port. (Ala.) 428; *McCoy v. Galloway*, 3 Han. (Ohio) 283; and *Stover v. Freeman*, 6 Mass. 441.) Conceding all men to be equally honest in their evidence, there is a vast deal of difference among them with regard to their habits of observation and their ability to determine localities. Some have an exceedingly acute sense of locality, if we may so call it, and can determine very accurately the position of any object which they have been accustomed to see; while others seem to have little or no capacity on that sort. I have found many men who would describe accurately the sort of monument used to perpetuate a corner and who would tell you that they could put their foot on the very spot to look for it; but when the trial came I have found but few of them who could locate the point within several feet, unless they had some object near at hand to assist the memory, and even then they would frequently fail.

It may happen where a corner post has been destroyed, that its location can be more nearly determined by the testimony of persons who were familiar with it when standing and can testify to its relations to other objects in its vicinity, than in any other way. But the surveyor in receiving this testimony should ascertain as far as possible what are the habits of accurate observation and the memory of

localities possessed by the person testifying, in order to know how much weight to give his testimony.

EXTRACTS FROM CIRCULAR 1452
of the General Land Office on the
RESTORATION OF LOST OR OBLITERATED CORNERS

1006. The act of Congress approved September 21, 1918, entitled "An ^{Resurvey of pri-} act authorizing the resurvey or retracement of lands here- _{vately-owned lands.} tofore returned as surveyed public lands of the United States under certain conditions" provides authority for the resurvey by the Government of townships theretofore held to be ineligible for resurvey by reason of the disposals being in excess of fifty per centum of the total area thereof. And it provides—"that the Secretary of the Interior is authorized to make all necessary rules and regulations to carry this act into full force and effect." (40 Stat. 965.)

The act of 1918 may be invoked where the major portion of the area is in private ownership, where it is shown that the need for retracement and remonumentation is extensive, and especially if the work that is proposed may be beyond the scope of ordinary local practice. The act requires that the proportionate costs be borne by the landowners.

1007. Under the above mentioned laws, and in principle as well, it is required that no resurvey or retracement shall be so executed as to impair the bona fide rights or claims of any claimant, entryman, or owner of lands so affected.

Likewise in general practice, the surveyor should take precaution not to exercise unwarranted jurisdiction, nor to apply an arbitrary rule, and he should be careful to note the distinction between the rules for original surveys and those that relate to the retracement. The unfortunate disregard of these principles, and in some cases for acquired property rights, prompts the suggestions herein that are intended to help avoid possible oversights.

In unusual cases where the evidence of the survey can not be identified with ample certainty to enable the application of the regular rules the surveyor may submit questions to the Commissioner of the General Land Office, or to the proper public survey office.

ORIGINAL RECORDS

1008. The township plats furnish the basic representation of the surveys and the description of all areas therein. All title records with-

in the area of the former public domain are initiated from a Government grant or patent, with description referred to an official plat; the lands so entered are identified on the ground through the retracement, restoration, and maintenance of the official subdivisions.

The plats are developed from the field notes; both are permanently filed for reference purposes; all are accessible for examination, and copies may be secured.

1009. An opinion by the Department of the Interior relating to the importance or legal significance, of the plats and field notes (45 L. D. 330, 336) is set out as follows:

It has been repeatedly held by both State and Federal courts that plats and field notes referred to in patents may be resorted to for the purpose of determining the limits of the area that passed under such patents. In the case of *Cragin v. Powell* (128 U. S. 691, 696) the Supreme Court said:

"It is a well settled principle that when lands are granted according to an official plat of the survey of such lands, the plat, itself, with all its notes, lines, descriptions and landmarks, becomes as much a part of the grant or deed by which they were conveyed, and controls so far as limits are concerned, as if such descriptive features were written out upon the face of the deed or the grant itself."

1014. The basic Federal laws from which there have been derived the rules for the establishment of the original surveys and for necessary resurveys or retracements include the acts of Congress approved February 11, 1805 (2 Stat. 313); April 24, 1820 (3 Stat. 566); and April 5, 1832 (4 Stat. 503); the provisions are set out at length in the Manual.

1015. The rules for the restoration of lost corners have remained substantially the same since 1883, when first published as such,¹ all of them having been brought into harmony with the leading judicial opinions, and what has been regarded as the most approved surveying practice.

1017. The general rules, which are controlling upon the location of all lands that have been granted or patented, are summarized in the following paragraphs:

First. That the boundaries of the public lands, when approved and accepted, are unchangeable.

Second. That the original township, section, and quarter-section corners must stand as the true corners which they were intended to represent, whether in the place shown by the field notes or not.

Third. That quarter-quarter-section corners not established in the original survey shall be placed on the line connecting the section and quarter-section corners, and midway between them, except on the last half mile of section lines closing on the north and west boundaries of the

¹ Restoration of Lost or Obliterated Corners, and Subdivision of Sections, March 13, 1883, 1 L. D. 339; 2d edition 1 L. D. 671; revised October 16, 1896, 23 L. D. 361 revised June 1, 1909, 35 L. D. 1; reprinted in 1916; superseded herewith

township, or on the lines between fractional or irregular sections. (Secs. 1042, 1043, 1049, 1052.)

Fourth. That the center lines of a section are to be straight, running from the quarter-section corner on one boundary to the corresponding corner on the opposite boundary.

Fifth. That in a fractional section where no opposite corresponding quarter-section corner has been or can be established, the center line must be run from the proper quarter-section corner as nearly in a cardinal direction to the meander line, reservation, or other boundary of such fractional section, as due parallelism with the section boundaries will permit. (Secs. 1050, 1051, 1060.)

Sixth. That lost or obliterated corners are to be restored to their original locations whenever it is possible to do so.

Restoration of Lost or Obliterated Corners

1018. The rules for the restoration of lost corners are not to be applied until after the development of all evidence, both original and collateral, that may be found acceptable, though the methods of proportionate measurement will aid materially in the recovery of the evidence, and will indicate what the resulting locations may be as based upon the known control.

An existent corner is one whose position can be identified by verifying the evidence of the monument, or its accessories, by reference to the description that is contained in the field notes, or where the point can be located by an acceptable supplemental survey record, some physical evidence, or testimony.

Even though its physical evidence may have entirely disappeared, a corner will not be regarded as lost if its position can be recovered through the testimony of one or more witnesses who have a dependable knowledge of the original location.

1019. An obliterated corner is one at whose point there are no remaining traces of the monument, or its accessories, but whose location has been perpetuated, or the point for which may be recovered beyond reasonable doubt, by the acts and testimony of the interested landowners, competent surveyors, or other qualified local authorities, or witnesses, or by some acceptable record evidence.

A position that depends upon the use of collateral evidence can be accepted only as duly supported, generally through proper relation to known corners, and agreement with the field notes regarding distances to natural objects, stream crossings, line trees, and off-line tree blazes, etc., or unquestionable testimony.

1020. A lost corner is a point of a survey whose position can not be determined, beyond reasonable doubt, either from traces of the original marks or from acceptable evidence or testimony that bears upon the original position, and whose location can be restored only by reference to one or more interdependent corners.

If there is some acceptable evidence of the original location that position will be employed in preference to the rule that would be applied to a lost corner.

No decision should be made in regard to the restoration of a corner until every means has been exercised that might aid in identifying its true original position. The retracements, which are usually begun at known corners, and run in accord with the plan of the original survey, will ascertain the probable position, and will show what discrepancies are to be expected; any supplemental survey record or testimony should then be considered in the light of the facts thus developed. A line will not be regarded as doubtful if the retracement affords the recovery of acceptable evidence.

1021. In cases where the probable position can not be made to harmonize with some of the calls of the field notes due to errors in description or to discrepancies in measurement, made apparent by the retracement, it must be ascertained which of the calls for distances along the line are entitled to the greater weight. Aside from the technique of recovering the traces of the marks, the main problem is one that treats with the discrepancies in measurement. (Sec. 1068.)

Existing original corners can not be disturbed; consequently, discrepancies between the new and those of the record measurements will not in any manner affect the measurements beyond the identified corners, but the differences will be distributed proportionately within the several intervals along the line between the corners.

1022. The ordinary field problem consists in distributing the excess or deficiency between two existent corners in such a manner that the amount given to each interval shall bear the same proportion to the whole difference as the record length of the interval bears to the whole record distance. After having applied the proportionate difference to the record length of each interval the sum of the several parts will equal the new measurement of the whole distance.

A proportionate measurement is one that gives concordant relation between all parts of the line, i. e.—the new values given to the several parts, as determined by the remeasurement, shall bear the same relation to the record lengths as the new measurement of the whole line bears to that record.

1023. The term "single proportionate measurement" is applied to

a new measurement made on a line to determine one or more positions on that line.

By single proportionate measurement the position of two identified corners controls the direction of that line; the method is sometimes referred to as a "two-way" proportion, such as a meridional or north and south proportion, or a latitudinal or east and west proportion. Examples, a quarter-section corner on the line between two section corners; all corners on standard parallels; and all intermediate positions on any township boundary line.

1024. The term "double proportionate measurement" is applied to a new measurement made between four known corners, two each on intersecting meridional and latitudinal lines, for the purpose of relating the intersection to both.

In effect, by double proportionate measurement the record directions are disregarded, excepting only where there is some acceptable supplemental survey record, some physical evidence, or testimony, that may be brought into the control. The method may be referred to as a "four-way" proportion. Examples, a corner common to four townships, or one common to four sections within a township.

The double proportionate measurement is the best example of the principle that existent or known corners to the north and to the south should control any intermediate latitudinal position, and that corners east and west should control the position in longitude. Lengths of proportioned lines are comparable only when reduced to their cardinal equivalents.

1025. The principle of the precedence of one line over another of less original importance is recognized, relative to single or double proportionate measurement, in order to harmonize the restorative process with the method followed in the original survey, thus limiting the control.

Standard parallels will be given precedence over other township exteriors, and ordinarily the latter will be given precedence over subdivisional lines; section corners will be relocated before the position of lost quarter-section corners can be determined.

1026. In order to restore a lost corner of four townships, a retrace-ment will first be made between the nearest known corners on the meridional line, north and south of the missing corner, and upon that line a temporary stake will be placed at the proper proportionate distance; this will determine the latitude of the lost corner.

Next, the nearest corners on the latitudinal line will be connected, and a second point will be marked for the proportionate measurement east and west; this point will determine the position of the lost corner in departure (or longitude).

Then, through the first temporary stake run a line east or west, and through the second temporary stake a line north and south, as relative situations may determine; the intersection of these two lines will fix the position for the restored corner.

A lost township corner can not safely be restored, nor the boundaries ascertained, without first considering the field notes of the four intersecting lines; it is desirable also to examine the four township plats. In most cases there is a fractional distance in the half-mile to the east of the township corner, and frequently in the half-mile to the south. The lines to the north and to the west are usually regular, i. e.—quarter-section and section corners at normal intervals of 40.00 and 80.00 chains, but there may be closing-section corners on any or all of the boundaries so that it is important to verify all of the distances by reference to the field notes.

1027. A lost interior corner of four sections will be restored by double proportionate measurement.

When a number of interior corners of four sections, and the intermediate quarter-section corners, are missing on all sides of the one sought to be reestablished, the entire distance must, of course, be measured between the nearest identified corners both north and south, and east and west, in accordance with the rule laid down, after first relocating the required lost section corners on the township exteriors.

1028. Where the line has not been established in one direction from the missing township or section corner, the record distance will be used to the nearest identified corner in the opposite direction.

1029. Where the intersecting lines have been established in only two of the directions, the record distances to the nearest identified corners on these two lines will control the position of the temporary points; then from the latter the cardinal offsets will be made to fix the desired point of intersection.

1030. In many of the surveys the field notes and plats indicate two sets of corners along township boundaries, and frequently along section lines where parts of the township were subdivided at different dates. In these cases there are usually corners of two sections at regular intervals, and closing section corners that are placed upon the same line, but which were established later at the points of intersection in accordance with a developed offset. The quarter-section corners on such lines are usually controlling for one side only in the older practice.

In the more recent surveys, where the record calls for two sets of corners, those that are regarded as the corners of the two sections first established, and the quarter-section corners relating to the same sections, will be employed for the retracement, and will govern both the aline-

ment and the proportional measurement along that line. The closing section corners, set at the intersections, will be employed in the usual way, i. e.—to govern the direction of the closing lines.

1031. In order to restore a lost corner by single proportionate measurement, a retracement will be made connecting the nearest identified regular corners on the line in question; a temporary stake (or stakes) will be set on the trial line at the original record distance (or distances); the total distance will be measured, also the falling at the objective corner.

On meridional township lines an adjustment will be made at each temporary stake for the proportional distance along the line, and then it will be set over to the east or to the west for falling, counting its proportional part from the point of beginning.

On east-and-west township lines and on standard parallels the proper adjustment should be made at each temporary stake for the proportional distance along the line, for the falling, and to secure the latitudinal curve, i. e.—the temporary stake will be either advanced or set back for the proportional part of the difference between the record distance and the new measurement, then set over for the curvature of the line, and last corrected for the proportional part of the true falling.

The adjusted position is thus placed on the true line that connects the nearest identified corners, and at the same proportional interval from either as existed in the original survey. Any number of intermediate lost corners may be located on the same plan, by setting a temporary stake for each when making the retracement.

1032. The term "original standard corners" will be understood to mean standard township, section, and quarter-section corners, meander corners terminating the survey of a standard parallel, and closing corners in those cases where they were originally established by measurement along the standard line as points from which to start a survey. No other meander or closing corners along a standard parallel will control the restoration of lost standard corners.

Lost standard corners will be restored to their original positions on a base line, standard parallel or correction line, by single proportionate measurement on the true line connecting the nearest identified standard corners on opposite sides of the missing corner or corners, as the case may be.

Corners on base lines are to be regarded the same as those on standard parallels. In the older practice the term "correction line" was used for what has later been called the standard parallel. The corners first set in the running of a correction line will be treated as original standard corners; those that were set afterwards at the intersection of a meridional line will be regarded as closing corners.

1033. All lost section and quarter-section corners on the township boundary lines will be restored by single proportionate measurement between the nearest identified corners on opposite sides of the missing corner, north and south on a meridional line, or east and west on a latitudinal line, after the township corners have been identified or relocated.

An exception to this rule will be noted in the case of any exterior the record of which shows deflections in alinement between the township corners. (Sec. 1039.)

1034. A second exception to the above rule is occasionally important, to be found in those cases where there may be persuasive proof of a deflection in the alinement of the exterior, though the record shows the line to be straight. For example, measurements east and west across a range line, or north and south across a latitudinal township line, counting from a straight-line exterior adjustment, may show distances to the nearest identified subdivisional corners to be materially long in one direction and correspondingly short in the opposite direction. This condition, when supported by corroborative collateral evidence as might generally be expected, would warrant an exception to the straight-line or two-way adjustment under the rules for the acceptance of evidence, i. e.—the evidence outweighs the record. See Retracement. The rules for a four-way or double proportionate measurement would then apply here, provided there is conclusive proof.

1035. All lost quarter-section corners on the section boundaries within the township will be restored by single proportionate measurement between the adjoining section corners, after the section corners have been identified or relocated.

1036. Lost meander corners, originally established on a line projected across the meanderable body of water and marked upon both sides will be relocated by single proportionate measurement, after the section or quarter-section corners upon the opposite sides of the missing meander corner have been duly identified or relocated.

1037. A lost closing corner will be reestablished on the true line that was closed upon, and at the proper proportional interval between the nearest regular corners to the right and left.

In order to reestablish a lost closing corner on a standard parallel or other controlling boundary, the line that was closed upon will be retraced, beginning at the corner from which the connecting measurement was originally made, itself properly identified or relocated; a temporary stake will be set at the record connecting distance, and the total distance and falling will be noted at the next regular corner on that line on the opposite side of the missing closing corner; the temporary stake will then be adjusted as in single proportionate measurement. (Sec. 1068.)

1038. A closing corner not actually located on the line that was closed upon will determine the direction of the closing line, but not its legal terminus; the correct position is at the true point of intersection of the two lines.

1039. Some township boundaries were not established as straight lines, termed an "irregular" exterior, e. g., where parts were surveyed from opposite directions and the intermediate portion was completed later by random and true line, leaving a fractional distance; such irregularity follows some material departure from the basic rules for the establishment of original surveys.

In order to restore one or more lost corners or angle points on such irregular exteriors, a retracement between the nearest known corners will be made on the record courses and distances, to ascertain the direction and length of the closing distance; a temporary stake will be set for each missing corner or angle point; the closing distance will be reduced to its equivalent *latitude and departure*.

On a meridional line the *latitude* of the closing distance will be distributed along the measurement of each course in proportion to its own difference in latitude, and then each temporary stake will be set over to the east or to the west for the *departure* of the closing distance in proportion to the total distance from the starting point.

Angle points and intermediate corners will be treated alike.

On a latitudinal line the temporary stakes should be placed to suit the usual adjustments for the curvature. The *departure* of the closing distance will be distributed along the measurement of each course in proportion to its own difference in departure, and then each temporary stake will be set over to the north or to the south for the *latitude* of the closing distance in proportion to the total distance from the starting point.

1040. Where a line has been terminated with measurement in one direction only, a lost corner will be restored by record bearing and distance, counting from the nearest regular corner, the latter having been duly identified or restored.

Examples will be found where lines have been discontinued at the intersection with large meanderable bodies of water, or at the border of what was classed as impassable ground.

In cases where a retracement has been made of many miles of the original lines, between identified original corners, and there has been developed a definite surplus or deficiency in measurement, or a definite angle from cardinal that characterizes the original survey, it will be proper to make allowance for the average differences. An adjustment will be taken care of automatically in all cases where there exists a suitable basis for proportional measurement, but where such control in

one direction is lacking, an average difference, if conclusive, will be made use of by applying the same to the record courses and distances.

Subdivision of Sections

1041. The sections are not usually subdivided in the field by the United States surveyors, but certain of the subdivision-of-section lines are protracted upon the township plats to indicate the lottings in the manner prescribed by law, and the boundaries of the quarter sections are generally shown.

1042. The sections bordering the north and west boundaries of a normal township, excepting section 6, are subdivided by protraction into parts that contain two regular quarter sections, two regular half-quarter sections, and four lots, the latter being the fractional quarter-quarter units that result from the plan of subdivision. In these sections the lines of the half-quarter sections are protracted from three points 20 chains distant from the line that connects the opposite quarter-section corners, i. e.—two on the opposite section lines, and one counting on the center line between the fractional quarter sections. The lines subdividing the fractional half-quarter sections into the fractional lots are protracted from mid-points on the opposite boundaries of the fractional quarter section.

1043. The two interior sixteenth-section corners on the boundaries of the fractional northwest quarter of section 6 are similarly fixed at points 20 chains distant north and west from the center of the section, from which points the lines are protracted to the corresponding points on the west and north boundaries of the section, which results in one regular quarter-quarter section and three fractional lots.

1044. Entry-men are allowed, under the law, to acquire title to any regular quarter-quarter section; such subdivisions are aliquot parts of quarter sections based upon mid-point protraction; it has not been regarded as necessary to indicate the lines upon the plat.

1045. Sections that are invaded by meanderable bodies of water, or by approved claims at variance with the regular legal subdivisions, are subdivided by protraction into regular and fractional parts as may be necessary to form a suitable basis for the entry of the public lands.

1046. The meander line of a body of water and the boundary lines of private claims are platted in accordance with lines run and connections made in the field; the sections so invaded are subdivided as nearly as possible in conformity with the uniform plan already outlined. The subdivision-of-section lines are terminated at the meander line or claim boundary, as the case may be, but their position is controlled precisely

as though the section had been completed regularly. In the case of a section whose boundary lines are partly within the limits of a meanderable body of water, or within the boundaries of a private claim, the said fractional section lines are, for the purpose of uniformity, completed in theory; the protracted position of the subdivision-of-section lines is controlled by the theoretical points so determined.

1047. Preliminary to subdivision it is essential to identify the boundaries of the section, as it can not be subdivided until the section corners and quarter-section corners have been found, or restored by proper methods, and the resulting courses and distances determined by survey.

The order of procedure is: First, identify or reestablish the section boundary corners; next, fix the lines of quarter sections; then, form the smaller tracts by equitable and proportionate division, according to the rules that follow.

SUBDIVISION OF SECTIONS INTO QUARTER SECTIONS

1048. The method to be followed in the subdivision of a section into quarter sections is to run straight lines from the established quarter-section corners to the opposite quarter-section corners; the point of intersection of the lines thus run will be the corner common to the several quarter sections, or the legal center of the section.

1049. Upon the lines closing on the north and west boundaries of a regular township the quarter-section corners were established originally at 40 chains to the north or west of the last interior section corners, and the excess or deficiency in the measurement was thrown into the half mile next to the township or range line, as the case may be. If such quarter-section corners are lost they should be reestablished by proportionate measurement based upon the original record.

1050. Where there are double sets of section corners on township and range lines, the quarter-section corners for the sections south of the township line and east of the range line have not usually been established in the original surveys; in subdividing such sections new quarter-section corners are required, to be so placed as to suit the calculation of the areas that adjoin the township boundary, as expressed upon the official plat, adopting proportional measurements where the new measurements of the north or west boundaries of the section differ from the record distances. (Secs. 1030, 1057.)

SUBDIVISION OF FRACTIONAL SECTIONS

1051. The law provides that where opposite corresponding quarter-section corners have not been or can not be fixed, the subdivision-of-section lines shall be ascertained by running from the established corners

north, south, east, or west lines, as the case may be, to the water course, reservation line, or other boundary of such fractional section, as represented upon the official plat.

In this the law presumes that the section lines are due north and south, or east and west lines, but this is not usually the case. Hence, in order to carry out the spirit of the law, it will be necessary in running the center lines through fractional sections to adopt mean courses, where the section lines are not on due cardinal, or to run parallel to the east, south, west, or north boundary of the section, as conditions may require, where there is no opposite section line.

SUBDIVISION OF QUARTER SECTIONS

1052. Preliminary to the subdivision of quarter sections, the quarter-quarter- or sixteenth-section corners will be established at points midway between the section and quarter-section corners, and between the quarter-section corners and the center of the section, except on the last half mile of the lines closing on township boundaries, where they should be placed at 20 chains, proportionate measurement, counting from the regular quarter-section corner.

The quarter-quarter- or sixteenth-section corners having been established as directed above, the center lines of the quarter section will be run straight between opposite corresponding quarter-quarter- or sixteenth-section corners on the quarter-section boundaries. The intersection of the lines thus run will determine the legal center of a quarter section.

SUBDIVISION OF FRACTIONAL QUARTER SECTIONS

1053. The subdivisional lines of fractional quarter sections will be run from properly established quarter-quarter- or sixteenth-section corners, with courses governed by the conditions represented upon the official plat, to the lake, water-course, reservation, or other irregular boundary which renders such sections fractional.

Retracements

1054. Where the surveyor is called upon to retrace the township or section boundary lines of the rectangular subdivisions, the problem requires a careful study of the record data; the first step is to assemble copies of the field notes and plats; the second step is to prepare an ownership map showing the limits of the properties, and the names of the owners who will be concerned in the retracement and survey; the third step is to make a thorough search and inquiry with regard to the additional survey records that have intervened subsequent to the approval

of the original survey, for this purpose consulting the county surveyor, county clerk, register of deeds, practicing engineers and surveyors, land-owners, and others who may furnish useful information.

Court records of boundary disputes should be carefully reviewed, particularly as to whether claimants have based their locations upon evidence of the original survey and a proper application of surveying rules. If there has been a boundary suit, the record testimony and the court's opinion and decree should be carefully examined in so far as these may have a bearing upon the problem in hand.

1055. The law requires that the position of original corners shall not be changed, and there is a penalty for the defacing of the marks, and for changing or removing a corner. The monuments afford the principal means for the identification of the survey, and accordingly the courts attach the greatest weight to the evidence of their location. Discrepancies that may be developed in the directions and lengths of lines, as compared with the original record, do not warrant any alteration of the corner position. (Sec. 1021.)

Obviously, on account of roadways or other improvements, it is frequently necessary to reconstruct a monument in some manner. Alterations of that kind are not regarded as changes in willful violation of the law, but rather that this is in complete accord with the intent, which is to safeguard the evidence. (Sec. 1080.)

1056. Therefore, whatever the purpose of the retracement may be— if it calls for the ascertainment of the true lines of the original survey, or for the running of the subdivisional lines of a section, the rules as outlined require some or all of certain definite steps, as follows:

- a. Secure a copy of the original plat and field notes;
- b. Secure all available data regarding subsequent surveys;
- c. Secure the names and contact the owners of the property adjacent to the lines that are involved in the retracement;
- d. Find the corners that may be required—
 - First: By the remaining physical evidence;
 - Second: By collateral evidence, supplemental survey records, or testimony, if the original monument is to be regarded as obliterated, but not lost; or,
 - Third: By the application of the rules for proportionate measurement, *if lost*;
- e. Reconstruct the monuments as required, including the placing of reference markers where improvements of any kind might interfere, or if the site is such as to suggest the need for supplemental monumentation;
- f. Note the rules for the subdivision of sections where these lines are to be run; and
- g. Prepare and file² a suitable record of what was found, the supplemental

² In many of the States there is a well-established practice for the filing of field notes and plats of surveys, usually in one of the county offices; otherwise the records are the property of whoever pays the cost of the survey, and ordinarily the record would be filed as an exhibit with a deed, or agreement, or court decree, etc.

data that was employed, a description of the methods, the direction and length of lines, the new markers, and any other facts regarded as important.

1057. A study of the early practices, and of the instructions that were in effect at the time of the original survey, will be exceedingly helpful to an understanding of the problem as it was then presented, indicating what was required and how it was intended that the survey should be made.

The plats should be carefully studied with regard to the placing of all fractional parts of sections, and where to expect two sets of corners along township or section lines. It should be noted that certain quarter-section corners relate to one section only, and that corresponding points needed for the subdivision of the adjoining section, usually those located between closing corners on the lines closed upon, were not established in the original survey. The plats will indicate whether these should be at mid-point between the closing corners, or if they should be placed with regard to a fractional distance. (Sees. 1030, 1050.)

It is essential to have the plats for both sides of a township or range line, and for the adjoining parts of a township wherever the whole was not subdivided at one time.

1058. The data for the township boundaries should be examined to ascertain whether there may be certain closing-section corners in addition to the regular quarter-section and section corners. The latter are regarded as having maximum control if the subdivisional lines on both sides of the boundary are based upon the one set of corners. Frequently, in the older surveys, there is a second set of corners, i. e.—the first being the quarter-section and section corners of minimum control that govern the subdivisions on one side only, which are corners that should be employed for the retracement and that will control the proportional measurement; the second set are the closing-section corners for the subdivisional surveys upon the opposite side of the boundary.

1059. The closing-section corners should be carefully considered for their value in the solution of the whole problem, and as evidence. The descriptions of the closing-section corners, and the connecting distances to the regular corners of two sections, will be found in the field notes of the later survey for which these corners are controlling.

1060. Where the section corners on the exteriors are of minimum control, the quarter-section corners have the same status for the same side of the boundary; in the older surveys there are usually no quarter-section corners for the sections on the opposite side of the boundary.

1061. There is nothing especially different or complicated in the matter of one or two sets of corners on the township boundary lines, it

is merely a question of assembling the complete data, and of making a proper interpretation of the status of each monument.

The same principles should be applied in the consideration of the data of the subdivisional surveys, where for any of several causes there may be two sets of interior corners.

1066. The needle-compass surveys, before being discontinued, had penetrated into the region of magnetic ore deposits of the Lake Superior watershed in northern Michigan, Wisconsin, and Minnesota; here many township plats were approved, and the lands patented, in which the section boundaries are found to be grossly distorted. There is no way in which to correct these lines, nor to make an estimate, except by retracement, of the extent of the irregularities, which involve excessive discrepancies both in the directions and lengths of lines. Greater experience is required here to make successful retracements, but there are no exceptions to be taken in the application of the rules of procedure either for the restoration of lost corners or for the subdivision of the sections.

1067. One other condition should be considered preparatory to solving the problem of these adjustments—the record will show that in many townships one surveyor ran the south boundary, a second the east boundary, and others the remaining exteriors and subdivisional lines. Accordingly, on needle-compass surveys, all may be reported on cardinal, but no two exactly comparable, i. e.—the east boundary will not be truly normal to the south boundary, etc. Recalling also that under the plan of subdivision the meridional section lines were placed as nearly parallel with the east boundary as could be by actual test of one or more miles of that boundary, these should be found in reasonable agreement. The latitudinal section lines should show an agreement with the south boundary, but the parallelism is frequently disturbed by the discrepancies in measurement. Stated differently, the corrections for bearings may not be the same for the east and west lines as for the north and south lines, and should be considered separately.

1068. The retracements will show various degrees of accuracy in the lengths of lines, where in every case it was intended to secure true horizontal distances. Until after 1900 most of the lines were measured with the Gunter's link chain, so that the surveyor must recall the difficulties of keeping a chain at standard length, and the inaccuracies of measuring steep slopes by this method.

All discrepancies in measurement should be carefully verified, if possible, with the object of placing each difference where it properly belongs. This is exceedingly important at times, because, if disregarded, the effect will be to give weight to a position where it is obviously not justified.

Accordingly, wherever it is possible to do so, the manifest errors in measurement will be removed from the general average difference, and will be placed where the blunder was made. The accumulated surplus or deficiency that then remains is the quantity that is to be uniformly distributed by the methods of proportional measurement.

1069. It is evident that if the trial lines are to be placed in close proximity to the most probable location of the original survey some corrections are thus frequently required in order to orient the record directions to the true meridian, and to adjust the record lengths of lines to a closer agreement with the actual distances that are to be found on the ground.

Where the surveys were faithfully made, there will generally be considerable uniformity in the directions and lengths of lines, so that the methods as explained will indicate what may be expected, excepting where there is local attraction; it will be appreciated that this will give a greatly improved placing of the trial lines.

1071. Having developed certain known corners whose locations can be identified, that constitute the main control upon which the survey pattern may be tested, and before proceeding with restorations by proportionate measurement, consideration will be given to the calls of the field notes, such as distances to stream crossings and to other natural objects, and to the questions of acceptance or non-acceptance of the submitted testimony, later survey marks and records, and the location of roads and property fences.

1072. It is a matter of considerable importance to determine where a tie shall control for both latitude and departure, or for only one position, and finally as to the necessity for applying the rules for proportionate measurement where the distance between identified points is considerable.

A line tree, or a connection to some natural object, or to an improvement, any of which can be identified, may fix a point of the original survey. The mean position of a blazed line, when identified as the original line, will place a meridional line for departure, or a latitudinal line for latitude; and the calls of the field notes for the various items of topography may assist materially in the recovery of the lines.

1073. A retracement between known corners will indicate whether the record courses may be improved by a correction to the right or to the left, and whether the record lengths may be uniformly long or short; these determined values, or corrections, will aid materially in the search for evidence, and in a better placing of the trial lines.

The object sought is to place the temporary lines of the retracement as closely as possible to the probable position of the original survey; this is necessary for the search that is to be made for the marks of the

old bearing trees, line blazes, line trees, and to verify the topographic calls of the field notes. Let it be emphasized that in the retracement of the very old surveys there often is no hope whatever of finding the obscure marks except by experienced, intelligent search in the immediate vicinity of the lines.

1074. Original line-tree marks, off-line tree blazes, and scribe marks on bearing trees and tree corner-monuments, whose age exceeds one hundred years, are found occasionally, and are recovered in much greater number for the later surveys. There will be many distinctive marks—some surveyors used hacks instead of blazes, and some used hacks over and under the blazes; some employed distinctive forms of letters and figures. All these will be recognized while retracing the lines of the same survey.

The field notes will give the species and the diameter of the bearing trees and line trees. Some of the smooth-barked trees were marked on the surface, but with that exception most of the marks were made on a flat smoothed-surface of the live wood tissue; the marks will remain as long as the tree is sound. The blaze and marks, and the hacks, will be covered by a gradual overgrowth, showing a scar for many years. The overgrowth will have a lamination similar to the annual rings of the tree, which may be counted in order to verify the date of marking, and to distinguish the original marks from later marks and blazes.

It is advisable, of course, not to cut into a marked tree excepting as necessary to secure proof; the evidence is frequently so abundant, especially in the later surveys, that the proof is conclusive without inflicting an additional injury that would hasten the destruction of the tree.

The finding of original scribe marks, line-tree hacks, and off-line tree blazes, furnishes the most convincing identification that can be desired, and every further proof then adds to the certainty of the location. On the more recent surveys the complete quota of marks should be found, clear cut and plainly legible, but this cannot be expected in the older surveys.

1075. It is not intended to disturb satisfactory local conditions with respect to roads and fences; manifestly the surveyor has no authority to change a property right that has been acquired legally, nor can he accept the location of roads and fences as evidence *prima facie* of the original survey, *i. e.*—something is needed in support of these locations. This will come from whatever intervening record there may be; the testimony of individuals who may be acquainted with the facts; and the coupling of these things to the original survey.

1076. There is another important factor that requires careful consideration, *i. e.*—the rules of the State law and the State court decisions, as distinguished from the rules laid down by the General Land Office

(the latter applicable to the public land surveys in all cases). Under State law in matters of agreement between owners, or acquiescence, or adverse possession, property boundaries may be defined by roads, fences, or survey marks, disregarding exact conformation with the original section lines, and will limit the rights as between adjoining owners.

In many cases due care has been exercised to place the property fences on the lines of legal subdivision, and it has been the general practice in the prairie States to locate the public roads on the section lines. These are matters of particular interest to the adjoining owners, and it is a reasonable presumption that care and good faith would be exercised with regard to the evidence of the original survey in existence at the time. Obviously, the burden of proof to the contrary must be borne by the party claiming differently. In a great many cases there are subsurface marks in roadways, such as deposits of a marked stone or other durable material, that are exceptionally important evidence of the exact position of a corner when duly recovered, if the proof can be verified.

1077. A property corner, when placed with due regard to the location of the original survey, should exercise a regular control upon the retracement, but not otherwise excepting in those cases where the agreement is so close as to constitute what is obviously the best available evidence.

1078. The data for the replacement of those corners that may be regarded as obliterated, but not lost, are derived from such collateral evidence as has been found acceptable; the recovery of these corners completes the retracement. All other corners are to be regarded as lost, i. e.—nonexistent; these can be restored only by reference to one or more interdependent corners.

1079. The surveyor will appreciate the great extent to which a successful retracement has depended upon an available record of the previous surveys, and upon the markers that were established by those who preceded him. The same will manifestly follow on subsequent retracements, so that it may well be regarded as exceedingly important, both in the protection of the integrity and accuracy of the work in hand, of the reputation of the surveyor, and of the security of the interested property owners, that durable new markers be constructed in all places where required, and that a good record be filed of the survey as executed.

1080. The preferred markers are of stone, concrete block, glazed sewer-tile filled with concrete, cast-iron or galvanized-iron pipe, and similar durable material. Many engineers and surveyors, counties, and landowners employ specially designed markers with distinctive lettering, including various cast-iron plates or bronze tablets.

Frequently on account of roadways or other improvements, it is

advisable to set a subsurface marker and in addition to place a reference monument where it may be found readily, selecting a site that is not likely to be disturbed.

MEANDER LINES AND RIPARIAN RIGHTS

1081. The traverse that is run by a surveyor along the bank of a stream or lake is termed a *meander line*. (Secs. 1017, 1045, 1046.) The meander line is not generally a boundary in the usual sense, as ordinarily the bank itself marks the limit of the survey. All navigable bodies of water are meandered in the public-land surveying practice; also, many other important streams and lakes that have not been regarded as navigable in the broader sense.

1082. All navigable rivers, within the territory occupied by the public lands, remain, and are deemed to be public highways; and, in all cases where the opposite banks of any stream not navigable belong to different persons, the stream and the bed thereof become common to both. (R. S. 2476.)

The public has no proprietorship in the soil under small streams, which are navigable only in a modified sense for floatage of logs, as it has under navigable waters at the common law, where the tide ebbs and flows, or under the larger streams and lakes.

1083. Grants by the United States of its public lands bounded on streams or other waters, made without reservation or restriction, are to be construed as to their effect according to the law of the State in which the lands lie. If there should be changes in the position of the bank line, as by accretion, or by recession of the water, the ownership may, in many States, include the new land.

1084. The Government conveyance of title to a fractional subdivision fronting upon a nonnavigable stream, unless specific reservations are indicated, either in the patent from the Federal Government or in the laws of the State in which the land is located, carries ownership to the middle of the stream.

1085. The above principles are set out in the syllabus in 50 L. D. 678, as follows:

Whenever the question arises in any court, State or Federal, as to whether the title to land, which had once been the property of the United States, has passed, that question must be resolved by the laws of the United States; but when, according to those laws, the title shall have passed, then that property, like other property in the State, is subject to the laws of the State, so far as those laws are consistent with the admission that the title passed and vested according to the laws of the United States.

Upon the admission of a State into the Union the title to all lands under the navigable waters within the State inures to the State as an incident of sovereignty,

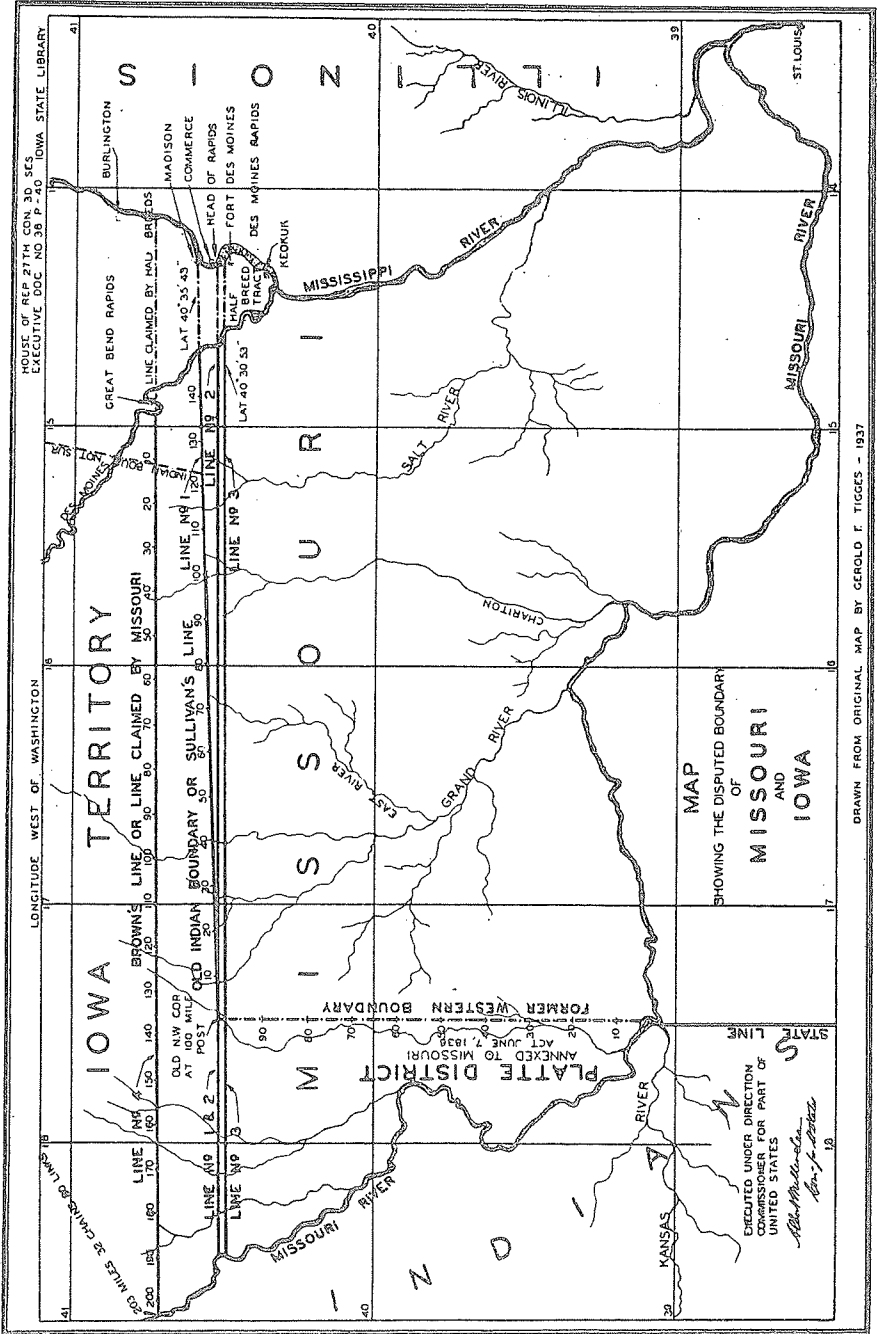
and the laws of the State govern with respect to the extent of the riparian rights of the shore owners.

With respect to public lands bordering on nonnavigable bodies of water, the Government assumes the position of a private owner, and when it parts with its title to those lands, without reservation or restriction, the extent of the title of the patentee to the lands under water is governed by the laws of the State within which the lands are situated.

Where a survey was fraudulent or grossly inaccurate in that it purported to bound tracts of public lands upon a body of water, when in fact no such body of water existed at or near the meander line, the false meander line and not an imaginary line to fill out the fraction of the normal subdivision marks the limits of the grant of a lot abutting thereon, and, upon discovery of the mistake, the Government may survey and dispose of the omitted area as a part of the public domain.

1086. Where partition lines are to be run *across accretions*, the Federal rule is to apportion the new frontage along the water boundary in the same ratio as that along the line of the record meander courses, on the principle derived from the opinion of the Supreme Court of the United States in the case of *Johnston v. Jones* (1 Black 209, 222, 223). The application of this rule should, of course, be brought into harmony with the State law.

1087. Where there is occasion to define the partition lines *within the beds* of nonnavigable streams, the usual rule, under Federal surveying practice, is to begin at the property line at its intersection with the bank, and from that point run a normal to a medial line that is located at midpoint between the banks. Where the normals to the medial line are deflecting rapidly, owing to abrupt changes in the course of the stream, suitable locations are selected above and below the doubtful positions, where acceptable normals may be placed, then the several intervals along the medial line are apportioned in the same ratio as the frontage along the bank. Precaution should be exercised to modify this rule to conform with the State law.



Chapter VII

THE IOWA-MISSOURI BOUNDARY.

The boundary line between Iowa and Missouri was the scene of at least three surveys and a near war before its locus was settled, finally, by a decision of the Supreme Court of the United States. Most of this misunderstanding came about because the phrase "rapids of the River Des Moines" did not mean the same site to Iowans and Missourians. The citizens of Iowa claimed that the rapids referred to were those in the Mississippi River immediately above the mouth of the Des Moines River. But these rapids are several miles in length so it was no easy matter to fix a point of beginning for the line. Missourians contended that the reference must mean rapids in the Des Moines River. There were no notorious rapids in the latter river. The result of all of this was a "no man's land" of uncertain boundaries approximately ten miles wide across the state.

The Supreme Court ruled that both states were wrong and chose a line which happened to fall between the two state-proposed lines. This line, known as the "Sullivan Line of 1816," was run by John C. Sullivan in 1816 to mark the boundaries of a large tract of land ceded to the United States by Osage Indians. That treaty is set forth by Frank E. Landers.¹

SULLIVAN'S LINE

Sullivan's line was run as the west and north boundaries, respectively of these Osage cessions. Sullivan, a deputy surveyor, began his survey on the east bank of the Missouri River opposite the mouth of the Kansas River. From there he ran north one hundred miles and set a corner, later known as "the old northwest corner of Missouri." He then ran east to the Des Moines River, about one hundred and fifty miles, setting posts at the mile and half-mile points and blazing the line. Later surveys revealed that this line was neither straight nor a true east line.

MISSOURI'S BOUNDARIES

When Missouri was admitted to statehood March 6, 1820, the state

¹ Landers, Frank E. *The Southern Boundary of Iowa. Annals of Iowa*, v. 1, No. 3 3d series, p. 641, January 1895.

constitution prescribed the boundaries, of which those on the west and north were this same Sullivan line.²

Beginning in the middle of the Mississippi River, on the parallel of thirty-six degrees of north latitude; thence west along the said parallel of latitude, to the St. Francois River; thence up, and following the course of that river, in the middle of the main channel thereof, to the parallel of latitude of thirty-six degrees and thirty minutes; thence west, along the same, to a point where the said parallel is intersected by a meridian line passing through the middle of the mouth of the Kansas River, where the same empties into the Missouri River; thence, from the point aforesaid, north, along the said meridian line, to the intersection of the parallel of latitude which passes through the rapids of the River Des Moines, making the said line correspond with the Indian boundary line; thence east, from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the channel of the main fork of the said River Des Moines; thence down along the middle of the main channel of the said River Des Moines to the mouth of the same, where it empties into the Mississippi River; thence due east to the middle of the main channel of the Mississippi River; thence down, and following the course of the Mississippi River, in the middle of the main channel thereof, to the place of beginning.

In 1824, about three years after Missouri became a state, the Sac and Fox Indians ceded to the United States all the claims that they had in the state of Missouri, the boundary line following the cession of the Osage Indians. The treaty stated:³ "To the northwest corner of Missouri and from thence east to the Mississippi; reserving for the use of the half-breeds belonging to the Sac and Fox nations the tract between the Des Moines and Mississippi and the section of the above line between the Mississippi and the Des Moines." This description differed from that which defined the northern boundary of Missouri in that it did not designate a fixed point of intersection with the Des Moines or Mississippi Rivers.

The June 23, 1834, act of Congress which extended the boundaries of Michigan Territory, and that of July 3, 1836, by which Wisconsin Territory was established from the western part of Michigan Territory, defined their boundaries⁴ "on the south by the state of Missouri and a line drawn west from the northwest corner of Missouri to the Missouri River."

On June 7, 1836, Congress passed an act⁵ to extend the western boundaries of Missouri to the Missouri River as soon as the Indian title was quieted and the state of Missouri had assented to the provisions of the act. The state assented promptly and immediately took steps to locate

² Boundaries, Areas, Geographic Centers and Altitudes of the U. S., etc., Geographic Survey Bulletin No. 807, by E. M. Douglas, 1930, p. 202.

³ American State Papers, *Indian Affairs*, v. 1, p. 763, 1824.

⁴ *Annals of Iowa*, v. 1, No. 8, 3d series, p. 644, Jan. 1895.

⁵ *Land Laws of U. S.*, v. 1, p. 438.

its entire north boundary, the new part westward from the "old north-west corner of Missouri" being a continuation of the old "in a right line to the west."⁶

BROWN'S SURVEY OF MISSOURI'S NORTH BOUNDARY

The act of the Missouri general assembly approved December 21, 1836, "authorized the Governor, with the advice and consent of the Senate, to nominate and appoint 'three commissioners to ascertain, survey and establish the north boundary of the State, and ascertain the point of commencement and termination thereof,' as the same was 'fixed and described by the Constitution of the State and the act of Congress on the 6th day of March, 1820, and the act of Congress approved the seventh of June, 1836.'" The commissioners were to determine the latitude and longitude of the eastern point of termination "in the rapids of the River Des Moines and thence passing west on that parallel of latitude, to where the same strikes the Missouri River."⁷

Missouri proceeded with the work of relocating her north boundary under the provisions of the above described act of the Missouri general assembly. Joseph C. Brown was appointed to make the boundary survey in 1837. He searched for the rapids in the Des Moines River, of which there are several, to find a starting point for his line. He finally chose a point at the great bend in the Des Moines River, (near Keosauqua) which he took to be the rapids of the River Des Moines referred to in the description of Missouri's north boundary as well as in the December 21, 1836, act of the Missouri general assembly. He ran his line westward to the Missouri River from this point. The state of Missouri then claimed Brown's line as its northern boundary.

MARKING IOWA'S SOUTH BOUNDARY

On June 18, 1838, Congress passed an act providing for the survey and marking of the southern boundary of Iowa. Albert M. Lea, special boundary commissioner of the United States began investigations preliminary to the surveying and marking of this line. One of his first questions related to a map drawn by William Milburn which was said to have been used at the 1820 constitutional convention.

MILBURN'S MAP

Mr. Milburn's answer to Major Lea's inquiry was:⁸

SURVEYOR'S OFFICE, ST. LOUIS, *September 12, 1838*

SIR: I have received yours of the 5th inst, on the subject of a map, which

⁶ Geological Survey *Bulletin*, No. 317, p. 202.

⁷ Landers, Frank E., *op. cit.*, p. 644.

⁸ Exec. Doc., 27 Congress 3d session. No. 38, p. 9, 10.

I had told you in conversation, I had aided in preparing for the use of the convention that formed the constitution of Missouri, showing the boundaries of the new state, as understood to be fixed by act of Congress, and requesting me to inform you:

1. By what authority and under whose direction was that map made?
2. Where can that map, or a copy of it, be obtained?
3. What was the northern boundary of the state, as delineated on that map; that is, was it the same as the old Indian boundary, run by Sullivan in 1816? Or did it pass through the Des Moines rapids in the Mississippi River; or did it pass through other rapids in the Des Moines River? If the latter, what was the position of those rapids in regard to Sullivan's line? How was that position ascertained; and by whom? Why were the particular rapids selected as "the rapids of the River Des Moines," so chosen in preference to other rapids now known to exist in the Des Moines River?

In reply to your first inquiry, I have to say, that at the time of the sitting of the convention, I was employed as a clerk in the United States surveyor's office for Illinois, Missouri, and Arkansas; that General William Rector, then surveyor general, was a member of that body, from the county of St. Louis, and that the map was constructed in the surveyor's office, under my superintendence, by direction of the surveyor general, and, as I believe, either at the request of the convention, or of the members, or a portion thereof, in their individual and unofficial capacity; the journals will show whether there was a resolution of the convention to that effect or not.

To your second inquiry, I can only reply, that I am uninformed as to what became of that map, and do not know that it ever was copied. I cannot, therefore, put you on the track for getting either the original, or a copy thereof.

To the third inquiry, I have no answer, that my recollection is distinct relative to the northern boundary of the state as delineated on the map. It was represented at some short distance north of the Indian boundary run by Colonel Sullivan in 1816, and as striking the rapids in the "*River Des Moines*," which rapids were understood, without either doubt or contradiction (so far as I heard), to be the rapids intended by the act of Congress. The position of said rapids was assumed from the general understanding at the time, and from the particular information of Colonel Sullivan, who was a member of the convention, and was also the surveyor of the Indian line in 1816.

Why these particular rapids were selected as the "*rapids of the River Des Moines*," in preference to other rapids now known to exist in that river I am unable to say. If there was any contrary opinion at the time, it never came to my knowledge, and I was in company with some of the members of the convention every day during their deliberations.

WHERE ARE THE RAPIDS OF THE RIVER DES MOINES

Another of Mr. Lea's inquiries directed to John Scott who was chairman of the committee which reported on the statehood act of 1820 replied:⁹

⁹ Exec. Doc., *op. cit.*, 7, 8, 9.

St. Louis, Missouri, September 7, 1838

DEAR SIR: I have just received yours of the 4th instant, asking information in regard to the northern line of the State of Missouri, &c. I hasten to put you in possession of such as I have, and can furnish you from recollection.

At the time the act of the 6th of March, 1820, was passed by Congress, authorizing the people of Missouri to form a constitution and state government, &c., the general geography was but little, and the topography of that part of the state still less, known. I, who represented the country, knew so little, that I had to rely on the information of others in regard to the lines. I applied to several for information, but more particularly to General William Clark, Major A. L. Langham, and General William Rector, then surveyor general. They all concurred that the Indian boundary line on the west, extended north so that an east line would pass through the rapids of the River Des Moines, ought to be the northern line of the State of Missouri, making the Missouri River run through the centre of the state from west to east; and they all concurred that there were rapids in the Des Moines River itself, some sixty miles from the mouth; and they all concurred that it would be useless to embrace that part of the country that would lie between the River Des Moines and the Mississippi, as it was but a gore, a low willow bar between the Mississippi and the Des Moines River, as they said, running nearly parallel for some sixty miles; and General Rector made me out a map of the boundaries of the contemplated state, which was the *only map* before the committee who reported the bill, and which map, I believe, I still have in my old Congress papers, and will try, on my return home, to furnish you with. I would here remark, that the northern Indian boundary line had then been run by Sullivan, and was deemed incorrect and badly done.

I was chairman of the committee who reported the bill that passed into a law on the 6th of March, 1820. Judge Baldwin, now on the bench of the Supreme Court, and Arthur Livermore were with me on the committee; the others I do not now remember, and should not them probably, but for the fact that they suggested (and particularly Mr. Livermore) the propriety to report a bill, with restrictions as regards slavery, &c.

After the bill had passed the House of Representatives, and went to the Senate, it was attacked by Rufus King, of New York, on the ground of want of certainty in the lines. He contended that the description was not mathematically (his own expression) correct; that lines, to correspond, must be either the same or parallel; and I was sent for to explain that part of the law which speaks of the corresponding lines. I went and explained thus: that the western Indian line was to be extended north to the parallel of latitude that passed through the rapids of the River Des Moines, and that the meaning and *correspondence intended* was, that the *extension* of the western line north was to correspond, in direction, with the Indian line already established. This seemed satisfactory, and opposition was withdrawn.

I am entirely sure that the rapids spoken of in the bill, and intended by the committee, were the rapids in the Des Moines River itself, and not the rapids in the Mississippi River, called, from their proximity to the mouth of the Des Moines River, the "Des Moines rapids." I am also satisfied that the committee who reported, and the convention who formed and adopted the state constitution, and who assembled on the 12th June, and signed that instrument

the 19th July 1820, had reference, in forming the northern line, to the rapids in the Des Moines River, and not those in the Mississippi River, called the "Des Moines rapids." The words used in the act of Congress of the 6th March 1820, and those used by the convention who formed the constitution, are the same; and I am not aware that there is any discrepancy or difference of intention as to the point in both named.

I have already stated we had no map but the one made for me by General Rector, then surveyor general. Nor does the act of the 6th March 1820, nor the heading of the constitution of the state, appear to me to be of doubtful character or construction.

From the northwest corner, you are to start east on the parallel of latitude which passes *through* the rapids of the "Des Moines River" or rather "*River Des Moines,*" and to follow that parallel (not to the Mississippi River, which would have been the wording, without reference to the crossing the Des Moines River, if you were to run straight out to the Mississippi River) to the middle of the main channel of the main fork of the said River Des Moines, and there you stop, and change the course of the line down the Des Moines to its mouth; and thence running your course east, to the middle of the main channel of the Mississippi, which will make the line, for the first time, strike the Mississippi River below what is called the "Des Moines rapids" in the Mississippi, and consequently leave the state line enclosed. The law speaks of the rapids of the *River Des Moines*, and not the "Des Moines rapids."

I am satisfied that the committee, and Congress, and the convention, all meant and intended the rapids in the *River Des Moines itself*, which were then known to exist, and spoken of, and not the rapids in the Mississippi River, called, by way of distinction from the upper rapids, the "Des Moines rapids."

Major Lea then inquired as to the intent of the 1820 constitutional convention by communicating with each of the members of the convention. Their answers¹⁰ indicated a general belief that the eastern end of the boundary began at the rapids of the River Des Moines. Some were of the opinion that the Missouri boundary line should coincide with the Indian boundary line as surveyed by John C. Sullivan. A few thought that the line should run on a parallel of latitude west from the rapids in the Des Moines River. A few of the group had no recollection concerning the north boundary line but thought that the references to the Indian boundary line referred to the west boundary line of the cession as it ran north from the mouth of the Kansas River.

INSTRUCTIONS FOR SURVEY OF IOWA'S SOUTHERN BOUNDARY

Major Lea was working under instructions of John M. Moore, acting commissioner of the General Land Office. The instructions were:¹¹

GENERAL LAND OFFICE,

August 10, 1838

SIR: The Secretary of State having advised this office, (copy of which, with

¹⁰ Exec. Doc., *op. cit.*, p. 1-20.

¹¹ Exec. Doc., *op. cit.*, p. 30-34.

its accompanying documents, is transmitted herewith,) of your appointment as commissioner, on the part of the United States to ascertain and mark the southern boundary line of the Territory of Iowa; and, by direction of the President, as therein stated, having furnished this office with a copy of the act of Congress, passed on the 18th of June last, authorizing such appointment, accompanied by a request that such instructions may be prepared at this office as will enable you to execute, agreeably to the provisions of law, the trust confided; it has become my duty to furnish such directions for marking the line as, in my judgment, are suitable for your government, accompanied by such *suggestions* as are deemed useful, for your most attentive consideration.

For more convenient reference as your *text*, as well as that of this communication, I would premise, by subjoining the act creating your office.

AN ACT to authorize the President of the United States to cause the southern boundary line of the Territory of Iowa to be ascertained and marked.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States be, and he is hereby authorized to cause to be surveyed, ascertained, and distinctly marked, the southern boundary line of the Territory of Iowa, west of the Mississippi River, which divides said Territory from the State of Missouri; and that, for that purpose, he shall appoint a commissioner on the part of the United States, who, with the aid of such surveyor or surveyors as may be necessary, shall unite or act in conjunction with a commissioner to be appointed by the State of Missouri, and a commissioner to be appointed by the governor of the Territory of Iowa, in running, marking, and ascertaining said boundary line; and it shall be the duty of the commissioner so to be appointed by the President, as aforesaid, after he shall have ascertained, run, and marked said boundary line, to make three maps or plats thereof, with a description or survey bill thereof appended to each map or plat, one of which shall be returned to the office of Secretary of State for the United States, one to the office of secretary of state for the State of Missouri, and one to the secretary of the Territory of Iowa; and the said commissioner on the part of the United States shall also make a full report of his proceedings in the premises to the Secretary of State for the United States.

Sec. 2. *And be it further enacted*, That the said boundary line shall be run or surveyed, ascertained, and marked, in all respects according to, and in pursuance of, the provisions of the following acts, wherein the said boundary line is defined and described, to wit: an act of Congress of the sixth March eighteen hundred and twenty, entitled "An act to authorize the people of Missouri Territory to form a constitution and state government, and for the admission of such state into the Union on an equal footing with the original states, and to prohibit slavery in certain territories;" and an act of the seventh June eighteen hundred and thirty-six, entitled "An act to extend the western boundary of the State of Missouri to the Missouri River:" *Provided, however*, That if either or both of said commissioners to be appointed on the part of the State of Missouri and Territory of Iowa should fail to attend to the aforesaid duty, after reasonable notice by the commissioner on the part of the United States; or if the State of Missouri, or governor of Iowa, or either of them, should fail to appoint such commissioner on their part, respectively, after reasonable notice from the President of the United States, then, and in that case, the commissioner appointed on the part of the United States shall proceed to execute the duties enjoined by

this act, with either of said commissioners who may attend, or without the attendance of either or both of said commissioners, as the case may be.

Sec. 3. *And be it further enacted*, That the line to be so run, ascertained, and marked, shall not be deemed to be finally established and ratified by the United States, until the map or plat, and description aforesaid, and also the said report of the commissioner, shall be submitted to, and the boundary, as thus ascertained and marked, approved of and ratified by the Congress of the United States.

Sec. 4. *And be it further enacted*, That, for the purpose of carrying into effect the provisions of this act, the sum of four thousand dollars be, and the same is hereby, appropriated out of any money in the Treasury not otherwise appropriated.

Approved June 18, 1838.

The following is an extract from the act of Congress approved March 6, 1820, entitled "An act to authorize the people of the Missouri Territory to form a constitution and state government, and for the admission of such state into the Union on an equal footing with the original states, and to prohibit slavery in certain territories:"

Sec. 2. *And be it further enacted*, That the said state shall consist of all the territory included within the following boundaries, to-wit; beginning in the middle of the Mississippi River, on the parallel of thirty-six degrees of north latitude; thence west, along that parallel of latitude, to the St. Francois River; thence up and following the course of that river, in the middle of the main channel thereof, to the parallel of latitude of thirty-six degrees and thirty minutes; thence west, along the same, to a point where the said parallel is intersected by a meridian line passing through the middle of the mouth of the Kansas River, where the same empties into the Missouri River; thence from the point aforesaid, north, along the said meridian line, to the intersection of the parallel of latitude which passes through the rapids of the River Des Moines, making the said line to correspond with the Indian boundary line; thence east, from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the channel of the main fork of the said River Des Moines; thence, down and along the middle of the main channel of the said River Des Moines, to the mouth of the same, where it empties into the Mississippi River; thence, due east, to the middle of the main channel of the Mississippi River; thence down, and following the course of the Mississippi River, in the middle of the main channel thereof, to the place of beginning: *Provided*, The said state shall ratify the boundaries aforesaid: *And provided, also*, That the said state shall have concurrent jurisdiction on the River Mississippi, and every other river bordering on the said state, so far as the said rivers shall form a common boundary to the said state, and any other state or states now or hereafter to be formed and bounded by the same—such rivers to be common to both; and that the River Mississippi, and the navigable rivers and the waters leading into the same, shall be common highways, and forever free, as well to the inhabitants of the said state, as to other citizens of the United States, without any tax, duty, impost, or toll therefor, imposed by the said state.

The following is a copy of the act of Congress approved 7th June 1836,

entitled "An act to extend the western boundary of the State of Missouri to the Missouri River:"

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when the Indian title to all the lands lying between the State of Missouri and the Missouri River shall be extinguished, the jurisdiction over said land shall be hereby ceded to the State of Missouri, and the western boundary of said state shall be then extended to the Missouri River, reserving to the United States the original right of soil in said lands, and of disposing of the same: *Provided,* That this act shall not take effect until the President shall, by proclamation, declare that the Indian title to said lands has been extinguished; nor shall it take effect until the State of Missouri shall have assented to the provisions of this act."

Application (marked A) having been made to the Secretary of War on the 30th ultimo, for the plat and field notes of survey of the Indian line north of the Missouri River, which was surveyed in the year 1816, by John C. Sullivan, in conformity with instructions from William Rector, surveyor of the lands of the United States in the Territories of Illinois and Missouri, I herewith transmit the reply of the acting Secretary of War, dated August 7, (marked B,) with a plat of the line therein referred to, (marked C,) which is believed to be "*the Indian boundary line*" alluded to in the act of March 6, 1820, above quoted.

The instructions of General Rector, and the field notes of the line run by Mr. Sullivan, said to have been run in pursuance of such instructions, are to be sought for by you in the office of the surveyor general at St. Louis, as they cannot be found at the seat of Government.

It is impossible to give you definite directions as to the best mode of proceeding, to enable you to determine and decide all the points and conflicting questions which may arise in executing your trust. It is only practicable to offer such suggestions as occur to this office, in connexion with the laws under which you are called upon to act, and furnish such information as may be within reach; leaving to your sound discretion to decide from them, and the additional facts which you shall collect by personal attendance on the spot.

With this view, your particular attention is directed to the 2d section of the act of Congress approved the 6th of March 1820, above referred to, wherein the boundary line to be run is in part defined and described, and conformable to which you are distinctly required to ascertain, run, and mark the same. This description, commencing at the southeast corner, makes the fourth call or southwest corner of the state "a point where the said parallel (the parallel of 36° 30' north latitude) is intersected by a meridian line passing through the middle of the mouth of Kansas River, where the same empties into the Missouri River." The description then reads: "thence from the point aforesaid (the southwest corner of the state) north, along the said meridian line, to the intersection of the parallel of latitude which passes through the rapids of the River Des Moines, making the said line to correspond with the Indian boundary line; thence east, from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the channel of the main fork of the said River Des Moines." The above description will constitute the basis of all your operations; for, whatever construction may be given thereto, the same will also determine the section of the line which forms the northern boundary of the northwest addition to the state, made by the act of the 7th of June 1836; every word and every expression of which

should be most carefully examined, in order to arrive at the true meaning and intention. It will be perceived that the northern boundary, as described, is a line to be run from the northwest corner of the state to the Des Moines River. Hence, your first operation should be, in my opinion, to establish the beginning of the line, or old northwest corner of the state; and, for this purpose, particular reference must be had to the call for that corner: that call, it will be seen, is described as the point of "intersection of the parallel of latitude which passes through the rapids of the River Des Moines, by a meridian line passing through the middle of the mouth of Kansas River, where the same empties into the Missouri River, making the said line to correspond with the Indian boundary line." Had the description ended with words "rapids of the River Des Moines," it seems to me the proper and only course would have been for you to ascertain the precise latitude of the rapids referred to; and a point of the same latitude ascertained in the Indian line, or in that line continued north, if necessary, would be the true northwest corner of the state; but, by the addition of the words "*making the said line* (that is, the western boundary of the state) *to correspond with the Indian boundary line,*" it becomes a question whether any other point than that ascertained to be the *north end* of the Indian line, as actually surveyed and marked upon the field, can be taken as the true northwest corner of the state. And it will remain to be determined by the authorities to whom the decision of the question is intrusted, whether, by the term "correspond," as applied in the law to the line in question, was meant *identity*, in all respects, both as to length and direction. It is also worthy of remark, that the call of the northern boundary line is not to the "*rapids of the River Des Moines,*" or of any other river, but "*to the middle of the channel of the main fork of the River Des Moines:*" thus leaving it free to strike that river at any point; whether the same shall happen to be situated below, above, or at any point along the rapids, that being a matter, so far as this call is concerned, perfectly immaterial. And here it may also be remarked, that the circumstance of this call not specifying the rapids, (which might naturally have been the language had the rapids referred to as a bearing by which the said northwest corner could be ascertained been situated in the River Des Moines,) may it not have been intended to refer to rapids situated upon some other river beyond the point of the intersection of the line with the Des Moines? For your information on this point, I herewith furnish a report of the solicitor of this office, (paper marked D.)

In view of the foregoing provisions of the several laws herein quoted, having ascertained the true point *from which to commence* your survey, and established a suitable monument thereat, you will carefully observe and note the latitude thereof by a series of the most critical observations you can make, not fewer than three, taking the *mean result* as the true one.

You will then proceed with an experimental line, as nearly as practicable on the same parallel of latitude, due west to the Missouri River, marking the same in the usual manner as you progress; and on reaching the Missouri River, you will, by another series of critical observations, as aforesaid, taking the mean thereof as the true result, ascertain and establish, by a suitable monument, the precise point of latitude corresponding with that which you will have previously determined for the position of the old northwest corner of the state. And it will be also proper to ascertain and show on the field notes the connexion between the point of latitude on the Missouri which you will determine as the true point of

termination of that river, and the point on the same river which you will have arrived at on your experimental line.

From the proper point on the Missouri River you will proceed to run a due east line, on the same parallel with the point aforesaid, to the old northwest corner as before ascertained; thence, according to the words of the law, proceed "east from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the channel of the main fork of the said River Des Moines."

In case you should find it impracticable to complete the survey of the line and make report thereon before, or at a seasonable period during, the ensuing session of Congress, it will be proper that your operations be such as to enable you to make satisfactory report of progress in time to be submitted to that body at as early a period of the session as circumstances will admit.

The third section of the law declares "that the line to be so run, ascertained, and marked, shall not be deemed to be finally established and ratified by the United States, until the map or plat and description aforesaid, and also the said report of the commissioner, shall be submitted to, and the boundary, as thus ascertained and marked, approved of and ratified by, the Congress of the United States."

It is deemed advisable that the line you will run should be defined by the most certain and distinctive marks, not to be confounded with any previous marks of survey, and, as much as possible, identified by reference to *natural objects*, all of which to be carefully noted in your field book. In open fields or prairies, suitable mounds should be raised at distances not exceeding five miles apart, to be identified by a deposit of charcoal therein, with a squared stake, charred below the surface, planted in the centre, with the initials "M" marked on the south side, and "I" on the north; and objects of less permanent nature, as stakes or posts, should be planted at intervals of one mile. And at the point of the termination of the line on the western bank of the River Des Moines, you will ascertain the latitude by the most careful observations, as heretofore mentioned, and establish at the same a suitable monument.

You will extend your observations and measurements in such manner as will enable you critically to delineate on your map the relative positions of the several lines and points in dispute.

SEARCH FOR NOTES ON SULLIVAN'S LINE

The above instructions were issued after the commissioner had made inquiry as to the original location of notes prepared by John C. Sullivan. A communication from the commissioner to the Secretary of War follows:¹²

"A"

GENERAL LAND OFFICE

July 30, 1838

SIR: To enable this office to prepare the necessary instructions for the commissioner appointed on the part of the United States to ascertain, run and mark the southern boundary line of the Territory of Iowa, under an act of Congress

¹² Exec. Doc., *op. cit.*, p. 35.

of the 18th ultimo, a copy of the plat and field notes of survey of the Indian line north of the Missouri River, which was surveyed (according to information in this office) in the year 1816, by John C. Sullivan, with the advice of the commissioners appointed by the Government of the United States to treat with the Indians of the Mississippi and its waters, becomes indispensably necessary; I have the honor to request, therefore, that the originals of the plat and field notes, instructions, &c., may be furnished to this office for a few days, in order that copies may be taken from them for the uses above mentioned.

I am, with great respect, sir, your obedient servant,

The Secretary of War replied:¹³

"B"

WAR DEPARTMENT

August 7, 1838

SIR: After a laborious search of the files of this Department, the enclosed papers have at length been found, and are all that can be discovered in relation to certain Indian boundary lines north of the Missouri, run in 1816. They embrace but one of the papers requested in your note of the 30th ultimo, and that is the plat of the survey of those lines. By the letter of Messrs. Clark, Edwards, and Chouteau, commissioners, which will be found among these papers, it will be seen that no instructions were given from this Department, or by those commissioners, respecting the running of the lines in question; but that Mr. William Rector, surveyor of the lands of the United States in the Territories of Missouri and Illinois, had this done upon his own responsibility, and gave the necessary instructions. There is no evidence that a copy of these instructions, or the field notes of the surveyor employed to run the lines, were ever forwarded to this Department. The presumption is, that the instructions were recorded and the field notes deposited in the land office of St. Louis, and will there be found. It appears, from the same letter of the commissioners, that Mr. Rector held a correspondence with the Treasury Department respecting the means to defray the expenses of the surveys; and it may be that, during that correspondence, he furnished a copy of the instructions, at least, and possibly forwarded the field notes.

Please to return the accompanying papers when done with.

Very respectfully, your most obedient servant.

LEGAL OPINION ON LINE'S LOCATION

The commissioner asked solicitors of the General Land Office for a legal opinion as to the location of the line. Their reply follows:¹⁴

"D"

GENERAL LAND OFFICE

Solicitor's Bureau, August 8, 1838

SIR: Pursuant to your request, I have examined the act of Congress of 1820, authorizing the people of Missouri to form a constitution and state government, &c.; the act extending the western boundary of the state, passed June 7, 1836; and the act of June 18, 1838, authorizing the running, &c., of the southern boundary of

¹³ Exec. Doc., *op. cit.*, p. 33.

¹⁴ Exec. Doc., *op. cit.*, p. 36, 37, 38.

the Territory of Iowa; and beg leave to submit the following as the result of my reflections upon the points to which you have particularly directed by attention.

The act of June, 1838, directs the line to be run, ascertained, and marked, *in all respects according* to the provisions of the said acts of 1820 and 1836, "wherein the said boundary line is described."

By the act of 1836, the line of *Iowa*, west of the old western boundary of Missouri, will be a parallel of latitude drawn through the old northwest corner of the state, and extended to the Missouri River.

The difficulty, if any exists, will be found in ascertaining the true position of the old northwest corner of the State of Missouri. The guide to the commissioner, in ascertaining this point, is the act of 1820.

The description gives as a standing point, so far as concerns this part of the boundary, *the point* where a parallel of latitude "is intersected by a meridian line passing through the middle of the mouth of the Kansas River, where the same empties into the Missouri River; thence, from the point aforesaid, north, along the said meridian line, to the intersection of the parallel of latitude which passes through the rapids of the *River Des Moines*, making the said line to correspond with the Indian boundary line; thence east, from the point of intersection last aforesaid, to the middle of the channel of the main fork of the said River Des Moines."

The map and papers, so long searched for, and yesterday transmitted from the War Department, show that an Indian boundary line was run in 1816, by direction of General William Rector, from the middle of the Kansas River, at its junction with the Missouri, due north one hundred miles; thence, easterly, to the "main fork" of the *Des Moines*. This line was, for many years, supposed to be the true boundary of Missouri. A line run one hundred miles north of the Kansas is spoken of as the "northwest corner of the limits of the State of Missouri," in the *Iowa* treaty of August 4, 1824, which was concluded, on the part of the United States, by Governor William Clark, one of the commissioners, with whose advice Surveyor General Rector caused said line to be run and marked.

The question to be solved is: Will the description in the act of 1820 justify Governor Clark in treating the northern termination of that line as the old northwest corner of the state; especially if it shall be found that the parallel drawn through the rapids of the River Des Moines intersects the meridian line drawn from the mouth of the Kansas at a point either north or south of the termination of the Indian boundary line?

I have to state, that the judicial tribunals, in settling questions of disputed boundary, uniformly hold that permanent natural objects, or artificial marks made upon the earth's surface, called for in the description of a boundary line, when clearly identified, control both the courses and distances which may be also called for in the same description. (9 *Cranch*, 173; 6 *Wheaton*, 58; 1 *Cooke*, 146.)

The reason of the rule will be perceived, with scarce a moment's reflection. A natural object, or fixed mark upon the earth, at a given point, more clearly ascertains the position of that point than any other mode. Mathematical observations and calculations, and lines run from distant fixed objects, are all liable to error, either from want of skill, bad measurement, or defective instruments. A line or point thus to be ascertained may be varied in its position by each artist who attempts to ascertain it. Not so with fixed marks, or natural objects: their position is always the same; hence they are most to be relied upon.

In a certain contingency, this rule may be deemed applicable to the descriptive calls for the old northwest corner of Missouri, and, if so, should govern the action of the commissioners. If, for instance the Indian boundary line can be found, and the mark at the point of its northern termination identified, and it be also determined that the words of the act of 1820, "*making it correspond with the Indian boundary line*" require an identity of correspondence, as well in the length as in the direction of the two lines, and it shall also be found that the point of intersection of the parallel and meridian, named in the description of the boundary, does not correspond therewith, the former should be regarded the true point, or corner, and not the latter. It may, perhaps, be claimed that the "rapids of the River Des Moines" is a call for a natural, and therefore controlling object in the description of the north boundary line. My opinion is adverse to such a claim. I consider it a natural object, given as a bearing point, from which it was supposed the true position of the northwest corner could be ascertained, either by taking its latitude and then finding the same latitude on the meridian of the mouth of the Kansas River, or by tracing a line due west from the rapids to the point of intersection. It is evidently so; for we find that the act, in proceeding to state the course and termination of the north boundary of Missouri, does not name said rapids as a point situate upon the line, but terminates the line at "the middle of the channel of the main fork of the River Des Moines."

A map of the surveys of this section of country also corroborates my conclusion. Supposing the rapids of the Des Moines, as claimed by Missouri, to be the point whose parallel of latitude constitutes her northern boundary, you will find that, by tracing this parallel from west to east, it will (owing to a southern bend in the Des Moines) strike the *main fork* some distance above the rapids. After striking the "main fork," the course of the line changes, and runs "down the middle of the main channel of the Des Moines," forming, not a part of the northern, but a part of the eastern or northeastern boundary of the state: thus showing that said rapids is a mere call for a bearing point, and not a call for boundary.

A question connected with the subject, legal in its character, and eminently material, is, does the act of 1820 require an identity of correspondence in the *length* as well as the direction of the Indian boundary line, and the former west line of the state? Can we say (using language according to its general acceptance) that two lines correspond with each other, when there is no agreement between them other than in the course they both run, and the point from whence they start; especially when the object in describing either line is to give the point of termination as well as the point of commencement and the course? Do lines correspond with each other when, as to material points, they are unlike?

If we cannot give affirmative answers to both questions, the true construction of this part of the act will require it to be treated in the same manner that a court would treat a description of boundary reading thus: "Beginning at a stake standing one rod north of the junction of Scioto and Little Miami Rivers; thence, north, 15° east, to the point where a line drawn between the lower bridge of the Miami and the lower bridge of the Scioto intersects the same—making the said line terminate at a stake standing on the south side of a white-oak tree, blazed on four sides, and two feet distant; thence, on the line drawn between said bridges, to the Scioto bridge, above mentioned."

In directing a surveyor to run such a line, a court would instruct him to

run from the stake first named to the stake near the white-oak tree; thence to the Scioto bridge; notwithstanding the course of the first line might vary from north 15° east, and the stake near the white-oak might not stand in the line drawn between the two bridges. In my opinion, the Indian boundary line marked on the west line of Missouri is made the true western line of that state by the act of 1820, the point of its northern termination being the northwest corner of the state. Consequently, the marks of that line are marks called for in the description of the boundary, which legally control the boundary is susceptible of identification; and I advise you so to instruct the commissioner.

I am aware that a line run upon these principles, due east, or on a parallel of latitude, may strike the "main fork" of the Des Moines at a point approximating the latitude of the Des Moines rapids of the Mississippi, more nearly than the rapids of the River Des Moines, and, possibly, will cut from Missouri a triangular portion of territory, over which her jurisdiction has been for a long time undisputed, equal in length to the former length of the north boundary of the state, and about five miles in width at the eastern end; but that will be a subject for the consideration of Congress, who, having the control over the boundaries of Iowa, may give Missouri all that she formerly claimed or now claims. The commissioner is bound to construe the act of 1820 legally, and to survey the line accordingly, inasmuch as it may be found that the line given by the act of 1820 is south of the Indian boundary line run by Sullivan in 1816, up to which, as her northern boundary, Missouri has exercised jurisdiction for many years. I would suggest the propriety of authorizing Major Leæ, on discovering that fact, to run an experimental line only, without fixing permanent marks; for, it occurs to me that Congress, in such event, may establish the Indian boundary line as the southern boundary of Iowa, which is precisely what the legislative council of Wisconsin requested might be done; and, if done, the permanent marks on this line will, at least, be useless.

LEA'S REPORT ON HIS INVESTIGATIONS

Major Lea's report to the commissioner of the General Land Office is a good resume of the situation up to 1838. It follows:¹⁵

Report of the commissioner appointed by the President, under the provisions of an act entitled "An act to authorize the President of the United States to cause the southern boundary of the Territory of Iowa to be ascertained and marked," approved June 18, 1838.

Baltimore, (Md.), January 19, 1839.

SIR: Having received at this place on the 14th of August last, through your office, the President's instructions to me as commissioner on the part of the United States, under the act above cited, I promptly repaired to St. Louis, where I had previously informed the governors of Missouri and Iowa that I would receive their communications respecting the appointment of commissioners on the part of the state and territory, respectively. On my arrival at St. Louis, 1st of September last, I received a letter from the acting governor of Iowa, requesting me to defer operations, in order to allow more time for the selection of a commis-

¹⁵ Exec. Doc., *op. cit.*, p. 21-29.

sioner on the part of the territory; also, a letter from the governor of Missouri, suggesting the propriety of suspending operations until I should hear from the Secretary of State of the United States, to whom his excellency had written on the subject. His excellency stated that he had no authority to appoint a commissioner on the part of the State of Missouri, and desired the proposed survey to be postponed until after the meeting of the state legislature. In reply, I informed his excellency that I would confine my operations to the ascertainment of facts necessary to be known before the line could be properly established; and with this arrangement he expressed himself satisfied.

On the 8th of September, I received notice from his excellency Robert Lucas, that he had appointed Doctor James Davis the commissioner on the part of the Territory of Iowa.

The history of the boundary in question is briefly as follows: In the year 1808, the Osage Indians ceded to the United States all their claims to lands lying north of the Missouri River, without specifying bounds. In 1816, General William Rector, surveyor general of Illinois and Missouri, finding it necessary to have the limits of this cession established, appointed John C. Sullivan the surveyor for that purpose, with the approbation of the commissioners of the United States then having charge of Indian relations in that quarter. During that year, Colonel Sullivan, accompanied by Pierre Chouteau, senior, one of the commissioners, met the Osages in council on the Missouri River; and thence he proceeded to run and mark the boundaries of their cession, in accordance with the views of the parties concerned. The line, as surveyed by Sullivan, is delineated on the accompanying map; and the field notes are in the office of the surveyor general at St. Louis. It begins on the Missouri River, opposite to the mouth of Kansas River, and runs thence one hundred miles north; and thence due east, according to the field notes, one hundred and fifty and a half miles, to the Des Moines River; but subsequent surveys have shown that the general course of this line is north of east, amounting at the east end to two and a half degrees; the error having arisen from want of proper care in making corrections for the variation of the needle.

By act of 6th March, 1820, Congress authorized the people of the Territory of Missouri to form a constitution and state government; and, in describing the boundaries of the new state, the act requires that part of the western boundary north of the Missouri River "to correspond with the Indian boundary line." As there was no Indian boundary in that vicinity at that time, but the line run by Sullivan in 1816, that must be the line called for in the act.

In July, 1820, the convention of the people of Missouri formed a constitution for the state; and in specifying the boundaries of the state, they copy literally the description given by the act of Congress. Since that time, the State of Missouri has continued to exercise jurisdiction as far north as the line run by Sullivan in the year 1816; and that line has been uniformly treated as the true northern boundary of the state by the authorities of the United States, and by the public at large, without any question as to its propriety, until after the purchase, in 1832, of other Indian lands lying north of said line. At the close of the Black Hawk War in 1832, the Indian title was extinguished to a strip of land about fifty miles wide, lying along the Mississippi River, and adjoining the State of Missouri on the north. This tract was soon settled upon by emigrants, and the district was temporarily attached to the Territory of Michigan. In the year 1836 the Territory of Wisconsin was created, embracing a portion of the country west

of the Mississippi, inclusive of the tract just named. During the last session of Congress, the Territory of Iowa was stricken off from Wisconsin, and made to embrace all the country north of Missouri, and included between the Mississippi and Missouri Rivers up to certain limits. Hence, the *northern* boundary line of the State of Missouri has become the "*southern* boundary line of the Territory of Iowa;" and the determination of the latter consists in the determination of the former, as described in the act of Congress of 6th March 1820.

After the country along the Des Moines River was thrown open to settlement by the whites, certain rapids in that river became more generally known than previously; and as the law designating the northern boundary of Missouri called for "a parallel of latitude passing through the rapids of the River Des Moines," it was supposed by many that these were the rapids intended. If that supposition were true, then a number of the settlers on the west side of the Des Moines River, and within the limits of the purchase of 1832, would be included within the State of Missouri; and the question was then raised as to what government they belonged. The Territories of Michigan, Wisconsin, and Iowa, however, have successively claimed and exercised jurisdiction as far south as the old Indian boundary.

By the act of 7th June 1836, Congress extended the limits of the State of Missouri west to the Missouri River; and by the act of 18th June last, provision was made for establishing the whole line between the state and the territory.

The information possessed by me, in regard to this line, on my arrival at St. Louis, is contained in my instructions from your office, signed by the acting commissioner, and dated August 10, 1838. A copy (marked K) is herewith transmitted; and also a copy of its accompanying document (marked D), being the opinion of the solicitor of the General Land Office on the points of law involved in the case. At the office of the surveyor general at St. Louis, I was furnished with a map and field notes of a survey of the northern boundary of the State of Missouri, made in the year 1837, by Joseph C. Brown, Esq., under the direction of three commissioners appointed by the authority of that state. This line will be designated as "Brown's line," and is distinctly laid down on the accompanying map. Other information was obtained at St. Louis, but reference is more particularly made to the letter of the honorable John Scott (marked E), and that of General William Milburn (marked F.)

In the second section of the act of 6th March 1820, the western boundary of Missouri is described as "a meridian line passing through the middle of the mouth of Kansas River, where the same empties into the Missouri River; thence, from the point aforesaid, north, along the said meridian line, to the intersection of the parallel of latitude which passes through *the rapids of the River Des Moines*, making the said line to correspond with the Indian boundary line;" and the northern boundary is described as running "thence, east, from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the main fork of the River Des Moines; thence, down and along the middle of the main channel of the said River Des Moines, to the mouth of the same, where it empties into the Mississippi River."

Under that phrase, in this description, which requires a part of the western boundary "to correspond with the Indian boundary line," the solicitor of the General Land Office (see paper marked D) has given it as his opinion that the true northern boundary of the state is the parallel of latitude passing through

the old northwest corner of the Indian boundary. Although the argument of the solicitor is ingenious and plausible, yet it was not altogether conclusive; for the call for the northern boundary is "the parallel of latitude which passes through the rapids of the River Des Moines;" and if we assume the old northwest corner to be the point through which the said parallel must run, it *may* not cut "the rapids of the River Des Moines" at all; and hence the law would be found to contain incompatible calls. But it is a good rule in law that a statute should be so construed, if possible, that one part may not contradict or be incompatible with any other part; and, in order to elucidate this point, a preliminary survey became necessary.

If we suppose the position assumed by the solicitor to be abandoned, and the call for "the rapids of the River Des Moines" to be paramount, then the question arises, Where are those rapids? The commissioners appointed by the State of Missouri to run the line assumed the rapids in question to be the rapids in the Des Moines River, about 63 miles above its mouth; whilst others contend that the rapids contemplated in the law are rapids in the Mississippi River, near the mouth of the River Des Moines. Finding that some preliminary surveys would be required before any conclusive construction could be placed upon the law, and being restrained from an actual demarcation of the line by the unexpected position of the executive of the State of Missouri, I determined to make a full examination of all the localities concerned, and to make to you a report of all the facts and circumstances of the case, in time for it to be laid before Congress at its present session. Accordingly, after much delay in procuring instruments and equipage, I left St. Louis, with my party, on the 21st of September last.

Having ascertained the latitude of the head of the Des Moines rapids in the Mississippi River, and of the point where Sullivan's line strikes the Des Moines River, I met, by appointment, at the town of Van Buren, in the great bend of the Des Moines River, Dr. James Davis, the commissioner on the part of the Territory of Iowa. He approved of the manner in which I proposed to conduct the examinations, and joined me in my operations. As I had explored the Des Moines River some years before, and was familiar with its islands and rapids, Dr. Davis was contented with my representations in that respect, and did not deem it necessary to make any further exploration of the river. It was agreed between us, that wherever the Des Moines River forms the division between the State of Missouri and the Territory of Iowa, all the islands in said river should belong to the Territory, except the large island about three miles below the town of St. Francisville, which should belong to the State of Missouri, as the channel on the side next to that state is dry except at times of high water.

The rapids at the great bend are those assumed by the commissioners of Missouri as "the rapids of the River Des Moines," and from which Brown's line is run west to the Missouri River. Believing that Congress *might* declare that to be the true point of beginning, I followed Brown's line westward, for the purpose of testing its accuracy by astronomic observations; intending to recommend its adoption, if found to be accurate, as the definitive line, in case that Congress should declare its beginning point to be the true one. By this course I hoped to save both time and expense in settling the disputed boundary. Much sickness, however, in my party, and the unusually early beginning of rigorous winter, prevented me from accomplishing a part of my projected operations. I found that

my time would not allow me to test Brown's line throughout; and I also failed in getting the latitude of the old northwest corner of the Indian boundary, after devoting four weeks to that object alone.

The head or most northern point of the Des Moines rapids, as seen from the western shore of the Mississippi River, is at the southeast corner of the square of old Fort Des Moines, and its latitude is $40^{\circ} 30' 53''$ N. On the east bank of the river the rapids are visible about one mile further north than on the west side; but the point where the main channel of the river becomes first obstructed by the rapids is a few yards south of that of which the latitude has just been given, and which is assumed as the proper head of the rapids, so far as the boundary line in question is concerned.

The latitude of the point where the old Indian boundary strikes the Des Moines River is $40^{\circ} 35' 43''$ N. Hence the difference of latitude of these two points is $4' 50''$, equal to 5 miles 2,919 feet. Unfortunately, we have not the precise latitude of the old northwest corner; but, from the results of recent surveys made on that line, and from data derived from Mr. Brown's survey, I have calculated that it is south of the point where Sullivan's line strikes the Des Moines River, by 4 miles 27 feet. By subtracting this from the 5 miles 2,919 feet, we have 1 mile 2,892 feet for the distance that the old northwest corner is north of the head of the Des Moines rapids. This result is probably very near the truth, but, from want of precise data, I cannot give it as the basis of any other conclusion.

In ascending the Des Moines River from its mouth, several shallow places with swift currents are found below the "great bend;" but there is no obstruction of magnitude sufficient to deserve, or to obtain among the neighboring inhabitants, the appellation of "rapids," below those at the place just named, where there is, at low water, a fall of one or two feet in a distance of about eighty yards; and, in part of the width of the stream, the water falls perpendicularly about ten or twelve inches. It is said, however, that when the river rises as much as three feet above low water, these rapids entirely disappear, and that the river assumes a uniform flow. There are other rapids above the great bend, particularly those near the Indian village lately known as Appenoose's, and now as Keokuk's, which are about nineteen miles north of those at the great bend, and which they much resemble. There are also a series of much greater rapids than either of those already named above the mouth of the Cedar fork of the Des Moines River, and about sixty miles north of the old Indian boundary line.

The latitude of the centre of the rapids at the great bend was taken by Mr. Brown, and is reported by him at $40^{\circ} 44' 6''$ N. By a series of observations, I determined it to be $40^{\circ} 44' 5.16''$ N., the point from which my observations were taken being about 20 feet south of that used by Mr. Brown. The difference of latitude between the eastern terminations of Sullivan's and Brown's lines is, therefore, $8' 22.16''$, or 9 miles 3,248 feet; and if to this be added 4 miles 27 feet, we shall have 13 miles 3,275 feet as the distance between the two lines at the old northwest corner, and thence to the Missouri River. From these data, and others deduced from the accompanying map, the area of the tract contained between Brown's and Sullivan's lines is estimated at 2,616 square miles, about one-half of which, lying at the eastern and western extremities, may be deemed excellent agricultural lands; the intermediate portions being of inferior quality. The whole of this tract is still possessed by various Indian tribes, except a small por-

tion next to the Des Moines River, which is attached to Van Buren County, Iowa Territory, and is supposed to contain about 1,500 inhabitants.

An examination of the preceding matter, with the accompanying map, will show that there are four lines, any one of which may be taken as that intended by the act of 6th March 1820:

1. The old Indian boundary, or Sullivan's line, extended west to the Missouri River.

2. The parallel of latitude passing through the old northwest corner of the Indian boundary.

3. The parallel of latitude passing through the Des Moines rapids in the Mississippi River.

4. The parallel of latitude passing through the rapids in the Des Moines River at the great bend.

Of line No. 1.—By reference to the annexed letter (marked G) of General William Clark, former governor of the Territory of Missouri, and late superintendent of Indian affairs at St. Louis, to the commissioner of Indian Affairs, dated January 13, 1838, it will be seen that many treaties have been formed with various Indian tribes, in which the old Indian boundary is called for as the northern boundary of the State of Missouri. In the treaties made with the Sacs and Foxes, and with the Iowas, at Washington city, in the year 1824, only four years after the formation of the State of Missouri (which treaties were made expressly for the purpose of extinguishing the claims of said tribes to all lands within that state), the northwest corner of the old Indian boundary, or the point 100 miles north of the mouth of the Kansas River, is expressly called for as "the northwest corner of the State of Missouri." These treaties have been ratified by the Senate, and appropriations have been made by Congress to carry them into effect, without any objection to their phraseology by the representatives of Missouri. Under these treaties, and under that made by Major General Scott with the Sacs and Foxes in 1832, lands have been surveyed, and municipal divisions established, with reference to the old Indian boundary, as the true northern boundary of the state; and in like manner is the same line marked in all the maps in common use in the country. The only known exception to this uniform manner of considering that line, from the year 1820 down to 1833, is that of the surveyor general's office at St. Louis, where the line run by Sullivan has been reported upon the surveys of the public lands as the "Indian boundary," and not as the state line. Yet, with all this uniformity of action, this line does not fulfil the requirements of the law, as it is an oblique line; whereas the law calls for "a parallel of latitude," without reference to the Indian boundary on the north. Moreover, this line does not pass through any point that could properly be termed "the rapids of the River Des Moines," as required by the law. It cannot, therefore, be deemed the *legal* boundary of the State of Missouri; although its long use as such, and the various interests which have grown up under that use, may render it proper to establish it as such by future legislation.

Of line No. 2.—For a full discussion of the legal claims of this line to preference, I refer you to the opinion of the solicitor of the General Land Office already cited. The great objection to this line is, that it *may* not pass through any rapids at all, and thus not fulfil one of the calls in the law; and this is probably the case, as shown heretofore. Yet, an actual survey might show a different result; in which case, the second and third lines would become identical. With all due

deference to the opinion of the solicitor, I believe that it is only in this latter case that the second line can have any just claim to preference, under a strict construction of the law; the call for the "rapids of the River Des Moines" being paramount, in my opinion, to the call for correspondence between the state line and the old Indian boundary.

Of line No. 3.—In case that neither of the two first lines should be deemed the true one, the question of the boundary would be reduced to the determination of what is meant by the phrase "the rapids of the River Des Moines." The Des Moines rapids in the Mississippi River, beginning about three miles above the mouth of the Des Moines River, and extending about fourteen miles up the river, have been noted as a great obstruction to its navigation ever since the country was first explored. They are named from their vicinity to the mouth of the Des Moines River, as the rapids in the Mississippi, about the same distance above the mouth of Rock River, are called "Rock River rapids." When the French first settled the valley of the Mississippi, they named the one *Les rapides de la riviere Des Moines*, and the other *Les rapides de la riviere de la Roche*. When the Americans took possession of the country, they generally retained the French names of places, merely translating them into English. In formal documents, especially, the names of places were usually translated literally; and hence the name *Les rapides de la riviere Des Moines* became "The rapids of the River Des Moines"—the precise words used in the act of Congress in designating the northern boundary of Missouri. In confirmation of this account of these names, I refer you to the annexed extract (marked H) from the records in the office of the United States recorder of land titles at St. Louis, and to reports made by Messrs. Clayton and Huntsman to the Senate and House of Representatives, respectively, in the year 1836, on the claim of the heirs of Thomas F. Reddick to a certain tract of land. From these papers it appears that, in the year 1799, permission was granted to Louis Honore "to settle at the head of the rapids of the River Des Moines," and that a grant of land was made to him at that place, conditioned upon actual settlement and occupation. Under this grant he settled at the head of the "Des Moines rapids," as they are now called; and under this grant and settlement the heirs of Reddick claim the tract at the head of the Des Moines rapids, as the legal representatives of Honore. The reports of both Messrs. Clayton and Huntsman are favorable to the claim; implying that, in the opinion of those gentlemen, and of the committees whom they represent, "the rapids of the River Des Moines," and "the Des Moines rapids," are the same thing. I also refer you to the letter of Pierre Chouteau, Jr. (marked I), for the name by which the Des Moines rapids have ever been known by the early French settlers and their descendants. It is, indeed, notorious that the name by which these rapids have ever been known among the French is *Les rapides de la riviere Des Moines*, and that the translated name has gradually assumed the more familiar English form of "Des Moines rapids." And in the French translation of the constitution of Missouri, sanctioned by the convention, the phrase "The rapids of the River Des Moines" is rendered *Les rapides de la riviere Des Moines*—the precise phrase used habitually by the French inhabitants of the country to mean the Des Moines rapids on the Mississippi. Were there any other rapids at that time generally known by that name? I answer, No: for, as has been already stated, there are various rapids in the Des Moines River of similar character; and they are, at this day even, distinguished from each other among the inhabitants of the country by some

additional qualification such as "the rapids at the great bend," and "the rapids at Appenoose's village," &c. When the commissioners of the State of Missouri went to run their line (only eighteen months since), they had to explore the river before they could determine which of its rapids should be selected; and there is still a great diversity of opinion, among those claiming to run to rapids in the Des Moines, as to which rapids were intended by Congress. But the use of the definite article "*the* rapids," &c., seems to imply some rapids well known and distinguished by that name; which is evidently not the case in regard to any rapids in the Des Moines. It is proper to observe, also, that the phrase used is "the rapids *of* the River Des Moines," and not the rapids *in* the River Des Moines: that it is a *name* merely, not designating geographical position; and that it is as applicable to rapids in the one river as in the other. The rapids in the Mississippi, were so much more notorious at the time of the formation of the state constitution of Missouri, that many of the members of the convention were not aware that there were any rapids in the Des Moines River at all, and, of course, have always believed the Des Moines rapids to be most intended by Congress. Among the members of the convention who have thus expressed themselves may be mentioned his excellency Henry Dodge, Captain Nathan Boone, United States dragoons, and Judge Emmons, of St. Charles County, Missouri. Yet there are others who appear to have had a different view of the matter at the time.

Of line No. 4.—The fourth line, or that passing through the rapids in the Des Moines River at the great bend, is understood to be the line claimed by the State of Missouri; and if any rapids in the Des Moines River ought to be regarded as the governing point, I believe that these should be taken, as being the best known on account of their proximity to the mouth and to the old boundary. In regard to the claims of this, the fourth line, I can say nothing more favorable than to refer you to the letter of the honorable John Scott, already cited, in reply to my application for information on this subject. Mr. Scott was the delegate from the Territory of Missouri at the time of the creation of the state; he drew the bill which became a law on the 6th of March 1820, specifying the limits of the state; and was afterwards a member of the convention of Missouri which adopted those limits. I also refer you again to the letter of General William Milburn, chief clerk of the Surveyor General's Office at St. Louis. The character of these gentlemen is too well known to need any comment; and they are so positive and so circumstantial in their statements of what was the impression of themselves and others on the point in question, that it is impossible to doubt their accuracy. Hence, it is manifest that there was a discrepancy of opinion among those most directly concerned, from the beginning; and hence, also, the difficulty of arriving at the intention of Congress in the use of the words "the rapids of the River Des Moines."

In view of all the facts and circumstances of the case, I feel constrained to say:

1. That the old Indian boundary, or line No. 1, extended west to the Missouri River, is the equitable and proper northern boundary of the State of Missouri; but that the terms of the law do not allow the commissioner to adopt that line.
2. That the parallel of latitude passing through the old northwest corner of the Indian boundary, or line No. 2, is neither legally nor equitably the northern boundary of Missouri.

3. That lines Nos. 3 and 4, or the parallels of latitude passing through the respective rapids, *both* fulfill the requirements of the law. I am not, however, prepared to say which of these lines should have the preference.

In accordance with your request that I should recommend such further action as I might deem necessary in the premises, I have the honor respectfully to suggest that Congress, during the present session, be requested to declare, by resolution or otherwise, which of the several lines here presented shall be deemed the southern boundary of the Territory of Iowa. The act of the 18th of June 1838, requires that the survey of the line shall be approved by Congress before it be deemed definitive; and it might very probably happen that the line surveyed under the direction of the commissioner might not be approved by Congress. With the information now before them, Congress can as well decide where the line should be before the actual survey as afterwards.

Should Congress be of the opinion that the *fourth line*, or that passing through the rapids in the Des Moines River, is the true boundary, I would respectfully recommend the definitive adoption of the line already run through that point by the authority of the State of Missouri. It was carefully surveyed and marked by Mr. Joseph C. Brown, of St. Louis, a gentleman in every way qualified to perform the duty.

Should Congress, however, deem it proper to adopt the old Indian boundary, or line No. 1, as the true boundary of the Territory, it is probable that the State of Missouri would acquiesce, as that has generally been deemed her true boundary, and consequently would not derange any of her municipal divisions, or deprive her of any territory over which she has heretofore exercised jurisdiction, and as the "Platte district," a large and very valuable section of country, was added to the state by Congress in 1836, doubtless under the impression that the northern boundary of the state was the old Indian boundary, as represented upon all the maps in use in the country.

But should either of the lines No. 2 and No. 3 be adopted, as it would take from the State of Missouri a portion of territory over which she has long exercised jurisdiction, much ill-feeling would be engendered, and tedious litigation might ensue.

Should Congress not adopt definitively the line surveyed by Mr. Brown, an appropriation will be necessary to carry on the survey during the next season. Estimates, according to the several cases, will be forwarded in a few days.

Sullivan's Line of 1816 finally became by Court decree the boundary line between Iowa and Missouri. Copies of his survey notes would be interesting in this connection. Unfortunately, they do not seem to be extant.

THE BOUNDARY DISPUTE

Matters ran along with the boundary undecided for several years. At one time the two states were on the verge of a "war" over the rights of their respective citizens. A statement of the situation in Fremont County will serve as an example:⁷

⁷ Fremont County History—Des Moines Historical County 1881, p. 177.

The boundary line between the Territory of Iowa and the State of Missouri was a difficult question to settle in 1836, in consequence of claims arising from taxes and titles and at one time civil war was imminent. In defining the boundary of the counties bordering on Missouri and Iowa, authority had fixed a line that has since been established as the boundary between Iowa and Missouri.

* * * * *

The Missourians (evidently not well versed in history or geography) insisted on running the northern boundary line from the rapids in the Des Moines River just below Keosauqua, thus taking from Iowa a strip of territory eight or ten miles wide. Assuming this as her northern boundary line, Missouri attempted to exercise jurisdiction over the disputed territory by assessing taxes, sending her sheriffs to collect them by distraining the personal property of the sellers. The Iowans, however, were not disposed to submit, and the Missouri officials were arrested by the sheriffs of Davis and Van Buren Counties and confined to jail.

Governor Beggs of Missouri called out his militia to enforce the claim and sustain the officers of Missouri. Governor Lucas called out the militia of Iowa and both parties made active preparations for war. In Iowa about 1,200 men were enlisted and 500 were actually armed and encamped in Van Buren County ready to defend the integrity of the Territory. Subsequently Gen. A. C. Dodge of Burlington, Gen. Churchman of Dubuque and Dr. Clark of Ft. Madison were sent to Missouri as envoy plenipotentiary to execute if possible, a peaceable adjustment of the difficulty. Upon their arrival they found that the county commissioners of Clarke County, Missouri, had rescinded their order for the collection of the taxes and that Governor Beggs had despatched messengers to the governor of Iowa proposing to submit agreed cases to the Supreme Court of the United States for the final settlement of the boundary question. This proposition was declined, but afterwards Congress authorized a suit to settle the controversy which was instituted and which resulted in judgment for Iowa.

IOWA BECOMES A STATE

As the Territory of Iowa began to be more thickly populated there was much favorable sentiment toward the creation of a state. In 1844 representatives were chosen to convene for the purpose of establishing the State of Iowa. They met at Iowa City and early in October prepared a constitution. The boundaries which they suggested were contained in an article which follows:^a

ARTICLE 1.—PREAMBLE AND BOUNDARIES

We, the people of the Territory of Iowa, within the boundaries hereinafter designated, by our representatives in convention assembled at Iowa City, on Monday the seventh day of October, in the year of our Lord one thousand eight hundred and forty-four, grateful to the Supreme Ruler of the Universe for the blessings hitherto enjoyed as a people, and acknowledging our dependence upon him for a continuation of these blessings, in order to establish justice, ensure tranquility, provide for the common defense, promote the general welfare, secure to ourselves and our posterity, the rights of life, liberty and the pursuit of happiness do agree

^a Journal Constitutional Convention 1844-57, p. 187.

to form and establish a free and independent government, by the name of the State of Iowa, the boundaries whereof shall be as follows, to-wit: Beginning in the middle of the main channel of the Mississippi River opposite the mouth of the Des Moines River; thence up the said River Des Moines in the middle of the main channel thereof, to a point where it is intersected by the Old Indian boundary line, or line run by John C. Sullivan in the year 1816; thence westwardly along said line to the "old northwest corner of Missouri"; thence due west to the middle of the main channel of the Missouri River; thence up in the middle of the main channel of the river last mentioned to the mouth of the Sioux or Calumet River; thence in a direct line to the middle of the main channel of the St. Peters River, where the Watonwan River (according to Nicolet's map) enters the same; thence down the middle of the main channel of said river to the middle of the main channel of the Mississippi River; thence down the middle of the main channel of said river, to the place of beginning.

There was much public discussion concerning these proceedings of the convention and the boundaries which they established. The best available record of this sentiment appears to be that which was prepared by Professor Shambaugh from newspaper reports available to him. In his preface, in which is contained an explanation of these matters, he states in part as follows:⁹

Apart from a bare journal of the proceedings, the early constitution-makers of Iowa—I mean the members of the Constitutional Conventions of 1844 and 1846—did not keep and preserve official records of their deliberations. This has always been a matter of regret, especially to students of our constitutional history and constitutional law.

* * * * *

And so the only reports of the debates of the Convention of 1844 and the Convention of 1846 thus far discovered are the fragments that appeared in the newspapers of the time. But these are priceless fragments. In order to make the material more generally available to those interested in the history of Iowa, I have reprinted in this volume: (1) the fragments of the debates of the Constitutional Convention of 1844, as preserved in the *Iowa Standard* and the *Iowa Capital Reporter*; (2) some press comments and other materials relative to the Constitution of 1844, as found in the *Iowa Standard* and the *Iowa Capital Reporter*; (3) fragments of the debates of the Constitutional Convention of 1846, as preserved in the *Iowa Capital Reporter*; (4) some press comments and other materials relative to the Constitution of 1846, as found in the *Iowa Capital Reporter*, the *Iowa Standard* and the *Bloomington Herald*.

In preparing the constitution of our state, the members composing the convention were much concerned about the boundary. Shambaugh reports on these proceedings in the following manner:

FRIDAY, OCTOBER 11, 1844, AFTERNOON SESSION

The convention took up for consideration the report of the committee on boundaries for the State of Iowa. The draft of the committee provided that the

⁹ Shambaugh, Benjamin F. *Fragments of Debates of the Iowa Constitutional Convention of 1844 and 1846*. Published by the State Historical Society of Iowa. Iowa City, Iowa. 1900.

state should be bounded by the River Des Moines to Sullivan's line; by that line to the "old N.W. corner of Missouri"; thence due west to the Missouri River; thence to the Big Sioux or Calumet River, up the same of the first branch falling into it on the east side, and up that branch to a point where it is intersected by the boundary established in the Treaty of 1830, with the Sac and Foxes, and other Indians; from thence to the St. Peters River, opposite the mouth of the Blue Earth, and down the St. Peters to the Mississippi, and down the Mississippi to the place of beginning, opposite the mouth of the Des Moines.

Mr. Gower moved to amend by taking the 45th parallel as the northern boundary.

Mr. Chapman opposed this proposition, because it would make the state too large, and would disturb a compromise made in the committee, and give room for the introduction of sectional influences.

Mr. Lucas opposed it because it would take in a large range of broken and comparatively valueless country, which had no natural connection with us, bringing within the state more than 120,000 square miles. It would also include the country of the Sioux Indians, the title to which would hardly ever be extinguished. The laws of United States could not reach there, and it would become a resort for desperadoes. Extending our boundary so far, would operate to our prejudice in Congress. You go up the Missouri 100 miles above the Council Bluffs, and take in country enough to make a new state.

Mr. Gower explained, that he offered the amendment because the boundaries reported by the committee were indefinite. It was impossible to tell whether the rivers existed as stated. He was in favor of the 45th parallel, because that was certain.

Mr. Langworthy was desirous of securing an ample territory, and wished a tract of country above the St. Peters. He had examined the country above the St. Peters. He had examined the country above that river, and it excelled any of the settled parts of the Territory. All included would make none too much for a great powerful state.

Mr. Hall remarked upon the uncertainty attached to the boundaries reported by the committee.

Mr. Quinton sustained the report of the committee and expressed himself perfectly satisfied. The question being now taken on Mr. Gower's amendment; it was lost.

Mr. Hall then proposed the 42½ parallel as the boundary. He said if gentlemen could demonstrate to him that the Calumet River was within 50 miles of where it was laid down to be, he would not offer the amendment. The amendment drew a line, including about the same as that of the committee. He should regret exceedingly to fix a boundary, and find it incorrect. As an example, take one of the maps formed after the Treaty with the Sac and Foxes; some of the rivers were placed 150 miles out of the way.

Mr. Lucas explained, that he thought the map relied upon (Judson's) to be generally correct.

Mr. Peck moved the 44th parallel. He had been told that Judson's map was copied from old maps made before it. If natural boundaries could be formed, he should prefer them.

Mr. Fletcher desired to include all possible of the Mississippi and Missouri Rivers. He would have a large territory.

Mr. Hall urged that in carrying the line up the Missouri above $42\frac{1}{2}$ degrees, it would form an inconvenient territory. The river took a western direction, and encircled a district of country which would be disadvantageous to include in the state.

Messrs. Chapman and Lucas expressed their willingness to concur in the proposition of Mr. Hall.

The vote being taken, Mr. Hall's amendment was agreed to.

Mr. Langworthy desired to amend, by having the line to run from the mouth of the Blue Earth River, to the Mississippi, opposite to the mouth of the Little Sac River. That would take in a country that Iowa wanted.

Mr. Chapman opposed. It included a large section of country not wanted, and was a kind of creeping up on the north which was not in good faith to the south. There were other desirable tracts included that might be included, as well as that the gentleman proposed to cross the St. Peters for.

Mr. Lowe, of Muscatine, voted for the amendment of Mr. Hall. He would prefer a line running from $42\frac{1}{2}$ degrees on the Missouri River, direct to the mouth of the Little Sac. The Falls of St. Anthony would be a valuable acquisition to the State of Iowa; would add wealth and power. We could not have too much water power. It was also said to be valuable for mineral resources.

Mr. Lucas suggested a line to run from the mouth of Calumet River to the mouth of the Little Sac.

The members desiring opportunity to examine the subject, the further discussion was postponed.

It is evident that at that time there was much controversy on the part of the settlers of the Territory of Iowa, as to the location of the southern boundary. The survey made by Sullivan, the line run by the the State of Missouri in 1836 and 1837 and the border wars of about 1840 had focused the attention of our citizens to the south. In framing this constitution, the southern line was of vital importance. Some of the matters discussed are pointed out by Shambaugh¹⁰ as follows:

SATURDAY, OCTOBER 12, 1844

The Convention in committee of the whole, resumed the consideration of the state boundary question.

Mr. R. P. Lowe moved to amend the draft, so that the line should run directly from the mouth of the Calumet River to the Mississippi, opposite to the mouth of the Little Sac.

Mr. Chapman opposed the proposition for want of certainty.

Mr. Hall was willing to extend the line upon the Mississippi, so as to include the mouth of the St. Peters River, and St. Anthony's Falls, and would be willing to agree to the Big Sioux (Calumet) if any gentleman could assure him that the mouth of the river was not above $42\frac{1}{2}$ degrees.

Mr. Lucas read from an Indian treaty, in explanation of the position of the Little Sac.

Mr. Chapman said it increased the uncertainty.

The question on Mr. Lowe's proposition was taken, and it was lost.

¹⁰ Shambaugh, Benjamin F., *op. cit.*, Iowa City, Iowa. 1900.

Mr. Clarke moved to strike out the words "Old Indian boundary line, or line run by John C. Sullivan in the year 1816" as descriptive of a part of what was claimed as the southern boundary of the State of Iowa, and substitute therefor the words "northern boundary of the State of Missouri."

Mr. Lucas opposed the amendment. It was as much as to say we give up to Missouri to take what line she chooses for her north boundary. The Sullivan line was the true line. It was the line that divided the Surveyor General's districts and the line referred to in every treaty with the Indians;—our citizens had purchased their land going up to that line and it was our duty to maintain it as the southern line of the State of Iowa.

Mr. Clarke said he did not agree that the change proposed would prejudice our claim. He thought that if we claimed the Sullivan line it would create controversy. He had conferred with a number of the members of Congress from Missouri, and they were anxious to admit us. We should never sacrifice right to expediency. We should rely upon the justice of our cause. If Sullivan's line was ours, take it and adhere to it. Use no ambiguous terms, but say Sullivan's line at once.

Mr. Hawkins thought it would be unwise to adopt the amendment.

Mr. Lucas made an explanation of the circumstances of Missouri running her northern line. He did not feel willing to yield a particle to Missouri. He believed the claim of Missouri originated in land speculations.

Mr. Peck said he had some knowledge of the origin of the Missouri claim. It did not originate with the State of Missouri, but with a portion of settlers upon the Half-Breed Tract, who thought by changing the lines they would be able to get titles to their land. He thought it was policy so to arrange the matter as not to meet the united opposition of the representatives of Missouri.

* * * * *

Mr. Hall would give it as his opinion, that we would never get admitted as a state until the boundary question was settled.

Iowa was given jurisdiction to the Sullivan line when organized as a Territory. If we gave it up in our constitution, no member of Congress would get up and say nay. It would be concluded that it was abandoned because we had got tired of the controversy. If we maintained our claim, and Missouri objected, Congress would settle the matter before it admitted us.

* * * * *

If we came in with an open boundary, we would lose it. The land office in St. Louis, where the Missouri lands were sold, was careful never to transcend Sullivan's line. At the time of the dispute arising, and when the surveys were going on in the disputed tract, the Surveyor General at Cincinnati ordered the surveys to be suspended until he could investigate the subject.

* * * * *

Mr. Lowe proposed to amend by striking out all after Calumet River, and insert a line running directly from the mouth of the Calumet to the Mississippi, opposite the mouth of the Little Sac or Wahtap River (above St. Anthony's Falls). Which was agreed to.

FRAGMENTS FROM *Iowa Standard* AND *Iowa Capital Reporter*, OCTOBER 12, 1844¹¹

We are told that the Sullivan line is the true line, we are also told that the Congress of the United States has repeatedly recognized this line as the true one,

¹¹ Shambaugh, Benjamin F., *op. cit.*, p. 184.

and that the State of Missouri until within a few years past has never set up any claim to this new line; that they have always recognized the Sullivan line. These facts then establish the fact that the Sullivan line is the *northern boundary line* of the State of Missouri.

After the citizens of Iowa had petitioned Congress for a boundary on the south coincident with Sullivan's line, a state of excitement ruled throughout the Territory. They were hopeful that their constitution would be approved and that Iowa would forthwith become a state. Typical excerpts from the press uncovered by Professor Shambaugh follow:

Should Congress approve (as no doubt they will) our proposed boundary, Iowa, in point of extent and richness of territory will be unequalled by any state in the Union. The boundary selected by the convention is the most natural which can be devised; and gives to us the majestic Mississippi for an entire eastern barrier, and carries our empire north to the St. Peters, and far west to the dark, rapid waters of the Missouri.—Reprinted from *Iowa Capital Reporter*, v. 3, No. 43, Nov. 9, 1844.

Congress met in Washington in 1845. In the course of their deliberations matters pertaining to the admission of the States of Iowa and Florida were considered.

Florida was anxious to gain admission so it was necessary that a state north of the Mason-Dixon line be admitted in order to maintain a balance of states in the North and South. Accordingly on March 3, 1845, an act was passed granting admission to the States of Florida and Iowa. The boundaries proposed for Iowa are contained in the second section of this act.

CONGRESSIONAL ACT OF MARCH 3, 1845¹²

Chapter XLVIII.—An Act for the admission of the States of Iowa and Florida into the Union.

* * * * *

Sec. 2. And be it further enacted, That the following shall be the boundaries of the said State of Iowa, to-wit: Beginning at the mouth of the Des Moines River, at the middle of the Mississippi, thence by the middle of the channel of that river to a parallel of latitude passing through the mouth of the Mankato, or Blue-Earth River, thence west along the said parallel of latitude to a point where it is intersected by a meridian line, seventeen degrees and thirty minutes west of the meridian of Washington City, thence due south to the northern boundary line of the State of Missouri, thence eastwardly following that boundary to the point at which the same intersects the Des Moines River, thence by the middle of the channel of that river to the place of beginning.

Approved March 3, 1845.

Immediately following the passage of the law which made Iowa a state Mr. Augustus C. Dodge wrote to his constituents regarding the boundaries which had been fixed by the United States Congress. They

¹² *United States Statutes at Large*, v. 5, p. 742.

were considerably different from those which had been proposed by the Constitutional Convention of the Territory which had convened in October, 1844. Mr. Dodge pointed out these matters in this letter which appears in Shambaugh's presentation.¹³ The pertinent provisions of the letter are as follows.

LETTER OF AUGUSTUS C. DODGE TO HIS CONSTITUENTS

Washington City, Mar. 4, 1845

FELLOW CITIZENS: The bill for the admission of Iowa and Florida into the Union has become a law. Florida is now the *twenty-seventh* state of the Union. Her admission is complete. So far as Congressional action is concerned, Iowa is a sovereign state. It remains, however, for you, on the first Monday of April next, to consummate her sovereignty, and say whether she shall take her place as the *twenty-eighth* member of the National Confederacy.

And, but for the alterations made by Congress in the boundaries proposed by the convention which framed the constitution, I should not have deemed it necessary to briefly address you.

In the act of our admission, the northern boundary of Missouri is made our southern line. This leaves our border dispute with Missouri as heretofore—Congress esteeming the Supreme Court of the United States the proper tribunal to decide that controversy. The western and northern lines adopted by the convention have also been changed by Congress, and the boundaries contained in the constitution are reduced. Notwithstanding this alteration our eastern line, following the course of the Mississippi, is three hundred and twenty-five miles in length; our southern line, due west from Fort Madison, is one hundred and sixty-two miles; our western is two hundred and thirty-five miles; our northern, one hundred and thirty-four miles; and within these boundaries are contained forty-four thousand three hundred square miles; or twenty-seven three hundred and fifty-two thousand acres of the most fertile land in the Union.

* * * * *

The boundaries adopted by Congress were those suggested by the late Mr. Nicollett, United States Geologist and who had accurately and scientifically examined the whole country lying between the Mississippi and the Missouri Rivers. In connection with the boundaries of five new states, to be formed south and north of the Missouri Mr. N. says: "According to this division, the State of Iowa should be bounded by the Mississippi on the east, by a parallel of latitude passing through the mouth of the Mankato or Blue Earth River, by a certain meridian line running between the seventeenth and eighteenth degrees of longitude on the west, and by the northern boundary of Missouri to the south. It would give the state a depot on the St. Peter's River, whilst the Des Moines and Iowa Rivers, running through its more central southern parts, would make the whole territory, excepting a small portion drained by the tributaries of the St. Peter's River, assume the character of an extended valley, with nearly all its streams flowing in one general direction, to contribute their share to the mighty Mississippi. As the population would be composed of emigrants from all parts of the civilized world, by not extending the boundary so as to estrange one portion of the people from the other, on account of a dif-

¹³ Shambaugh, Benjamin F., *op. cit.*, p. 184. The Dodge letter appeared in the *Iowa Capital Reporter*, v. 4. No. 8, March 29, 1845.

ference of origin or a different course of trade, they would be brought to live contentedly under the same laws and usages; whilst the uniform direction of the waters, together with the similarity of climate, soil resources, and avenues to market, are well calculated to give to the inhabitants of this state, a homogeneity of character and interest highly conducive to their well being, both morally and politically.

* * * * *

I must in all candor inform you that, whatever your decision on the first Monday of April next may be, we will not be able hereafter under any circumstances, to obtain *one square mile more* for our new state than is contained within the boundaries adopted by the act of Congress admitting Iowa into the Union.

In haste, and with high regard, your fellow-citizen,

AUGUSTUS C. DODGE.

The next convention of the State of Iowa met in the early part of 1846. Considerable dissatisfaction was expressed concerning the boundaries prescribed in the Congressional act of March 3, 1845. The Constitutional Convention redefined the boundaries which they desired and substituted them for those established in Section Two (2) in the Congressional act of March 3, 1845.

The amended boundaries were adopted on May 18, 1846. They are described as follows:¹⁴

Beginning in the middle of the main channel of the Mississippi River, at a point due east of the middle of the mouth of the main channel of the Des Moines River, thence up the middle of the main channel of the said Des Moines River, to a point on said river where the northern boundary line of the State of Missouri—as established by the constitution of that state, adopted June 12th, 1820—crosses the said middle of the main channel of the said Des Moines River; thence westwardly along the said northern boundary line of the State of Missouri, as established at the time aforesaid, until an extension of said line intersects the middle of the main channel of the Missouri River; thence up the middle of the main channel of the said Missouri River to a point opposite the middle of the main channel of the Big Sioux River, according to Nicollet's map; thence up the main channel of the said Big Sioux River, according to the said map, until it is intersected by the parallel of forty-three degrees and thirty minutes north latitude; thence east along said parallel of forty-three degrees and thirty minutes until said parallel intersects the middle of the main channel of the Mississippi River; thence down middle of the main channel of said Mississippi River to the place of beginning.

The representatives of Iowa carried their fight to Congress and on August 4, 1846, Congress passed an act repealing that portion of the March 3, 1845, statute relating to the boundaries and substituted therefor a description requested by the Constitutional Convention of Iowa. The pertinent part of this act follows:¹⁵

¹⁴ *Laws of Iowa, General Assembly 1846-1853*, p. 11.

¹⁵ *United States Statutes at Large*, v. 9, p. 52.

Chap. LXXXII.—An Act to define the Boundaries of the State of Iowa, and to repeal so much of the Act of the third of March, one thousand eight hundred and forty-five as relates to the Boundaries of Iowa.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following shall be, and they are hereby, declared to be the boundaries of the State of Iowa, in lieu of those prescribed by the second section of the act of the third of March, eighteen hundred and forty-five, entitled "An Act for the Admission of the States of Iowa and Florida into the Union," viz. Beginning in the middle of the main channel of the Mississippi River, at a point due east of the middle of the mouth of the main channel of the Des Moines River; thence up the middle of the main channel of the said Des Moines River, to a point on said river where the northern boundary line of the State of Missouri, as established by the constitution of that state, adopted June twelfth, eighteen hundred and twenty, crosses the said middle of the main channel of the said Des Moines River; thence, westwardly, along the said northern boundary line of the State of Missouri, as established at the time aforesaid, until an extension of said line intersects the middle of the main channel of the Missouri River; thence, up the middle of the main channel of the said Missouri River, to a point opposite the middle of the main channel of the Big Sioux River, according to Nicollet's map; thence, up the main channel of the said Big Sioux River, according to said map, until it is intersected by the parallel of forty-three degrees and thirty minutes north latitude; thence east, along said parallel of forty-three degrees and thirty minutes, until said parallel intersects the middle of the main channel of the Mississippi River; thence, down the middle of the main channel of said Mississippi River, to the place of beginning.

Sec. 2. And be it further enacted, That the question which has heretofore been the subject-matter of controversy and dispute between the State of Missouri and the Territory of Iowa, respecting the precise location of the northern boundary line of the State of Missouri, shall be, and the same is hereby, referred to the Supreme Court of the United States for adjudication and settlement, in accordance with the act of the legislature of Missouri, approved March twenty-five, eighteen hundred and forty-five, and the memorial of the council and house of representatives of the Territory of Iowa, approved January seventeenth, eighteen hundred and forty-six, by which both parties have agreed to "the commencement and speedy determination of such suit as may be necessary to procure a final decision by the Supreme Court of the United States upon the true location of the northern boundary of that state;" and the said Supreme Court is hereby invested with all the power and authority necessary to the performance of the duty imposed by this section.

Sec. 3. And be it further enacted, That, until the next census and apportionment shall be made, the State of Iowa shall be entitled to two representatives in the House of Representatives of the United States.

Sec. 4. And be it further enacted, That so much of the act of the third of March, eighteen hundred and forty-five, entitled "An Act for the Admission of the States of Iowa and Florida into the Union." relating to the said State of Iowa, as is inconsistent with the provisions of this act, be and the same is hereby repealed.

Approved, August 4, 1846.

The hardy pioneers of the state were not of a disposition to compro-

mise, neither did they regard the acts of the United States Congress with any degree of reverence. They regarded the proceedings of Congress as a haphazard job. The press of the Territory were vociferous in their comments. Typical extracts of the position of our newspapers are recorded in Shambaugh's excellent report.¹⁶

ADMISSION OF IOWA

We give place, in this paper, to the late act of Congress, defining the boundaries of the State of Iowa and to repeal so much of the act of the 3d March 1845 as relates to the boundaries, and so much of the first named act as relates to Iowa, with supplemental act of the same date. These are all the acts of Congress relating to the admission of Iowa into the Union; and taken together, they will be found to be a disgraceful piece of legislative patch-work. There is not the slightest allusion to the Constitution of 1846, under which it is presumed we enter the Union; but, from all that appears from the three several acts, Iowa enters the Union under the rejected Constitution of 1844, with the addition of one member of Congress, and a change of boundaries; and the date of her admission is the 3d of March 1845, instead of the 4th of August 1846, the date of the last act.

If our Locofoco editors can come to any other conclusion, we will thank them for their rules of construction. We have read the acts over and over again, and for the life of us we cannot tell whether Iowa is now in or out of the Union; and if she is out, what ulterior steps must be taken to consummate her admission;

This constitution (1844) was submitted to the people in April, and rejected. On the third of March following, before the result was known at Washington, Congress passed an act for the admission of Iowa, with an especial reference to this constitution which was then a dead letter. Iowa, at that time, being a Territory without a constitution the act of Congress admitted her became, in consequence of the *reason of the enactment* ceasing, dead and inoperative from thenceforth and forever, so far as she was concerned, unless revived by the subsequent enactment.

The first act of admission, so far as related to Iowa was dead; but to make everything plain, there should have been a new bill framed, having reference to the constitution formed in May last, then before Congress, and repealing the two acts of March 3, 1845. Instead of this, an act is passed defining the boundaries of the State of Iowa—being precisely the same contained in the new constitution, recognizing the proposed adjustment of the southern line—giving us another member of Congress, without any official return of our population—and then winding up with a repeal of so much of the act admitting Iowa and Florida, approved March 3, 1845, as came in conflict with the provisions of that act; all the while, leaving the supplemental act unnoticed—neither repealed nor revived. This supplemental act was passed, also with reference to the Constitution of 1844.

* * * * *

The ordinance of the first convention was declared not to be obligatory on the United States; there is nothing said about the one appended to the Constitution of 1846. Where are we—in, or out of the Union?

¹⁶ Shambaugh, Benjamin F., *op. cit.* The paper quoted was the *Iowa Standard*, new series, v. 1, No. 14, 16 September 1846.

With the matter pertaining to the position of Iowa so forcefully called to their attention Congress passed a supplemental act which was approved December 28, 1846, which disposed of the objection and completed the requirements for the proper entrance of Iowa into the Union. This act follows:

Chapter 1.—An Act for the Admission of the State of Iowa into the Union.¹⁷

Whereas the people of the Territory of Iowa did, on the eighteenth day of May, anno Domini eighteen hundred and forty-six, by a convention of delegates called and assembled for that purpose, form for themselves a constitution and state government—which constitution is republican in its character and features—and said convention has asked admission of the said Territory into the Union as a state, on an equal footing with the original States, in obedience to “An Act for the Admission of the States of Iowa and Florida into the Union,” approved March third, eighteen hundred and forty-five, and “An Act to define the Boundaries of the State of Iowa, and to repeal so much of the Act of the third of March one thousand eight hundred and forty-five as relates to the Boundaries of Iowa,” which said last act was approved August fourth, anno Domini eighteen hundred and forty-six: Therefore—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the State of Iowa shall be one, and is hereby declared to be one, of the United States of America, and admitted into the Union on an equal footing with the original States in all respects whatsoever.

Sec. 2. And be it further enacted, That all the provisions of “An Act supplemental to the Act for the Admission of the States of Iowa and Florida into the Union,” approved March third, eighteen hundred and forty-five, be, and the same are hereby declared to continue and remain in full force as applicable to the State of Iowa, as hereby admitted and received into the Union.

Approved, December 28, 1846.

BOUNDARY COMMISSIONERS APPOINTED

The boundary dispute was continued by the two states after the admission of Iowa into the Union December 28, 1846. Suit was entered in the Supreme Court of the United States, December 10, 1847, by a bill filed by the State of Missouri, with the State of Iowa filing a cross bill. Mr. Landers states:¹⁸

The Supreme Court at its December term 1848 . . . entered a decree that the proper northern boundary of Missouri and the true southern boundary of Iowa was the line run and marked in 1816 by John C. Sullivan as the Indian boundary from the northwest corner made by Sullivan extending easterly as he ran and marked the said line to the middle of the Des Moines River and that a due west line from said northwest corner to the middle of the Missouri River was the proper dividing line between said states west of the aforesaid corner; and the States of Missouri and Iowa were bound to conform their jurisdiction up to the

¹⁷ *United States Statutes at Large*, v. 9, p. 117.

¹⁸ *Annals of Iowa*, v. 1, No. 8, 3d Series, p. 641, Jan. 1895.

said line on their respective sides thereof from the River Des Moines to the River Missouri.

The Court appointed two commissioners to establish this line, Joseph C. Brown of Missouri and Henry B. Hendershott of Iowa. The two commissioners met by agreement April 28, 1850, near the supposed site of Sullivan's northwest corner, the point where they were to begin their boundary survey. No precise evidence of the old northwest corner remained. After running many experimental lines, diligently examining the evidence on the ground together with the reports of surveyors, they were satisfied and established the corner. Here they planted a solid cast iron post four and one-half feet in length, twelve inches square at the base, eight inches square at the top, and weighing three-fourths of a ton. The word *Missouri* was cast on the south face, *Iowa* on the north face and *State Line* on the east face. The point stands in the southwest quarter of section 25, T. 67 N., Range 33 W. (Jackson township, Taylor County, Iowa.)

Joseph C. Brown died and Robert W. Wells was appointed in his place. Wells resigned and William G. Minor was appointed. The two commissioners selected Wm. Dewey for Iowa and R. Walker for Missouri to do the surveying. Their report to Commissioners Hendershott and Minor, dated September 30, 1850, appears as an exhibit in the Supreme Court decision of the December term of 1850, which is included in this chapter.

From this monument two lines were run—one westward, the other eastward. The former was a new line running due west to the Missouri River, a distance of 60 miles and 61 links. Another large boundary monument was set up at this end point. [See pages 472 and 502]

The line eastward from the reestablished northwest corner followed Sullivan's line of 1816. This line did not run due east (perhaps Sullivan used the wrong variation). It deviated to the north, with some intermediate deviations, so that the state line at its intersection with the Des Moines River is between two and three miles farther north than it is at the "old northwest corner."

The commissioners submitted their findings immediately upon receipt of the surveyors' report. The arguments were ably presented. Their complete text is presented in this chapter. [See page 460]

BOUNDARY RESURVEY

By 1896 some of the old marks had been destroyed so the Supreme Court ordered that twenty miles of the line be resurveyed by the U. S. Coast and Geodetic Survey. This was done and durable monuments of

granite were established thereon. The report of that survey is in the decree of the Supreme Court of the United States, October term, 1896, a copy of which is included at the end of this chapter. [Page 505]

SUPREME COURT OF THE UNITED STATES

December Term 1850

THE STATE OF MISSOURI	}	ORIGINAL BILL
VS		
THE STATE OF IOWA		

AND

THE STATE OF IOWA	}	CROSS BILL
VS		
THE STATE OF MISSOURI		

And now, on this third day of January A. D. 1851, this cause came on for further order and decree therein, when it appeared to the Court that at the December term 1848 thereof, Henry B. Hendershott and Joseph C. Brown were appointed Commissioners to run and mark the line in controversy between the States of Missouri and Iowa; and the said Brown having died, the Hon. Robt. W. Wells was appointed in room and stead of said Brown by the Chief Justice of this Court, in vacation. And said Wells having resigned his appointment William G. Minor was appointed Commissioner in room and stead of said Wells by this Court, at its last December term of 1849; and at which term, the time for running and marking said line was extended to this present term of December 1850, for the reasons stated in the report of said Wells and Hendershott, made to the last term; and which is hereinafter embodied. And the present commissioners, Henry B. Hendershott and William G. Minor, have made their report in the premises to this term; and which report is as follows:

TO THE HON. THE SUPREME COURT OF THE UNITED STATES:

The undersigned appointed commissioners by this Honorable Court, in the above cases, to establish the boundary line between the aforesaid States respectfully

REPORT

That for the purpose of arranging the operations in the field, so as to combine economy with speed, we met in the City of St. Louis in March last, and there, after consulting experienced surveyors as to the time that might be consumed in running the line—the probable amount of expense to be incurred—the necessary force to be employed and the proper outfit—we determined a plan of operations, and agreed to meet at the supposed site of Sullivan's "Northwest Corner" between the 1st and 20th of April last. While in St. Louis we obtained from Major M. L. Clark, Surveyor General of the State of Missouri and Illinois, a copy of the field notes of the survey made by John C. Sullivan in the year 1816, of a line beginning on the east bank of the Missouri River, opposite the middle of the mouth of the Kansas River and extending north one hundred miles, where he made a corner, and also of the line run by him in an easterly course to the Des Moines River. We were also furnished by Major Clark, with several charts, diagrams and copies

of surveys, which had at various times, been made of portions of Sullivan's line, and which were of much service in the prosecution of the work.

The surveyors severally appointed by us were William Dewey, Esq., of Iowa, and Robert Walker, Esq., of Missouri. Both these gentlemen had been connected with the public works of their respective states and enjoy a high professional reputation.

According to our agreement we left our respective homes on the 10th of April last, and soon after reaching the point of meeting—in view of the increased prices of transportation, provisions, &c., caused by the immense emigration through Southern Iowa and Northern Missouri to California—we altered our plan and reduced our force.

No precise trace of the "Old Northwest Corner" remained; the witness trees to it were on the margin of a vast prairie, and had apparently been destroyed by fire years ago; consequently its exact position could not be ascertained, yet from the running of many experimental lines, diligently examining the evidence before us, together with the reports of the surveyors, we became satisfied of its proper position and accordingly established it.

Its latitude taken resulted as follows: 40° 34' 40" N.

At the corner so determined we planted a large solid cast iron pillar, weighing fifteen and sixteen hundred pounds, four feet six inches long, squaring twelve inches at its base and eight inches at its top. This pillar was deeply and legibly marked with the words (strongly cast into the iron) "Missouri" on its south side, "Iowa" on its north side and "State Line" on the east.

From the monument so planted at the "Northwest Corner" aforesaid, in the said latitude, the survey of the line was commenced, running due west on said parallel of latitude to the Missouri River, as directed by this Honorable Court, and at its terminus as near the bank of said Missouri River, as the perishable nature of the soil would admit, we planted a monument similar in figure, weight, dimension and inscription to the one planted at the "Northwest Corner" the words "State Line" facing the east.

Unexpected delays arising from a condition of the weather which prevented the surveyors from making reliable astronomical observations, together with the fact that to a great extent in the vicinity of said line there were no roads and the settlements distant and sparse, compelling us to open a track for the transportation of the monuments and baggage of the corps, and also to construct necessary bridges and grade fords, greatly retarded the work.

Returning to the "Northwest Corner" the survey of the line was commenced, extending eastwardly from said corner to the Des Moines River, as run and marked by said Sullivan in 1816, from said corner to said river. On this line by close examination we discovered abundant blazes and many witness trees which enabled us to find and re-mark the said line as directed by this Honorable Court.

The survey of this portion of the line, more than one hundred and fifty miles in length, was commenced on the 13th day of August and finished on the 18th of September.

Near the bank of the Des Moines River where the line terminated, we planted a cast iron pillar, similar in weight, figure, dimensions and inscriptions to those planted at the "N. W. Corner" and near the bank of the Missouri River, the words "State Line" facing the west.

Solid pillars of cast iron weighing each between three and four hundred

pounds and minutely described, as to figure and inscriptions, in the report heretofore made to this Honorable Court by Messrs. Wells and Hendershott, commissioners, we caused to be planted at every ten miles in the due west line extending from said "N. W. corner" to the Missouri River, and also at every ten miles in the line extending east from the "N. W. Corner" aforesaid to the Des Moines River.

No iron monument was planted at mile 150 in the line running east, because, between it and the point where the large one is planted on the bank of the Des Moines River there existed but a small fraction of ten miles, being only fifty-one chains.

For a fuller account of the said survey we respectfully refer to the report of the surveyors made to us marked A. and to the following exhibits herewith transmitted.

Field notes of said survey, accompanied by a map of the line (marked) B. Tabular statement of the costs and charges incurred in said survey (marked) C.

All of which is most respectfully submitted.

HENRY B. HENDERSHOTT
Comr. &c Iowa.

W. G. MINOR
Comr. Mo.

And the report of the surveyors employed by the commissioners, and above referred to as part of said commissioners' report, is in the words and figures following:

Keokuk, September 30, 1850

MESSRS. HENDERSHOTT AND MINOR

Commissioners of the Boundary Survey.

GENTLEMEN:

Having been appointed by you, on the part of the States of Iowa and Missouri severally, to locate and survey the boundary between those states, under the decree of the Supreme Court of the U. S., we met according to your appointment, on the 28th of April last, near the supposed site of the old N. W. corner, for the purpose of commencing operations in the field.

We proceeded to search for the old corner, which was to be the basis of our future operations. Having a certified copy of Sullivan's field notes, from the Surveyor General's Office at St. Louis, we knew that the corner had been originally located in timber, and designated by two witness trees. Aided by a view of the topography of the locality, as indicated in the notes, and especially by the manner in which Sullivan's North line crossed the Platte River near its terminus, we were able to determine the locality of the corner approximately; and an inspection of the ground satisfied us that every evidence of its *exact* position had long since disappeared. Time and the fires that annually spread over the prairies, had destroyed the witness trees and every trace of both lines near the corner. This point, known familiarly as the "Old N. W. Corner," was the termination of the line surveyed by Sullivan in 1816 from the mouth of the Kansas River north 100 miles, and was the point at which he turned east, in running to the Des Moines River, his miles being numbered north from the Kansas, and east beginning again at the corner.

Having no *direct* evidence of the exact site of the required point, it became necessary to find determinate points in the two lines as near the corner as possible.

Prolonging the lines severally from such points, their intersection would be the point to be assumed as the corner, and if Sullivan's measurement were correct, would be the precise spot where he established it. Near the supposed locality of the 99th mile corner on the north line, we found a decayed tree and a stump, which correspond in course, distance and description with the witness trees to that corner, and cutting into the tree we saw what we supposed to be the remains of an old blaze upon which was preserved a part, apparently, of the letter M. This supposition was verified by measuring south two miles to a point, which we found to be Sullivan's 97th mile corner; from one witness tree, which was perfectly sound. The marks upon it two or three inches beneath the bark, were plain and legible.

On the east line we found the witness tree to the 3d mile corner. The wood upon which the marks had been inscribed was decayed, but their reversed impression appeared upon the new growth which covered the old blaze, and which was cut out in a solid block.

Prolonging the lines three miles each from the points thus determined, their intersection was assumed as the required corner, and at that point was planted the monument specified in the decree. By measurement made from the surveyed lines, we found the corner to be in the N. E. quarter of Section 35, Township 67 north, Range 33 west. Its exact position with reference to these lines can be seen in the diagram in the field notes.

The latitude of the corner, determined by a series of observations taken on the ground, we found to be $40^{\circ} 34' 40''$ north. While employed upon these observations, we were delayed by unfavorable weather, and it was not till the 24th of May, that we were in readiness to commence the survey of the west line from the corner to the Missouri River.

This portion of the boundary, being required to be a parallel of latitude, was run with Burt's Solar Compass, the use of which requires the longitude of the place of observation to be at least approximately known. Not having the requisite means of ascertaining the longitude of the corner, we calculated it from maps to be about $94^{\circ} 30'$ west from Greenwich, which was sufficiently accurate for the purpose. The instrument used being an untried one, some delay was experienced in its adjustment. To insure accuracy in the work, a telescope was attached to it.

The principles upon which this line was run involve a mathematical investigation, which will be found in note A accompanying this report, but the mode of running it will be briefly described here. Each successive mile was prolonged in the plane of the prime vertical passing through its beginning. The direction indicated by the instrument stationed at the beginning of a mile is in the plane of the prime vertical passing through that point, and that direction was continued through the mile by means of fore and back sights. At the end of the mile, an offset north was made to compensate for the sphericity of the earth. This offset it will be seen by the note is 6.855 inches for one mile. The instrument being moved at the end of the mile, the proper distance north, and a new direction given and continued as before, the parallel passing through the initial point was continued throughout the line. In some instances, however, it became convenient, whenever the nature of the ground admitted of it, instead of offsetting, to continue the same direction through several miles. It will be seen by the note, that the offsets increase as the squares of the distances, being for one mile 6.855 inches; for two miles, four times that distance, &c. Thus it appears that the offsets rapidly increase with the distance run, and that by continuing the direction of the prime

vertical from the corner to the terminus, the southing would have been over 2,000 feet.

At the western terminus of the line the observations for latitude were repeated. Having established that point, we returned to the N. W. corner and commenced retracing Sullivan's east line on the 13th of August.

It is thirty-four years since this line was run, and every vestige of the mounds and pits established in the prairies has disappeared. Much of the country through which it passes consists of brushy barrens, or high rolling prairies, dotted with detached groves, or covered with a thin growth of dwarf timber. Much of this description of timber has been destroyed by fire, forming in some instances, prairie, and in others, brushy barrens, destitute of trees; while in some places, an entirely new growth of young timber, principally hickory, has sprung up. In all such cases the witness trees and other marks, mentioned in Sullivan's field notes, were gone, and thus it occurred that we frequently ran several miles without finding any traces of the line. But in heavy bodies of timber no difficulty was experienced in discovering evidences of the precise location of the line, not only by blazes, but by line and witness trees, many of which are sound and the marks in good preservation. The general topography of the country, and especially the crossings of the streams, greatly facilitated us in following the line, and in some instances, when confirmed by the old blazes, enables us to establish it with sufficient certainty. In the absence of any traces of the line between two known points, distant from each other more than one mile, we assumed the line to be straight between such points, and established our posts accordingly. This was done by running a random line from the last found corner, in a direction as near that pursued by Sullivan as we could determine, until another point was found, and then correcting back. No notice, however, is taken of these random lines in the field notes, which relate to the true line only.

We soon satisfied ourselves that the line run by Sullivan, was not only not a due east line, but that it was not straight. That more or less northing should have been made in the old line, was to have been expected from the fact that Sullivan ran the whole line with one variation of the needle, and that variation too great. This would account for the fact that the northing increases as he progressed east. But there are great irregularities in the course of the line, for which it is difficult to find a cause. Sudden deviations, amounting to from one to three degrees frequently occur, and it rarely happens that any two consecutive miles pursue the same direction.

A resurvey of the line between the 91st and 134th miles was made in the year 1845, and we found the witness trees on that part of the line defaced and others substituted. We succeeded, however, in identifying Sullivan's trees, and we destroyed the marks of that 1845 survey as far as they related to the old line. In all instances where a corner on Sullivan's line is mentioned in our field notes, one or both witness trees were found to identify it and we did not always think it necessary to repeat the fact in the notes.

Accompanying this report are the field notes and map of the boundary, the former of which are sufficiently explained in the note prefixed to them.

On the west line the monuments every ten miles were deemed sufficient. On the east line mile posts are established, marked and witnessed as described in the field notes.

It will be perceived that the measurement of this line as run by us exceeds

that of Sullivan by 11.80 chains, and that this increase, although gradual, is not regular. Some portions of the old line agree very nearly with our measurement, while others differ materially, and the greatest gain is generally made in brushy and broken land.

For the convenience of estimating distances and that the true length of the line might be indicated by the mile posts, they were established by our measurement, taking care in every instance to note the distance of the posts set by us from the corresponding corners in the old line, whenever found. The different courses being extended from one known point to another, the line was not altered at those points, being made to pass through them, but only its length corrected.

The length of the entire line is 211 miles and 32.80 chains, embracing $4^{\circ} 1' 7.29''$ of longitude. The length of a second of longitude is calculated in note C. and the longitude of any point of the line being known, that of any other point can be deduced.

The map is platted from the field notes on a scale of half an inch to the mile, and is only intended to represent the general features in the topography of the line. The scale upon which it is made is much too small to show the angles in the east line, to do which would require it to be extended to a length that would render it inconvenient. All the purposes for which it can be used, will be attained by its present form.

WM. DEWEY,

Surveyor on the part of Iowa.

R. WALKER

Surveyor on the part of Missouri.

Note A

Put a = Semi-equatorial axis of the earth

c = Semi-polar axis

x = absciss

y = ordinate

to a point s , on the terrestrial meridian

e = excentricity

l = latitude of s .

r = radius of curvature at s .

Then considering the centre as the origin of the co-ordinates, we have

$$y^2 = \frac{c^2(a^2 - x^2)}{a^2};$$

and, differentiating,

$$dy = -\frac{c^2 x dx}{a^2 y};$$

whence

$$dx^2 + dy^2 = \frac{(a^4 y^2 + c^4 x^2) dx^2}{a^4 y^2} \text{-----} (1)$$

differentiating again, we find

$$d^2 y = -\frac{(a^2 c^2 y^2 + c^4 x^2) dx^2}{a^4 y^3} \text{-----} (2)$$

Substitute these values (1 & 2) in the general equation $r = -\frac{(dx^2 + dy^2) 3/2}{dx d^2 y}$ and we have

$$r = -\frac{(a^4y^2 + c^4x^2)dx^2}{a^4y^2} \cdot \frac{3}{2} \times -\frac{a^4y^3}{(a^2c^2y^2 + c^4x^2)dx^3}$$

$$= \frac{\left[a^4 \frac{c^2(a^2 - x^2)}{a^2} + x^2(a^2 - e^2)^2 \right] \frac{3}{2} a^4 y^3 dx^3}{a^4 y^3 \left(\frac{a^2 c^2 (a^2 - x^2)}{a^2} + c^4 x^3 \right) dx^3}$$

$$= \frac{a^4 c^2 - a^2 c^2 x^2 + (a^2 - e^2)^2 x^2 \frac{3}{2}}{a^4 c^4} = \frac{(a^6 - a^4 e^2 - a^4 x^2 + a^2 e^2 x^2 + a^4 x^2 - 2a^2 e^2 x^2 + e^4 x^2) \frac{3}{2}}{a^4 c^4}$$

whence

$$\frac{c^2 x \sin 1}{a^2} = \frac{c}{a} (a^2 - x^2)^{1/2} \cos 1, \text{ and, dividing by } \frac{c}{a},$$

$cx \sin 1 = a^2 - x^2)^{1/2} \cos 1$ —squaring, we find

$c^2 x^2 \sin^2 1 = a^2(a^2 - x^2) \cos^2 1 = a^4 \cos^2 1 - a^2 x^2 \cos^2 1$. Hence, since

$c^2 = a^2 - e^2$, $(a^2 - c^2)x^2 \sin^2 1 = a^2 x^2 \sin^2 1 - e^2 x^2 \sin^2 1 = a^4 \cos^2 1 -$

$a^2 x^2 \cos 1$: & transposing $a^2 x^2 \sin^2 1 + a^2 x^2 \cos^2 1 - e^2 x^2 \sin^2 1 = a^2 x^2$

$(\sin^2 1 + \cos^2 1) - e^2 x^2 \sin^2 1 = a^4 \cos^2 1 = \text{since } \sin^2 1 + \cos^2 1 = 1) a^2 x^2 - e^2 x^2$

$\sin^2 1 = x^2(a^2 - e^2 \sin^2 1) = a^4 \cos^2 1$. Whence we deduce

$$x^2 = \frac{a^4 \cos^2 1}{a^2 - e^2 \sin^2 1} \text{----- (4)}$$

If now, in equation (3), we substitute for x^2 its value just found, we have

$$r = \frac{a^4 - c^2 \frac{a^4 \cos^2 1}{a^2 - e^2 \sin^2 1} \frac{3}{2}}{a^4 c} = \frac{a^4 \frac{a^2 - e^2 \sin^2 1 - e^2 \cos^2 1}{a^2 - e^2 \sin^2 1} \frac{3}{2}}{a^4 c} = \frac{a^6 \frac{a^2 - e^2}{a^2 - e^2 \sin^2 1} \frac{3}{2}}{a^4 c}$$

$$= \frac{a^2}{c} \left(\frac{c^2}{a^2 - e^2 \sin^2 1} \right) \frac{3}{2} = \frac{a^2 c^3}{c} \left(\frac{1}{a^2 - e^2 \sin^2 1} \right) \frac{3}{2}, \text{ whence, at last, we find}$$

$$r = \frac{a^2 c^2}{(a^2 - e^2 \sin^2 1) \frac{3}{2}} \text{----- (5)}$$

which is a general expression for the radius of curvature at any point on the elliptic meridian.

The determination by Bessel of the equatorial and polar diameters of the earth may be regarded as more accurate than that of any other geometer. His results, deduced from a consideration of the most accurately measured arcs of the meridian in various latitudes, are therefore adopted.

We have then

$$a = 20,923,596 \text{ feet}$$

$$c = 20,853,662 \text{ feet}$$

It thus appears that the planes represented by SC , SF , intersecting the plane of the second meridian, will form, externally to the earth, a figure which may be represented by SDB ; and, the arc DB being very small, this figure may be treated as a plane triangle, right angled at D . The angle S , when projected upon the plane of the second meridian, will, of course, undergo a diminution; but when (as is the case here) the inclination of the two meridians is small, this

diminution becomes almost infinitesimal in amount, and may be disregarded. If, therefore, we put $u=SD$, and $v=BD$, we shall have

$$v = u \tan l \text{-----} (8)$$

But, making d =the distance along the line between the meridians, we have from the properties of the circle

$2r+u : d :: d : u$: whence $u(2r+u)=d^2$, and $u=\frac{d^2}{2r+u}$; and the quantity u , in the divisor of the second member, being so minute, when compared with $2r$, as to have no effect upon the result within the limits we have adopted, this expression becomes

$$u = \frac{d^2}{2r}$$

and substituting this value in equation (8), we have

$$v = \frac{d^2 \tan l}{2r} \text{-----} (9)$$

If, now, in this expression we made $d=1$ mile, and substitute for the letters their numerical values, we shall have

$$v = 6.855 \text{ inches.}$$

A simple inspection of equation (9) will show that, the latitude being constant, v varies as d^2 . Hence we must offset north, as follows:

When	$d=1$ mile,	$v=$	1×6.855 inches =	0 ft., 6.855 ins.
"	"= 2 miles,	$v=$	4×6.855 "	= 2 ft., 3.420 ins.
"	"= 3 "	$v=$	9×6.855 "	= 5 ft., 1.695 ins.
"	"= 4 "	$v=$	16×6.855 "	= 9 ft., 1.680 ins.
"	"= 5 "	$v=$	25×6.855 "	= 14 ft., 3.375 ins.
"	"= 6 "	$v=$	36×6.855 "	= 20 ft., 6.780 ins.
"	"= 7 "	$v=$	49×6.855 "	= 27 ft., 11.895 ins.
"	"= 8 "	$v=$	64×6.855 "	= 36 ft., 6.720 ins.
"	"= 9 "	$v=$	81×6.855 "	= 46 ft., 3.255 ins.
"	"= 10 "	$v=$	100×6.855 "	= 57 ft., 1.500 ins.
"	"= 60 "	$v=$	3600×6.855 "	= 2056 ft., 6.000 ins.

Note B

In note A, equation (7) we find 20,872,306 feet to be the length of the radius of curvature of the terrestrial meridian at the parallel of $40^\circ 34' 40''$; and, as this value may be considered constant for a short distance north or south of that parallel, and as radius, expressed in seconds, is equal to 206,264,806", we have, for the length of a second of latitude on either side of the line, for a few miles

$$1'' = \frac{20,872,306.}{206,264,806.} = 101.2 \text{ feet}$$

Note C

It is plain that the absciss X is equal to the radius of the circle of latitude passing through S .

In note A, equation (4) we have

$$x^2 = \frac{a^2 \cos 1}{a^2 \cos 1}; \text{ whence}$$

$$X = \frac{a^2 - e^2 \sin^2 1}{(a^2 - e^2 \sin^2 1)^{1/2}}; \text{ or, using } a \text{ as a unit, and}$$

Substituting the numerical values,

$$X = \frac{(1 - .006673531 \times .4231238233)^{1/2}}{.75953361} = \frac{.75953361}{.99717627^{1/2}}$$

$$= \frac{.75953361}{.998587137} = 76060824 \quad \text{and, resuming the foot as a unit,}$$

$$X = 20,923,596 \times 76060824 = 15,914,660 \text{ feet.}$$

Hence, along (or near) the parallel of $40^\circ 34' 40''$, we have for the length of a second of longitude

$$1'' = \frac{15,914,660}{206,264,806} = 77.1564 \text{ feet.}$$

We may therefore easily ascertain the difference of longitude between any two points in the line; and consequently whenever the longitude at any one of these points shall have been determined, it will become known for all the others.

The following is a statement of the difference of longitude between the principal points in the line: viz.:

Between Sullivan's corner and the monument near the Missouri River $1^\circ 8' 25.94''$

Between Sullivan's corner and the monument near the Des Moines $2^\circ 51' 48.49''$

Between the extreme monuments $4^\circ 0' 14.43''$

And since the line extends west of the monument near the Missouri River 61 chains, and east of the monument near the Des Moines 80 links we see that the whole extent of longitude embraced by the line is $4^\circ 1' 7.29''$.

And the field notes referred to, by the said surveyors Walker and Dewey as part of their report, are in the words and figures following:

The field notes relate to the true line, as established on the ground. No notice is taken of random lines. The distances are reckoned in chains and links from the beginning of each mile.

When a post is noted as set in a mound the pit is invariably 9 links west, to designate it from other surveys. In the prairie the posts are marked with the letters "B. L." facing the east, the letter "I" facing the north, and the letter "M" facing the south, and the number of the mile marked on the west face of the post. In timber the number of the mile is marked on the witness trees, with the letter appropriate to each state, there being one tree marked on each side of the line whenever possible. The foot of each witness tree is marked with the letters "B. L."

MISSOURI AND IOWA BOUNDARY

West line, commenced May the 24th and completed July the 12th, A. D. 1850

Planted a cast iron monument at the "Northwest corner"

Latitude $40^\circ 34' 40.3''$ N.

Missouri and Iowa boundary; west line

Commencing at Sullivan's N. W. Corner

COURSE	DIST	
		<i>1st Mile, on a Parallel of Latitude</i>
WEST	5.00	Prairie.
	18.30	Branch 6 lks. wide runs S., skirted with timber.
	27.00	Prairie. Land rolling 2d rate.
		<i>2d Mile</i>
	33.90	Brushy branch 6 lks. wide, runs south, skirted occasionally with strips of timber. Land rolling 2d rate.
		<i>3d Mile</i>
	78.00	Timber. Land rolling soil 2d rate.
		<i>4th Mile</i>
	75.00	Honey Creek 25 lks. wide runs south.
	78.00	Prairie Land rolling and 2d rate, timber ordinary, black and burr oak, elm, hickory and walnut and undergrowth brush of same. On a parallel of latitude.
		<i>5th Mile</i>
		Second rate rolling prairie.
		<i>6th Mile</i>
		Second rate rolling prairie.
		<i>7th Mile</i>
	30.00	A small branch runs S. W.
	74.00	Branch 4 lks. wide runs south. These branches unite about 10 chs. below the line and at their junction commences an extensive grove extending south. Land rolling, soil 2d rate.
		<i>8th Mile</i>
		Rolling prairie. Soil 2d rate.
		<i>9th Mile</i>
		First half rolling prairie, second half broken and covered with patches of Hazel.
		<i>10th Mile</i>
		Hazel continues.
	50.00	Timber.
	58.00	Drain runs N. W.
	71.00	Prairie.
	80.00	Set a cast iron monument with the word "Boundary" facing both the east and west, and the word "Iowa" facing the north and the word "Missouri" facing the south.

COURSE DIST Land rather broken. Soil 2d rate. Timber poor and sparse,
WEST mostly black oak.

11th Mile

4.50 Timber (a small grove).
6.25 Prairie.
13.00 Bottom.
21.00 East fork of 102, 40 lks. wide runs S. W.
27.00 Prairie.

Land rolling, 2d rate, prairie interspersed with hazel thickets, timber tolerable. Elm, lind, hickory, walnut, &c. The ridges are covered with hazel and scrub oak.

12th Mile

54.50 Timber.
56.50 Middle fork of 102, 25 lks. wide, runs south
61.50 Prairie with patches of hazel.
Land rolling, soil 2d rate. Bottom on the creek level and rich. Timber indifferent.

13th Mile

69.00 Timber.
74.50 West fork of 102, 50 lks. wide, runs south, skirted with a narrow belt of sparce timber. Land rolling, 2d rate, bottom rather wet.

14th Mile

Rolling 2nd rate prairie.
On a parallel of latitude.

15th Mile

Prairie rather broken, 2d rate. Patches of hazel and small groves of sparse timber.

16th Mile

Same as last mile.

17th Mile

31.00 Timber.
31.25 Small branch runs N. W.-N. E. corner of Mr. Short's field, 300 lks. S. 45° W.
50.00 N. W. corner of Short's field 200 lks. south.
64.00 Clear creek 10 lks. wide runs S. W.
Land rolling, 2d rate, timber tolerable, black and burr oak, Elm and walnut, &c., with underbrush.

18th Mile

1.50 Prairrie. Land rolling, 2d rate.

19th Mile

Rolling, 2d rate prairie.

COURSE	DIST	
		<i>20th Mile</i>
WEST	5.00	Drain runs N. W. Grove short distance north.
	39.00	Cut off S. W. corner of Davidson's field.
	67.00	Drain N. W.
	80.00	Set cast iron monument facing as before. Land rather broken. Soil 2d rate.
		<i>21st Mile</i>
		Rolling 2d rate prairie.
		<i>22d Mile</i>
		Mostly bottom prairie, level and rich.
		<i>23d Mile</i>
7.30		Nodaway River 100 lks. wide, runs south. Muddy channel, narrow belt of timber on the banks. The first half is rather wet, bottom prairie. Last $\frac{1}{4}$ of the mile brushy and the end in a dense thicket.
		<i>24th Mile</i>
		First $\frac{1}{4}$ brushy with thickets of hazel, &c. Balance prairie, rolling, 2d rate soil.
		<i>25th Mile</i>
		Upland prairie, rolling, 2d rate.
		<i>26th Mile</i>
		Same as last mile. On a parallel of latitude.
		<i>27th Mile</i>
		Rolling 2d rate prairie.
		<i>28th Mile</i>
	29.50	Sparse timber.
	34.00	Brushy prairie.
	49.50	Drain S. W.
	57.00	Timber.
	65.00	Bottom.
	68.50	Thicket of dense brush.
	72.00	Branch 6 lks. wide runs S. E.
	73.50	Prairie. Land rolling, soil 2d rate, timber poor.
		<i>29th Mile</i>
	5.00	Left bottom.
	19.50	Small grove.
	25.50	Left same, prairie.
	35.00	Bottom.
	38.00	Timber.
	43.00	Mill Cr. 15 lks. wide, runs south.
	45.50	Prairie.
	53.00	Left bottom (same as last mile).

COURSE	DIST	
		<i>30th Mile</i>
WEST	16.40	Small branch runs N. E. Hazel on the banks.
	80.00	Set cast iron monument in a swale facing as before. Lnd very rolling, 2d rate.
		<i>31st Mile</i>
		Rolling upland prairie.
		<i>32d Mile</i>
		Rolling upland prairie.
		<i>33 Mile</i>
		Same.
		<i>33d Mile</i>
		Same.
		<i>34th Mile</i>
	13.60	East Tarkio 80 lks. wide runs south, banks steep, channel muddy, narrow belt of timber on the banks, occasionally spreading out into considerable groves.
		Upland rolling, 2d rate. Bottom about $\frac{3}{4}$ mile wide, level and rich.
		<i>35th Mile</i>
		Rolling upland prairie.
		<i>36th Mile</i>
		The same.
		<i>37th Mile</i>
		The same.
		On a parallel of latitude.
		<i>38th Mile</i>
	9.90	Middle Tarkio 6 lks. wide, runs south. Same as last mile.
		<i>39th Mile</i>
	7.50	A wet swale.
	17.00	Left swale.
	50.00	East edge of a grove about 5 chs. south, extending west.
		<i>40th Mile</i>
	29.00	Timber.
	69.25	West Tarkio 60 lks. wide, runs S. W. Prairie.
	80.00	Set cast iron monument facing same as above.
		Upland rolling 2d rate, bottom rich. Timber: burr oak, hickory, elm, &c.
		<i>41st Mile</i>
		Upland rolling prairie.
		<i>42d Mile</i>
		The same.

COURSE	DIST	<i>43d Mile</i>
WEST	The same.	
		<i>44th Mile</i>
	The same.	
		<i>45th Mile</i>
	The same.	
		<i>46th Mile</i>
	Upland rolling prairie.	
		<i>47th Mile</i>
26.40	High Creek 5 lks. wide, runs S. W.	
	The same.	
		<i>48th Mile</i>
	The same.	
		<i>49th Mile</i>
	The same.	
		<i>50th Mile</i>
80.00	Set cast iron monument in a low wet swale, facing as before. Land same as last mile.	
		<i>51st Mile</i>
44.90	Field fence N. & S.	
69.30	fence N. & S.	
71.00	Timber. Land as before. On a parallel of latitude.	
		<i>52d Mile</i>
4.70	Left field-fence N. & S. Timber.	
51.25	Branch 4 lks. wide runs north.	
'9.00	Road N. & S. Prairie.	
.9.50	Touched the N. W. corner of a field. Land as usual. Timber tolerable, oak, hickory, elm, &c.	
		<i>53d Mile</i>
7.75	Timber.	
28.00	Field-fence N. & S.	
40.10	Left field-fence N. & S. Prairie.	
45.50	Timber.	
64.75	Small branch runs south.	
66.80	Field-fence N. & S. (Sager's) Left timber. Land broken, soil 2d rate. Timber: oak, hickory, elm, &c.	
		<i>54th Mile</i>
00.60	Fence N. & S. dividing Sager and Sebo.	
7.50	Left field N. and S.	
10.00	Open burr oak timber.	
45.75	Spring branch S.W.	
59.50	Road N. and S.	
60.00	Field-fence N. & S. Prairie.	

COURSE WEST DIST Land, broken 2d rate. Timber: burr oak, hickory, &c. The 51st, 52d, 53d, 54th, and 55th miles run through what is known as "McKissock's Grove," embracing a fine farming country. On a parallel of latitude

55th Mile

2.50 Left field.
 5.10 Top of steep bluff, sparse timber on the slope.
 9.50 Bottom prairie.
 30.00 Timber.
 33.50 Nishnebotone River 150 lks. wide, runs S. W. The bottom is level and rich, affording fine pasturage. There is a narrow strip of timber on the river.

56th Mile

Level rich bottom.

57th Mile

22.80 Slough runs south.
 Land the same.

58th Mile

The same.

59th Mile

The same.

60th Mile

80.00 Set cast iron Monument¹⁹ the words "State Line" facing the east and the word "Iowa" facing the north and the word "Missouri" facing the south. The ground here is high, affording a much more appropriate site for the monument, than the terminus on the bank of the Missouri River, where the land is extremely liable to wash, and is frequently overflowed.

61st Mile

9.50 Road N. & S. The ground begins to become lower from this point.
 15.75 Field-fence N. & S.
 24.00 Left field-fence north & south. Timber.
 57.50 A cottonwood 30 inches diam. notched on the east and west sides and marked with the letter "I" on the north, and "M" on the south.
 61.00 Set a post on the bank of the Missouri River.
 Bearings
 { Cottonwood 10 inches diam. S. 67° E. 6 lks.
 { Cottonwood 10 inches diam. N. 21° W. 12 lks.
 Rich bottom land, heavy body of timber, principally cottonwood and elm.

¹⁹ On April 1, 1940, two pictures were taken of this "60th Mile Monument." These are reproduced on p. 502.

MISSOURI AND IOWA BOUNDARY—EAST LINE

COURSE	DIST	<i>From Sullivan's N. W. Corner</i>	
S 89°24'E.		<i>1st Mile, Var. of Needle 11° E.</i>	
	4.00	Small branch, runs, S. W.	
	10.50	Prairie	
	23.50	Drain south, brushy prairie.	
	65.00	Touched south point of a grove.	
	80.00	Set post in mound.	
		Land very rolling, soil 2d rate.	
		<i>2d Mile</i>	
	10.00	Small branch runs S. E. bottom, sparse timber.	
	16.00	Branch 25 lks. wide, runs south.	
27.00	Bottom prairie.		
61.20	Branch 25 lks. wide, runs S. E. Narrow skirt of timber on the banks.		
75.00	Bushy upland prairie, barrens.		
80.00	Set 2d mile post in mound.		
	<i>3d Mile</i>		
	59.50	Sparse timber.	
	77.00	Prairie.	
	80.00	Sullivan's third mile corner found by one witness tree. Set 3d mile post in mound; 2d & 3d miles very rolling with sparse timber and barrens.	
N.89°45'E.		<i>4th Mile (Var. 11° E.)</i>	
	19.00	Bottom prairie.	
	50.50	Platte River 75 lks. wide, runs S. S. E. Narrow skirt of timber, Sullivans blazes.	
	58.50	South point of a sharp bend in the river, the line enters the river a short distance.	
	66.00	Prairie.	
	72.00	Upland.	
	80.00	Set post in mound.	
		Land rolling, 2d rate. Timber poor: hickory, elm, burr oak, &c.	
		<i>5th Mile</i>	
	80.00	Set post in mound.	
	Rolling upland prairie.		
	<i>6th Mile</i>		
80.00	Set 6th mile post in mound.		
	Land as last mille.		
	<i>7th Mile</i>		
13.50	Branch 20 lks. wide runs S. W. Timber.		
14.25	Branch 20 lks. wide runs N.		
16.00	Branch 20 lks. wide runs S. W.		

COURSE	DIST	Found Sullivan's blazes on the line.
N. 89° 45' E.	35.50	Prairie.
	51.50	Bottom.
	80.00	Set 7th mile post in mound. Upland—broken, brushy barren, bottom rich.
<i>8th Mile (Var. 11° E.)</i>		
	40.00	West fork of Grand River 100 lks. runs S. Timber.
	61.50	Prairie.
	80.00	Set 8th mile post in mound. Land level and rich. Timber good, hickory, elm, black wal- nut, &c.
<i>9th Mile</i>		
	28.00	Brushy upland prairie—sparse scrub oak on the ridges.
	54.50	Small branch runs S. W.
	80.00	Set 9th mi. post in mound. Upland broken and brushy.
<i>10th Mile</i>		
	42.50	Road N. E. Open prairie.
	80.00	Set cast iron monument with the word "Boundary" facing both the east and the west, and the word "Iowa" facing the north and the word "Missouri" facing the south. First half mile broken and brushy, 2d half open prairie.
<i>11th Mile</i>		
	80.00	Set 11th mi. post in mound. Land broken and brushy.
<i>12th Mile (Var. 11° E.)</i>		
	25.00	Sparse timber, land broken.
	29.00	Branch 10 lks. wide runs E. S. E.
	31.00	Prairie.
	80.00	Set 12th mi. post in mound near a small branch. Land rolling—2d rate.
<i>13th Mile</i>		
	00.05	Small branch runs S. scattering trees sand brush on E. side.
	59.00	Timber—Creek a few links south.
	71.00	Creek 50 lks. wide runs south.
	73.00	Creek 50 lks. wide runs N. W.
	78.50	Creek 50 lks. wide runs south This creek is very crooked, and has probably changed its chan- nel since Sullivan ran his line. The line is on his blazes.
	80.00	Set 13th mile post. Bearing { Burr oak 18 inch - diam S. 20 E. 41 lks. { elm 20 inch - diam N. 20 W. 57 lks. Land rolling, 2d rate. Timber: elm, burr oak, hickory, lind, etc.

COURSE	DIST.	
		<i>14th Mile (Var. 11° E.)</i>
N.89°45'E.	1.40	Sullivans 13th mile corner found by one witness tree still standing.
N.89°43'E.	40.20	Field—Left timber—The line is on Sullivan's blazes through this timber.
	50.75	Left field—Prairie.
	80.00	Set 14th m. post in mound. Land rolling 2d rate—Timber good—white and burr oak, elm, hickory, etc.

15th Mile

N.89°43'E.	80.00	Set 15th m. post in mound. Land rolling prairie.
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16th Mile (Var. 10° 30' E.)

	39.00	Small branch runs S. E.
	46.00	Branch 12 lks. wide runs S.S.W. Narrow belt of timber on banks—Sullivan's blazes.
	55.00	Sparse timber.
	69.00	Prairie.
	80.00	Set 16th m. post in mound. Land rolling, 2d rate.

17th Mile

	80.00	Set 17th m. post in mound. Land same.
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18th Mile (Var. 10° 30' E.)

	30.00	Bottom
	80.00	Set 18th m. post in mound. Upland rolling—Bottom rich.

19th Mile

	13.50	Branch 10 lks. wide runs S. narrow belt of timber on the branch.
	30.00	Timber. (Lot's Grove).
	32.50	Creek 25 lks. wide runs S. W.
	80.00	Set 19th m. post. Bearings { White oak 10 in. dia. N. 20° W. 129½ lks. } White oak 14 in. dia. S. 8° W. 85 lks. Land rolling, 2d rate. Timber good, white, blk. & burr oak, elm, hickory, etc.

20th Mile

	2.15	Sullivan's 19th m. corner found by both witness trees.
S.89°47'E.	6.50	Small branch runs N. W. Prairie.
	30.50	Small branch runs N. W.
	80.00	Set cast iron monument facing as before. Land broken and brushy. A few trees on east end of the mile.

21st Mile

	67.50	Drain runs S. W.
	80.00	Set post 21st m.

COURSE	DIST	Bearings	
		{ Burr oal 14 in. dia. S. 61° E. 181 lks. { Burr oak 14 in. dia. N. 35° E. 74 lks.	Land broken and brushy.
		<i>22d Mile</i> (Var. 10° 10' E.)	
S.90°47'E.	1.00	Sullivan's 21st mile corner found by both witness trees.	
N.89°29'E.	6.00	Small branch W. S. W.; a few trees.	
	12.50	A small branch runs S. W.	
	80.00	Set 22d mile post in a mound. Land broken and brushy—barrens.	
		<i>23d Mile</i>	
	5.00	Small branch runs north.	
	27.50	Small branch runs S. W.	
	80.00	Set 23d mile post in mound. Land very rolling with patches of hazel.	
		<i>24th Mile</i>	
	23.00	Creek 50 lks. wide runs S. W. Timber.	
	26.00	Same 50 lks. wide runs N. W.	
	33.00	Same 50 lks. wide runs S. W.	
	35.00	Prairie.	
	80.00	Set 24th mile post in a mound. Land rolling, 2d rate. Timber indifferent, elm, hickory, and burr oak.	
		<i>25th Mile</i> (Var. 9° 54' E.)	
	67.50	Small branch runs N. W. Sparse timber.	
	80.00	Set 25th mile post.	
		Bearings { Blk. oak, 20 in. dia. S. 31° W. 190 lks. { Blk. oak, 20 in. dia. N. 41° W. 262 lks.	
		<i>26th Mile</i> (Var. 9° 54' E.)	
	2.00	Prairie.	
	14.50	Road N. E.	
	66.25	Small branch runs S. Grove 200 lks. S.	
	80.00	Set 26th mile post in a mound. Land rolling, 2d rate.	
		<i>27th Mile</i>	
	80.00	Set 27th mile post in a mound. Land same as last mile.	
		<i>28th Mile</i>	
	22.00	Creek 20 lks. wide runs south. Timber.	
	27.84	Red oak 36 in. dia. Sullivan's line tree, noted by him at 26 chs.	
	80.00	Set 28th mile post on Sullivan's blazes.	
		Bearings { Blk. oak 14 in. dia. N. 5° E. 352 lks. { Elm 10 in. dia. S. 50° E. 60 lks.	

COURSE	DIST	
		<i>29th Mile</i>
N.89° 4'E.	3.00	Prairie.
	60.00	A few trees and brush.
	80.00	Set 29th mile post in mound. Rolling prairie.
		<i>30th Mile</i>
	12.00	Small branch runs S. E.
	80.00	Set cast iron monument facing as before. Rolling prairie, rather brushy.
		<i>31st Mile</i>
N.89° 20'E.	11.50	Timber.
	16.00	Creek 50 lks. wide runs S. E.
	22.00	Prairie.
	80.00	Set 31st mile post in mound. Land same as before.
		<i>32d Mile</i>
	80.00	Set 32d mile post in mound. Rolling prairie.
		<i>33d Mile</i>
	20.50	Creek 25 lks. wide, runs S. E. Timber.
	22.50	Prairie.
	36.75	Stream 10 lks. wide runs south.
	80.00	Set 33d mile post in mound. Land same.
		<i>34th Mile</i>
	69.83	Stream 35 lks. wide runs S. E. Timber.
	78.50	Prairie.
	80.00	Set 34th mile post. Bearings { Elm 10 in. dia. N. 75° W. 63 lks. { Elm 9 in. dia. S. 45° W. 148 lks. Land rolling. Soil 2d rate.
		<i>35th Mile (Var. 9° 54' E.)</i>
	3.67	Sullivan's 34th mile corner found by one witness tree
N.88° 53'E.	80.00	Set 35th m. post in mound. Land rolling.
		<i>36th Mile</i>
	40.75	Stream 25 lks. wide runs S.; few trees on banks.
	54.00	Timber.
	78.50	Prairie.
	80.00	Set 36th mile post in mound. Rolling prairie.
		<i>37th Mile</i>
	80.00	Set 37th mile post in mound. Rolling prairie.
		<i>38th Mile</i>
	80.00	Set 38th mile post in mound. Rolling prairie.

COURSE	DIST	
		<i>39th Mile</i> (Var. 9° 54' E.)
N.88° 53' E.	31.00	Grove of young timber—hickory.
	32.50	Prairie.
	44.00	Grove of young hickory.
	46.50	Prairie.
	60.00	Timber.
	62.60	Stream 25 lks. wide runs S. Dry at present.
	66.50	Small prairie surrounded with timber.
	76.50	Timber.
	80.00	Set 39th mile post.
		Bearings { Burr oak 9 in. dia. N. 20° E. 30 lks.
		{ Blk. oak 12 in. dia. S. 30° E. 22 lks.
		Land rolling. Timber Br. and Blk. oak, &c.
		<i>40th Mile</i>
	5.50	Sullivan's 39th m. corner found by one witness tree.
	9.50	Prairie.
	80.00	Set a cast iron monument facing as above, on the steep slope of a hill in the prairie.
		Rolling prairie.
		<i>41st Mile</i>
	80.00	Set 41st m. post in mound.
		Land as above.
		<i>42d Mile</i>
	10.00	River bottom.
	60.00	Timber.
	76.00	Sullivan's line tree (an elm).
	80.00	Set 42d mile post.
		Bearings { Cottonwood 18 in. dia. S. 20° E. 17 lks.
		{ Maple 9 in. dia. S. 35° W. 1½ lks.
		Land, bottom and rich. Timber, cottonwood, elm, maple, walnut, &c.
		<i>43d Mile</i> (Var. 9° 54' E.)
	00.50	Grand River 200 lks. wide runs S. E.
	6.50	Sullivan's 42d mile corner.
N.89° 6' E.	11.50	Prairie bottom. Var. 9° 6' E.
	79.50	Upland and timber.
	80.00	Set 43d mile post.
		Bearings { Elm 10 in. dia. N. 8° W. 79 lks.
		{ White oak 10 in. dia. S. 60° W. 158 lks.
		Level rich land.
		<i>44th Mile</i>
	6.73	Sullivan's 43d m. corner found by one witness tree.
N.89° 47' E.	61.00	Prairie.
	73.00	Timber.
	76.00	Prairie.
	80.00	Set 44th mile post.
		Bearings { Pin oak 15 in. dia. S. 32° W. 390 lks.
		{ Pin oak 15 in. dia. N. 63° W. 342 lks.
		Land rolling. Timber, oak and hickory.

COURSE	DIST	
		<i>45th Mile</i>
S. 89° 47' E.	7.00	Sullivan's 44th m. corner found by one witness tree. Timber.
N. 89° 9' E.	22.00	Prairie.
	80.00	Set 45th mile post in mound. Land as usual.
		<i>46th Mile (Var. 9° 6' E.)</i>
	73.00	Timber with thick undergrowth.
	80.00	Set 46th mile post in mound. Barrens.
		<i>47th Mile</i>
	80.00	Set 47th mile post in mound. Brushy barrens.
		<i>48th Mile</i>
	53.00	Stream 12 lks. wide runs S.
	80.00	Set 48th mile post in mound. Brushy barrens.
		<i>49th Mile</i>
	52.50	Timber.
	60.50	Little River (a fork of Grand River) 60 lks. runs S. E.
	66.50	Same stream runs north.
	71.50	Same stream runs south.
	80.00	Set 49th mile post.
		Bearings { White oak 36 in. dia. S. 76° E. 39 lks. { White oak 18 in. dia. N. 63° E. 27 lks.
		Land 1st rate.
		<i>50th Mile</i>
	6.20	Sullivan's 49th m. corner found by one witness tree.
N. 89° 16' E.	10.00	Brushy prairie.
	80.00	Set cast iron monument facing as before. Barrens.
		<i>51st Mile (Var. 9° 6' E.)</i>
	80.00	Set 51st mile post in mound. Rolling prairie.
		<i>52d Mile</i>
	12.00	Timber.
	25.00	River bottom.
	28.50	East Grand River 150 lks. wide runs S. W.
	38.50	Same, runs north.
	52.30	Same, runs south.
	80.00	Set 52d mile post.
		Bearings { Elm 18 in. dia. N. 87½° E. 102½ lks. { Burr oak 12 in. dia. S. 22° W. 28 lks.
		Mostly rich bottom. White and burr oak, elm, hickory, etc.
		<i>53d Mile</i>
	00.30	A pond 250 lks. wide; direction of its length N. and S.
N. 88° 47' E.	5.00	Prairie.
	15.00	Timber.

COURSE	DIST	
N.88°47'E.	30.00	Field (stokes') fence nearly N. and S.
	57.50	Left field, brushy prairie.
	80.00	Set 53d mile post.
		Bearings { Blk. oak 8 in. dia. S. 53° E. 15 lks. { Blk. oak 6 in. dia. N. 53° E. 64 lks. Land rolling. Timber, oak and hickory, with undergrowth.

54th Mile (Var. 9° 6' E.)

1.50	A small prairie surrounded by timber.
9.00	Timber and dense undergrowth of thorn, oak, &c.
80.00	Set 54th mile post.
	Bearings { Blk. oak 12 in. dia. N. 55° W. 73 lks. { Blk. oak 14 in. dia. S. 9° W. 124 lks. Growth of small timber and dense underbrush.

55th Mile

N.89° 2'E.	4.07	Sullivan's 54th m. corner found by both witness trees.
	32.70	Branch 10 lks. wide, runs south.
	42.50	Branch 10 lks. wide, runs N. W.
	62.75	Prairie (small and surrounded with timber).
	71.00	Alexander's field—fence nearly N. and S.
	80.00	Set 55th mile post in a field. First rate upland.

56th Mile

7.00	Fence nearly N. and S.
9.00	Fence runs a little south of east.
11.00	Brushy thicket—plum, scrub oak, sumac, &c.
20.00	Timber.
31.00	Prairie.
75.00	Fence, about N. 65° E. (Hodges.)
80.00	Set 56th mile post in a mound. Land same as before.

57th Mile (Var. 9° 6' E.)

8.50	Fence, about N. 25° W.
47.50	Road N. and S.
80.00	Set 57th mile post in mound. Rolling prairie.

58th Mile

31.00	Timber with dense undergrowth.
31.35	Stream 10 lks. wide runs N. E.
31.80	Same runs east.
32.25	Same runs N. E.
49.75	Same runs south.
53.00	Prairie.
57.50	Brushy prairie.
58.75	Prairie.
60.50	Brushy thicket.
65.00	Timber with dense undergrowth.

COURSE	DIST	
N.89° 2'E.	75.90	Sullivan's line tree (elm).
	80.00	Set 58th mile post.
		Bearings { Pin oak, 8 in. dia. S. 77 E. 43 lks.
		{ Pin oak, 6 in. dia. N. 11 E. 41½ lks.
		Land rolling—Soil good—Timber small with a dense under growth.

59th Mile

	2.53	Sullivan's 58th m. corner found by both witness trees.
N.89°27'E.	3.65	West fork of muddy cr. 25 lks. wide runs S.
	55.00	Middle fork muddy cr. 25 lks. wide runs S. E.
	79.00	Prairie.
	80.00	Set 59th mile post in mound. Land same as before.

60th Mile

	0.45	Field (Sullivan's) fence N. and S.
	12.45	Fence N. and S. Prairie.
	35.25	Field (Sullivan's & Lochlin's) fence about S. 25° W.
	45.20	Fence about S. 65° E.
	80.00	Set cast iron monument facing as before. Land good.

61st Mile

	19.80	East fork of muddy cr. runs S.; very little timber on banks
	80.00	Set post to 61st mile in mound. Land good.

62d Mile

	80.00	Set 62d mile post in mound. Rolling prairie.
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63d Mile

	80.00	Set 63d mile post in mound. Rolling prairie.
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64th Mile (Var. 9° 6' E.)

	80.00	Set 64th mile post in mound. Same.
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65th Mile

	7.00	Timber.
	11.00	Prairie.
	19.65	West fork Medicine Creek 40 lks. runs south. Timber
	22.50	Field-fence. N. and S.
	33.25	Left field-fence N. and S.
	47.50	Prairie.
	80.00	Set 66th mile post. Land good. Timber indifferent.

66th Mile

	62.50	Timber.
	80.00	Set 66th mile post.

COURSE	DIST	
N.89°27'E.		Bearings { White oak 16 in. dia. N. 63° E. 14 lks.
		Rich land. { White oak 16 in. dia. S. 55° W. 20 lks.

67th Mile

N.89°42'E.	4.50	Sullivan's 66th m. corner found by one witness tree.
	9.20	Middle Medicine Creek 25 lks. wide runs S. E.
	13.40	Same runs N. E.
	16.20	Same runs S. E.
	18.00	Prairie.
	44.50	Timber.
	45.12	Big Medicine Creek 60 lks. wide runs S. E.
	30.00	Set 67th mile post.
		(White oak 10 in. dia. S. 47° E. 48 lks.
		Bearings (White oak 8 in. dia. N. 40° W. 25 lks. Broken 2nd rate land.

68th Mile

N.89°35'E.	4.62	Sullivan's 67th m. corner found by both trees.
	25.48	Sullivan's line tree (a white oak).
	31.30	Collin's field-fence nearly N. and S.
	41.25	Left field-fence near N. and S.
	61.50	Timber.
	72.50	Prairie.
	80.00	Set 68th mile post in mound.
	(Corrected this mile from the line tree.)	
	Land 2d rate.	

69th Mile

N.89°21'E.	8.00	East Medicine Creek 30 lks. wide, runs S. E. Timber on the bank.
	17.00	Timber, open, white oak.
	47.50	Prairie.
	80.00	Set 69th m. post in mound.
		Land rolling. Timber, white oak, elm, and hickory. Land 2d rate.

70th Mile (Var. 9° 6' E.)

80.00	Set cast iron monument facing as before. Same. Rolling prairie.
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71st Mile

80.00	Set 71st mile post in mound. Same.
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72d Mile

80.00	Set 72d mile post in mound. Same.
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73d Mile

80.00	Set 73d mile post in mound. Same.
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COURSE	DIST	
		<i>74th Mile</i>
N. 89° 21' E.	41.00	Stream 15 lks. wide runs South. Timber.
	47.50	Prairie.
	60.10	Stream 10 lks. wide runs S. W. narrow strip of timber on banks.
	80.00	Set 74th m. post in mound. Land same.

75th Mile

80.00	Set 75th mile post in mound. Same.
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76th Mile (Var. 9° 6' E.)

80.00	Set 76th m. post in mound. Same.
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77th Mile

66.30	Stream 50 lks. wide runs S. W. Timber.
80.00	Set 77th mile post. Bearings (Blk. oak 15 in. dia. S. 23° W. 30 lks. (Blk. oak 15 in. dia. N. 44° E. 20 lks. Broken 2d rate land.

78th Mile

	9.20	Sullivan's 77th m. corner found by both witness trees.
N 88° 57' E.	47.00	Prairie.
	55.75	Smith's field-fence N. and S.
	58.40	Timber.
	64.50.	Prairie.
	74.00	Field-fence N. and S.
	80.00	Set 78th mile post in a field. Land rolling, soil 2d rate. Timber, oak and hickory.

79th Mile

	9.00	Left field-fence N. and S. Prairie.
	49.50	Timber, generally small with underbrush.
	59.20	Stream 10 lks. wide runs south.
	77.50	Small prairie.
	80.00	Set 79th mile post in mound. Same.

80th Mile (Var. 9° 6' E.)

	2.50	Timber.
	14.60	Stream 10 lks. wide runs south.
	41.50	Prairie.
	80.00	Set cast iron monument facing as before. Same.

81st Mile

	40.50	Mormon trace. N. and S.
	80.00	Set 81st mile post in mound. Rolling prairie.

COURSE	DIST							
		<i>82d Mile</i>						
N.88°57'E.	4.50	Stream 10 lks. wide, runs S.—Timber on the banks.						
	80.00	Set 82d mile post in a mound. Same.						
		<i>83d Mile</i>						
	80.00	Set 83d mile post in mound. Same.						
		<i>84th Mile</i>						
	80.00	Set 84th mile post in mound. Rolling prairie.						
		<i>85th Mile</i>						
	80.00	Set 85th mile post in mound. Same.						
		<i>86th Mile (Var. 9° 6' E.)</i>						
	29.50	Benner's house, about 150 links north.						
	80.00	Set 86th mile post in mound. Prairie with clumps of oak.						
		<i>87th Mile</i>						
	80.00	Set 87th mile post in a mound. Land same.						
		<i>88th Mile</i>						
	38.50	Timber.						
	80.00	Set 88th mile post in mound. Prairie with scattering trees—sparse timber.						
		<i>89th Mile</i>						
	13.34	Sullivan's 88th m. corner found by one witness tree.						
N.89°12'E.	33.75	Stream 50 lks. wide runs S.E.						
	65.28	Sullivan's line tree (a white oak)						
S.89°15'E.	80.00	Set 89th mile post.						
		<table border="0"> <tr> <td style="vertical-align: middle;">Bearings</td> <td style="font-size: 2em; vertical-align: middle;">}</td> <td>White oak 24 in. dia. N. 15° W. 65 lks.</td> </tr> <tr> <td></td> <td style="font-size: 2em; vertical-align: middle;">}</td> <td>White oak 24 in. dia. S. 13° W. 82 lks.</td> </tr> </table> Poor broken land.	Bearings	}	White oak 24 in. dia. N. 15° W. 65 lks.		}	White oak 24 in. dia. S. 13° W. 82 lks.
Bearings	}	White oak 24 in. dia. N. 15° W. 65 lks.						
	}	White oak 24 in. dia. S. 13° W. 82 lks.						
		<i>90th Mile</i>						
	3.50	Small prairie surrounded by timber.						
	12.82	Sullivan's 89th mile corner.						
N.88°57'E.	15.00	Timber.						
	80.00	Set cast iron monument facing as before. Timber: white and black oak, with undergrowth. Land rolling.						
		<i>91st Mile (Var. 9° 36' E.)</i>						
	12.71	Sullivan's 90th mile corner.						
N.89° 5'E.	38.40	Small branch runs S. E.						
	80.00	Set 91st mile post						

COURSE	DIST	
N. 89° 5' E.		{ White oak 24 in. dia. S. 7½° E. 49 lks.
		{ White oak 24 in. dia. N. 18½° E. 89 lks.
		Land broken, 3d rate. Timber, white and Black oak, &c.

92d Mile

	8.55	Corner to intersection of supposed Sullivan's line, with range line between ranges 17 and 18. (Iowa Sur.).
	12.19	Sullivan's 91st mile corner.
N. 89° 12' E.	34.05	Corner to intersection of supposed Sullivan's line, with range line between ranges 17 and 18. (Mo. Sur.).
	43.00	Prairie.
	46.50	Cut off the S. E. corner of a field.
	49.10	Left field.
	52.00	Timber.
	54.70	West fork of Chariton 100 lks. wide runs S. E. (Var. 9° 36' E.).
	80.00	Set 92d mile post.
		Bearings { White oak 14 in. dia. S. 4½° E. 41 lks.
		{ White oak 14 in. dia north 41 lks.
		Upland, broken, 3d rate—narrow bottom on the river.
		First rate timber, white, blk. oak, &c.

93d Mile (Var. 9° 36' E.)

	12.36	Sullivan's 92d mile corner.
	15.00	Small branch runs N. W.
	19.33	Sullivan's line tree.
	80.00	Set 93d mile post.
		Bearings { White oak 12 in. dia. N. 23° W. 30 lks.
		{ White oak 6 in. dia. S. 4° E. 40 lks.
		Land broken, 3d rate, white and black oak, hickory, &c.

94th Mile

N. 89° E.	12.20	Sullivan's 93d mile corner.
	25.00	Prairie
	80.00	Set 94th mile post in mound.
		Land broken, 2d rate soil.

95th Mile

	0.30	Road N. E. and S. W.
	80.00	Set 95th milepost (in the brush) in a mound.
		Land broken, 2d rate, brushy, a few trees.

96th Mile

	63.00	Jack oak grove.
	68.50	Small prairie surrounded by timber.
	75.75	Small branch runs N. E.
	80.00	Set 96th mile post.
		Bearing (Burr oak. 14 in. dia. N. 11° E. 235 lks.
		Land broken, 2d rate; scrub oak, crab, thorn, &c.

97th Mile (Var. 9° 36' E.)

	11.80	Sullivan's 96th m. corner found by his elm tree.
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COURSE	DIST	
N.88°33'E.	22.00	Heavy timber—more open.
	35.00	Sparse open timber.
	53.00	Thicket of scrub oak, crab, thorn, &c.
	80.00	Set 97th mile post. Bearings { Black Oak, 6 in. dia. N. 40° E. 12 lks. } Pin Oak 12 in. dia. S. 29° E. 126 lks. Land broken, 2d rate. Timber poor.

98th Mile

N.89° 3'E.	11.84	Sullivan's 97th m. corner, witness trees defaced.
	26.50	Small branch runs north.
	29.50	Barren, brushy prairie.
	42.00	Sparse timber.
N.88°53'E.	56.58	Sullivan's line tree. (Blk. oak 24. diam.)
	78.00	Bottom prairie.
	80.00	Set 98th mile post in mound. Land rolling, soil 2d rate.

99th Mile

19.85	Field-fence N. and S. North side of field 25 lks. N. of line and parallel with it.
35.35	Left field.
37.00	Thicket and sparse timber.
42.00	Bottom prairie, level and wet.
80.00	Set 99th Mile post in mound. Upland is good soil.

100th Mile (Var. 9° 36' E.)

7.50	Timber.	
12.06	Sullivan's 99th m. corner—witness trees defaced.	
N.88°57'E.	14.00	Right bank of Chariton 150 lks. runs S. W.
	17.25	Left bank of River (by triangulation) left bottom.
	80.00	Set cast iron monument facing as before. Land rolling, 2d rate. Timber good, white and black oak, hickory, &c.

101st Mile (Var. 5° 30' E.)

9.00	Timber.	
12.77	Sullivan's 100th mile corner.	
N.89° 2'E.	20.29	Sullivan's line tree.
	34.00	Low wet prairie. Land rolling to this point.
	63.00	Timber—upland.
	80.00	Set 101st mile post. Bearings { Blk. oak 14 in. dia. S. 38° E. 62½ lks. } White oak 14 in. dia. N. 10¼ E. 119 lks. Timber good. White and blk. oak, hickory, &c.

102d Mile

12.78	Sullivan's 101st mile corner. Trees defaced.
N.88°47'E.	54.80 Road N. & S.

COURSE	DIST	
N.88°57'E.	80.00	Set 102d mile post Bearings { Hickory 14 in. dia. S. 4° E. 88 lks. { White oak 12 in. dia. N. 58¾° W. 61½ lks. Land rather broken. Timber good, white and black oak.
	<i>103d Mile (Var. 9° 30' E.)</i>	
	6.00	Small branch runs north.
N.88°56'E.	12.40	Sullivan's 102d mile corner.
	43.60	Road nearly N. and S. House 500 lks. south.
	64.00	Prairie.
	77.50	Timber.
	80.00	Set 103d mile post. Bearings { Elm 20 in. dia. N. 12° E. 46 lks. { Elm 20 in. dia. S. 22° W. 46 lks. Land rolling, 2d rate. Timber indifferent, brush.
<i>104th Mile (Var. 8° 45' E.)</i>		
N.88°E.	11.96	Sullivan's 103d mile corner, one witness standing.
	12.00	Prairie.
	17.20	Field (Veach) fence N. and S.
	48.20	Left field-fence N. and S.
	80.00	Set 104th mile post in mound. Land rolling. Soil 2d rate.
<i>105th Mile</i>		
80.00	Set 105th mile post in mound. Same.	
<i>106th Mile</i>		
52.00	Small grove and thicket.	
65.75	Small branch runs south.	
69.50	Prairie.	
80.00	Set 106th mile post in mound. Land same.	
<i>107th Mile (Var. 8° 45' E.)</i>		
45.00	Grove and thicket.	
80.00	Set 107th mile post. Bearings { Blk oak 12 in. dia. S. 20° E. 43 lks. { Blk oak 12 in. dia. N. 8° W. 7 lks. Land rolling, 2d rate. Brushy; timber poor.	
<i>108th Mile</i>		
N.87°39'E.	12.69	Sullivan's 107th mile corner.
	20.00	Small prairie.
	26.00	Timber.
	30.20	Small branch runs south.
	64.50	Prairie.
80.00	Set 108th mile post in mound. Timber poor.	

COURSE	DIST	
		<i>109th Mile</i>
	80.00	Set 109th mile post in mound. Rolling prairie.
		<i>110th Mile</i>
	11.40	Field-fence N. and S. (Wright).
	20.00	Left field.
	70.00	Timber and patches of brush.
	75.00	House 200 lks. north of line (Baker).
	80.00	Set cast iron monument facing as before. Land rolling. Timber poor and sparse.
		<i>111th Mile (Var. 8° 45' E.)</i>
	12.34	Sullivan's 110th mile corner.
N.86° 7'E.	80.00	Set 111th mile post in mound, in small prairie surrounded by dense thickets. Land broken, 2d rate. Scrub timber and small prairies.
		<i>112th Mile</i>
	3.00	Heavy timber.
	11.50	Sullivan's 111th mile corner.
N.87°56'E.	14.50	Small branch, general course E.: the line runs down it cross ing it several times.
	41.50	Left branch course N. E.
	73.00	Same branch runs south.
	76.00	Same branch runs N. E.
	80.00	Set 112th mile post on Sullivan's blazes. Bearings { White oak 20 in. dia. N. 3° E. 119 lks. { White oak 14 in. dia. S. 15¼° W. 155 lks. Land good. Timber: wh., blk. and burr oak, hickory, elm etc
		<i>113th Mile</i>
	11.09	Sullivan's 112th mile corner.
N.88°21'E.	60.50	Field-fence N. and S.
	74.75	Left same.
	76.50	Bottom prairie.
	80.00	Set post 113th mile in prairie. Bearings { Burr oak 20 in. dia. N. 15½° E. 268 lks. { Land and timber as last mile.
		<i>114th Mile (Var. 8° 45' E.)</i>
	25.00	Timber.
	33.00	Fabins River (west fork) 50 lks.; runs S. E.
	50.72	Sullivan's line tree.
	65.00	Barrens.
	80.00	Set 114th mile post. Bearings { Blk. oak 12 in. dia. N. 42½° W. 177 lks. { Blk. oak 6 in. dia. S. 29½° E. 40 lks. Land good. Timber: hickory, blk. oak, elm, etc.

COURSE	DIST	
		<i>115th Mile</i>
N.88°21'E.	7.70	Field—fence N. and S. Prairie.
	34.00	Left field-fence N. and S.
	80.00	Set 115th mile post in mound. Rolling prairie.
		<i>116th Mile</i>
	36.00	Scrub oak thicket.
	48.00	Prairie.
	75.00	McAtee's field—fence N. and S.
	80.00	Set 116th mile post in field. Same.
		<i>117th Mile (Var. 8° 45' E.)</i>
	15.50	Left field—fence N. and S.
	40.00	Timber. On Sullivan's blazes.
	75.15	East fork of Fabins 50 lks. wide runs south.
	80.00	Set 117th mile post. Bearings { Hickory 12 in. dia. S. 3½° E. 73 lks. { Hickory 20 in. dia. N. 14° W. 91 lks. Land good. Timber: hickory, elm, wh. and blk. oak, &c.
		<i>118th Mile</i>
N 88°17'E.	65.00	Prairie.
	80.00	Set 118th mile post in mound. Land good. Timber: burr and blk. oak, hickory, &c., and brush.
		<i>119th Mile</i>
	9.25	Field—fence N. and S.
	19.40	Left field near S. E. corner. Thicket.
	53.50	Hickory branch 15 lks. wide runs E. S. E.
	80.00	Set 119th mile post in blk. oak thicket. Bearings { Blk. oak 8 in. dia. S. 38° W. 15½ lks. { Blk. oak 5 in. dia. N. 5° E. 14½ lks. Land 2d rate. Timber poor, blk. oak and hickory.
		<i>120th Mile</i>
	2.00	Prairie.
	80.00	Set cast iron monument facing as before. Rolling prairie.
		<i>121st Mile (Var. 8° 45' E.)</i>
	80.00	Set post 121st mile in mound—edge of thicket. Same.
		<i>122d Mile</i>
	13.00	Branch 10 lks. wide runs S. Timber, thicket.
	17.55	Range line between ranges 12 and 13.
	23.50	Prairie.
	40.00	Jack oak thicket.
	80.00	Set 122nd mile post. Bearing—Jack oak 6 in. dia. S. 12° E. 47 lks. Land 2d rate; timber poor.

123d Mile

N.88°17'E.	15.04	Sullivan's line tree (a blk. oak, noted as a hickory).
N.88°12'E.	20.00	House 300 lks. south (I. N. Bish).
	23.00	Touched N. E. corner of field.
	31.50	Small, low, wet prairie, extending south.
	45.00	Timber.
	53.20	Wyacondah Creek, 40 lks. wide, runs S. E.
	56.20	Enter cr. running E.
	59.70	Left same cr. running S. E.
	67.00	Cut off south corner of field.
	69.00	Brushy prairie.
	80.00	Set 123d m. post.
		Bearing (White oak 24 in. dia. S. 28½° W. 54 lks.
		Land brushy, timber poor.

124th Mile (Var. 8° 45' E.)

	1.50	Prairie.
	15.00	Thicket and a few trees.
	29.50	Open prairie. House 300 lks. S.
	33.00	Touched N. W. corner of a field.
	80.00	Set 124th mile post in mound.
		Land rolling; timber poor with undergrowth.

125th Mile

	80.00	Set 125th mile post in mound.
		Rolling prairie.

126th Mile

	46.00	Timber.
	47.00	Branch 25 lks. wide, runs S. S. E.
	52.00	Prairie.
	63.50	Thicket of blk. and jack oak.
	71.00	Prairie.
	80.00	Set 126th mile post in mound.
		Land as usual.

127th Mile

	29.00	Drain runs S.E.
	80.00	Set 127th mile post in mound.
		Rolling prairie.

128th Mile (Var. 8° 45' E.)

	30.20	Small branch runs S. E. Small grove.
	80.00	Set 128th mile post in mound.
		Rolling prairie.

129th Mile

	10.84	Sullivan's 128th mile corner.
N.87°58'E.	13.00	North point of a grove.
	80.00	Set 129th mile post in mound.
		Same.

COURSE	DIST	
		<i>130th Mile</i>
N.87°58'E.	80.00	Set cast iron monument facing as before. Same.
		<i>131st Mile</i>
	53.50	Small branch runs S. E.—timber on banks.
	80.00	Set 131st mile post in mound. Same.
		<i>132d Mile</i>
	80.00	Set 132d m. post in mound. Same.
		<i>133d Mile</i>
	13.00	Branch 10 lks. wide runs S. E. Timber.
	13.50	Sullivan's 132d m. corner.
N.87°50'E.	80.00	Set 133d mile post in mound. Same.
		<i>134th Mile (Var. 8° 45' E.)</i>
N.87°50'E.	16.50	Field-fence nearly N. and S.
	28.40	Left field-thicket and sparse timber.
	54.50	Small wet prairie.
	59.25	Timber—thicket.
	61.50	Creek 15 lks. north of line.
	63.50	Little fork cr. 40 lks. wide runs south.
	67.80	Sullivan's line tree.
	80.00	Set 134th mile post.
		Bearings { Burr oak 10 in. dia. N. 55° E. 69 lks. { Hickory 14 in. dia. S. 46° E. 89 lks.
		Land good; timber poor. Dense undergrowth.
		<i>135th Mile</i>
N.88°E.	35.00	Brushy prairie.
	46.10.	Field-fence N. and S. Thicket. Field is waste ground.
	57.50	Left field. Thicket.
	58.00	House 250 lks. S. (Circles).
	60.85	Small branch runs S. Brushy prairie.
	62.00	Road to Keosauqua N. and S.
	80.00	Set 135th mile post in mound. Prairie with brush and thickets.
		<i>136th Mile (Var. 8° 45' E.)</i>
	5.00	Road to Farmington a little N. of E.
	11.50	Touched N. W. corner of a field, in a line.
	30.75	Touched S. E. corner of another field. Prairie.
	60.00	N. E. corner of a field 12.00 south.
	80.00	Set 136th mile post in mound. Rolling prairie.
		<i>137th Mile</i>
	22.00	Road to Farmington E.N.E.
	60.00	Brushy barrens.

COURSE	DIST	
N.88°E.	80.00	Set 137th mile post in mound. Same.
		<i>138th Mile</i>
	27.50	Prairie.
	30.00	A small drain runs N.W.
	42.00	A field—fence N. & S.
	71.60	Left field—fence N. and S. Prairie.
	80.00	Set 138th mile post in mound. Same.
		<i>139th Mile</i>
	21.00	Timber.
	25.00	Small stream runs north.
	26.50	Prairie.
	66.00	Road N. E. and S. W.
	80.00	Set 139th mile post in mound. Rather level, 2d rate.
		<i>140th Mile (Var. 8° 45' E.)</i>
	6.50	Sparse timber and barrens.
	14.83	Sullivan's 139th mile corner.
N.87°24'E.	75.00	Heavy timber.
	80.00	Set cast iron monument facing as before. Land rolling. Timber: blk. and wh. oak, hickory, and dense undergrowth of same with crab, &c.
		<i>141st Mile</i>
	14.54	Sullivan's 140th mile corner.
N.87°56'E.	38.76	Big Fox River 50 lks. runs a little east of south.
	49.54	Same runs North.
	56.50	Same runs E.S.E.
	59.25	Same runs north.
	77.00	Enter river, runs S.E.
	80.00	Left same and set 141st m. post on the bank. Bearings { Birch 22 in. di. N. 55° E. 128 lks. { Elm 24 in. di. S. 15° W. 58 lks. Land on river level, other same as last.
		<i>142d Mile</i>
	8.20	Fox River runs south.
	13.85	Sullivan's 141st mile corner.
N.88° 9'E.	23.00	Fox River runs north.
	25.00	Same runs south.
	35.00	Enter river—runs east.
	40.70	Left river—runs S. E.
	43.00	Prairie.
	75.00	Timber upland.
	80.00	Set 142d mile post.

COURSE N.88° 9'E.	DIST	Bearings {	Blk. oak 30 in. di. N. 8½° E. 115 lks.
			Blk. oak 20 in. di. south 69 lks.

Land level, 2d rate; timber poor; dense undergrowth.

143d Mile

49.50 Road to Churchville runs S. E.
80.00 Set 143d mile post in mound (in the brush).
This is exceeding brushy, scrub oak, &c.

144th Mile

COURSE N.87°15'E.	DIST	Sullivan's 143d mile corner.
		80.00 Set 144th mile post.

Bearings {	White oak 10 in. dia. S. 10° W. 28 lks.
	White oak 10 in. dia. N. 29° E. 81 lks.

This mile is brushy barrens.

145th Mile

2.50 Prairie—barrens.
43.00 Brushy barrens.
80.00 Set 145th mile post in brush.
Bearings { Burr oak 14 in. dia. south 75 lks.
Burr oak 18 in. dia. north 34 lks.
Barrens.

146th Mile (Var. 8° 45' E.)

COURSE N.87°38'E.	DIST	Sullivan's 145th mile corner.
		20.50 Prairie.
		46.50 Touched N.W. corner of a field—a lane runs parallel with and 25 lks. N. of the line.
		57.50 House 50 lks. north (Wm. Hatten).
		67.50 Lane turns south. Field—fence N. and S.
		74.00 Left field—fence N. and S. Prairie.
		80.00 Set 146th mile post in mound. Land as before.

147th Mile

12.00 Thicket.
42.00 Prairie.
69.00 Thicket.
80.00 Set 147th mile post in thicket.
Bearings (Red oak 30 in. dia. S. 46° E. 256. lks
Barrens.

148th Mile

3.00 Branch 6 lks. wide runs north.
30.00 Prairie.
58.50 Field—fence N. and S.
61.00 Road to Churchville N. and S.
80.00 Set 148th mile post in a field.
Prairie with brushy barrens.

COURSE	DIST	
		<i>149th Mile (Var. 8° 45' E.)</i>
N.87°38'E.	3.90	Left field—fence N. and S.
	30.00	Brush and timber.
	59.00	Road N. and S.
	50.00	Road N. and S.
	80.00	Set 149th mile post in edge of a small prairie.
		Bearings—Burr oak 12 in. dia. S. 1½° E. 172 lks.
		Land, good. Timber indifferent. Burr and blk. oak, hickory, elm, &c., with a dense undergrowth.
		<i>150th Mile</i>
	3.50	Timber.
	80.00	Set 150th mile post.
		Bearings { White oak 10 in. dia. N. 27° W. 93 lks.
		} White oak 20 in. dia. S. 30½° E. 90 lks.
		Land broken, 2d rate. Timber: wh. and blk. oak, hickory, &c., underbrush.
		<i>151st Mile</i>
	4.90	A small saltpetre cave, noted by Sullivan.
	41.50	River bottom.
	51.00	Set a cast iron monument on the bank of the Des Moines River, with the word <i>State Line</i> facing the west, and the word <i>Missouri</i> facing the south and the word <i>Iowa</i> facing the north.
	51.80	Sullivan's terminus on the lower bank found by one witness tree still standing.
		River bottom rich. Timber, white and blk. oak, hickory, elm, lind, etc.
		Sept. 18, 1850.

Keokuk, September 30, 1850

We certify the foregoing to be the correct field notes of the survey of the boundary between Iowa and Missouri as run by us.

R. WALKER,
Surveyor on the part of Missouri
WM. DEWEY,
Surveyor on the part of Iowa

And the report of the Hon. Robt. W. Wells and Henry B. Hendershott, which is above referred to, and which was made to the last term of this Court is as follows:

TO THE HONORABLE THE SUPREME COURT OF THE UNITED STATES:

The undersigned, appointed by this Hon. Court, commissioners in the above cases, to establish the boundary line between the States of Missouri and Iowa, respectfully report that, upon being furnished with copies of the decree, they, in compliance therewith, addressed letters to the chief magistrates of those states, through their secretaries of state, respectfully requesting the co-operation and assistance of the state authorities in the performance of the duties imposed on the commissioners by said decree; and they received assurances, in answer to their letters, of all the aid and assistance within their power.

The Governor of the State of Missouri consented to consider an appropriation of two thousand dollars made by the general assembly for the purpose of conducting the suit, as applicable to the establishment of the boundary by the commissioners; and agreed to place that sum at their disposal for that object. The Governor of the State of Iowa entertained the opinion, it is understood, that no appropriation had been made by the legislature of that state applicable to the survey of the boundary, but endeavored to obtain the necessary funds from other sources; and, as the undersigned are advised, obtained them; but the commissioners were not informed of this until about the 23d of October last—then too late to procure the necessary assistants, fit out an expedition, travel to the place of commencing operations and complete the work in the field, before the weather would, in all probability, become too inclement in the vast and high prairies through which the line will pass.

As the grass in the prairies is burned in October, there would also be some difficulty, after that, in procuring provender for the teams necessary for the transportation of the baggage, provisions and monuments.

For these reasons, and others with which it is unnecessary to trouble the Court, the commissioners resolved not to attempt the work in the field until the opening of the spring.

The commissioners have procured all the monuments necessary for the line. Three are of the size and description directed in the decree. Nineteen other cast iron monuments, six of which are four feet long, eight inches square at the base and five inches square at the top to be placed at intervals of thirty miles; and thirteen of which are seven inches square at the base and four inches square at the top, and four feet long. These nineteen monuments each has the word *Missouri* on one side and *Iowa* on the opposite side, and the word *boundary* on the other opposite sides, strongly cast into the metal. All the monuments are cast *solid*; and will weigh about 13,000 lbs. and cost three cents per pound.

All which is most respectfully submitted.

H. B. HENDERSHOTT

R. W. WELLS

Novr. 1849.

And said reports not having been excepted to by either of the parties, they are therefore respectively confirmed and adopted by this Court. From said reports it appears that the old North West Corner of the Indian boundary line, made by John C. Sullivan in the year 1816 (and referred to in our former decree) is found to be at forty degrees, thirty four minutes and forty seconds of north latitude; and at about ninety four degrees, thirty minutes of west longitude from Greenwich: That at the said "North West Corner," was planted a large cast iron monument weighing between fifteen and sixteen hundred pounds: four feet six inches long, squaring twelve inches at its base, and eight inches at its top. This monument is deeply and legibly marked with the words (strongly cast into the iron) *Missouri* on its south side and *Iowa* on its north side: and *State Line* on the east.

And this Court doth adjudge and decree that said monument doth mark and witness the true North West Corner of the Indian boundary lines as run by John C. Sullivan in 1816. And the precise corner is hereby established and declared to be in the centre of the top of said monument.

Said reports further show that from the monument a line was run due west on a parallel of latitude to the eastern bank of the Missouri River; which line appears by the field notes accompanying the reports, to be sixty miles and sixty one

chains in length. And it further appears, by the reports and field notes that the Commissioners caused to be planted cast iron pillars in the line running west from the old North West Corner, at intervals of ten miles apart, with the word *Boundary*, cast in the iron, on the east side and on the west side of said pillars; and the word *Iowa* facing on the north, and the word *Missouri* facing on the south. That in running West, one such pillar was planted at the end of ten miles from the old North West Corner, another at the end of twenty miles; a third at the end of thirty miles; a fourth at the end of forty miles; and a fifth at the end of fifty miles. And at the end of sixty miles, was planted a monument similar to that erected at the old North West Corner, marked *Missouri* on its south side, *Iowa* on its north side, and *State Line* on the east. This monument stands sixty-one chains east of the eastern bank of the Missouri River on firm ground; the bottom lands beyond being soft and subject to overflow; for which reason the monument was planted so far east of the river. From this last monument the line runs due west on a parallel of latitude through a cottonwood tree thirty inches in diameter, notched on the east and west sides, and marked with the letter *I* on the north, and the letter *M* on the south. And on the bank of the Missouri River, sixty-one chains west of the iron monument last planted, a wooden post is set in the ground, with two cottonwood pointers—one of ten inches diameter standing S. 67° E. 6 links; and the other at N. 21° W. 12 links from the wooden post.

And said line having been run and marked according to our former decree, it is therefore now adjudged and decreed that the true and proper boundary line between the States of Missouri and Iowa, extending west from the centre of the monument standing at Sullivan's old North West Corner, runs through the centre of the five iron pillars and the monument near the Missouri River; and through the cottonwood tree above described; and through the centre of the wooden post planted by the commissioners on the eastern bank of the Missouri River; and then due west on a parallel of latitude to the middle of the Missouri River.

And it further appears from the report of said commissioners, that, pursuant to our former decree, they had ascertained and re-marked Sullivan's line as run and marked by him in 1816, extending eastwardly from the old "North West Corner" above described and established.

Sullivan's line as run and marked in 1816, from the said corner east, to the Des Moines River, was found not to be a due east line; but that more or less northing should have been made in the old line. Nor is it a straight line, as sudden deviations amounting to from one to three degrees frequently occur; and it rarely happens that any two consecutive miles pursue the same direction. It also appears that if the whole line was reduced throughout to a straight line, its southing would be about two degrees from a due east line. The length of this line is one hundred and fifty miles, fifty-one chains, and eighty links, from the old North West Corner to the western bank of the Des Moines River.

At the end of each intermediate space of ten miles on tracing Sullivan's line from the old North West Corner eastwardly, cast iron pillars were planted, of a similar description to those erected in the western part of the line between the old North West Corner and the monument near the Missouri River. These pillars were planted in Sullivan's line as found at the particular point; but as the line was bending in the ten mile spaces between the pillars, it was found necessary to erect wooden posts at the termination of each mile, in order to mark the line with more accuracy. In the prairies the mile posts are marked with the letters

B. L. facing the east; the letter *I* facing the north, and the letter *M* facing the south; and the number of the mile is marked on the west face of the post. Where timber exists the number of the mile is marked on witness trees or pointers with the letter appropriate to each state; there being one tree marked on each side of the line: whenever it was possible so to do. The foot of each witness tree is marked with the letters *B. L.* In all cases where posts are set in mounds, the pit is invariably nine links west to designate it from other surveys.

At the end of the one hundred and fiftieth mile no iron pillar was planted, because at fifty-one chains east of this point, the Des Moines River was reached; and there, according to our former decree, a large monument was planted of similar description to that placed at the old North West Corner, with the words *State Line* facing the west, the word *Missouri* facing the south, and the word *Iowa* facing the north.

And the re-marking of Sullivan's line as above set forth, partly with wooden posts at the termination of each mile, having been submitted to the counsel of the parties, it was by them deemed sufficient, because the public surveys of the lands of the United States are to be governed and closed on said line as run by the commissioners; and therefore private titles will be established on both sides; the state line being the dividing boundary of such private rights: and in these views of the counsel the Court concurs. It is therefore adjudged and decreed that Sullivan's line is established to run through the wooden mile posts, and the cast iron pillars planted ten miles apart on said line; and that the true and proper dividing line between the States of Missouri and Iowa east of the monument erected at the old "North West Corner," begins at the centre of said monument, and runs eastwardly, (southing about two degrees of a true east line,) through the centre of each wooden post, and iron pillar, to the centre of the monument erected on the bank of the Des Moines River. And it is further adjudged and decreed, that a straight line from one mile post to another; and from a mile post to a pillar; and from the last mile post to the monument on the bank of the Des Moines River, is the true and proper line: and that such straight lines shall conclude all other marks.

And it is further adjudged and decreed that a line extended north, eighty-seven degrees, thirty-eight minutes east, from the centre of the monument erected on the bank of the Des Moines River, to the middle of said river, is the true and proper boundary line between the States of Missouri and Iowa east of said monument.

And this Court having had submitted to its consideration what amount of compensation should be allowed to the different commissioners and to the surveyors employed by them, for services performed in running and marking the line in controversy; and also the amount of expenses incurred in performing the duties imposed on said commissioners by our former decree; and these matters having been referred to the clerk of the Court to ascertain the proper compensation and charges, and he having reported thereon; and also on other costs and charges incident to the suit; and said report not being excepted to, is in all things confirmed, and which report is in the words and figures following, to-wit:

TO THE HONORABLE CHIEF JUSTICE AND ASSOCIATE JUSTICES OF THE
SUPREME COURT OF THE UNITED STATES:

Pursuant to an order of this Honorable Court made the 12th instant in the

case of the State of Missouri and the State of Iowa now pending on Bill and Cross-Bill, the undersigned, after a careful examination of witnesses and all the other sources of information within his reach, respectfully reports:

1. That the \$8 per diem, which the commissioners agreed to pay each of the surveyors in the field, is a fair and reasonable compensation for their labors.
2. That \$10 per day to each of the three commissioners while engaged on this duty is a fair and reasonable compensation for their services—and that a further per diem of \$2 to each of the two commissioners engaged in the field would be a reasonable and proper allowance on account of their personal expenses.
3. That the statement of the expenditures by the commissioners and of their purchases appears to be very moderate and reasonable.
4. That the whole expense of the survey amount to \$10,880 41/100.
5. That each of the said States advanced \$2,000.
6. That the commissioners realized from sales of camp furniture \$13.15.
7. That the instruments purchased by the commissioners for the survey (which cost \$247 22/100) have been retained by them for safe-keeping, subject to the order of this court.
8. That the fees now due the clerk of this court, and up to this term, by both parties in this case amount to \$48.67.

Lastly—That in a detailed account, stated upon the preceding basis and hereto appended, each of the said States is charged with \$3,457.96½ being a moiety of the balance (\$6,867.26) due on the survey, and a moiety of the fees (\$48.67) now due the clerk of this Court.

All of which is respectfully submitted by

WM. THOMAS CARROLL,
Clerk of Supreme Court U. S.

17th December 1850.

THE STATES OF MISSOURI AND IOWA

In Account with the Adjustment of the Boundary Line Between Them

	DEBITS
To 22 cast iron monuments	\$ 386.95
To freight, transportation and expenses on same	246.40
To camp furniture, provisions, expenses in going to and returning from the line, and upon the line, postages, stationery, hire of horses, expenses in going to and returning from Iowa City, Jefferson City and St. Louis	826.92
To wages to hands in the field	1,718.92
To William Dewey, surveyor, for 184 days, at \$8 per day	1,472.00
To Robert Walker, surveyor, for 183 days, at \$8 per day	1,464.00
To Robert W. Wells, commissioner, for 15 days, at \$10 per day	150.00
To William G. Minor, commissioner, for 177 days, at \$12 per day	2,124.00
To Henry B. Hendershott, commissioner, for 187 days, at \$12 per day	2,244.00
To sextant, barometer, and thermometer, solar compass and other instruments necessary for the survey	247.22
To fees now due the clerk in the case pending in Supreme Court U. S.	48.67
	\$10,929.08
<i>Contra</i>	
	CREDITS
By cash received from State of Missouri	2,000.00
By cash received from State of Iowa	2,000.00

By proceeds from sale of camp equipage	13.15
By balance of which \$3,457.96½ is due by the State of Missouri, and \$3,457.96½ is due by the State of Iowa	6,915.93
	\$10,929.08

And it appearing to the Court here, that there will be due to the clerk of this Court for the duties devolved on him by this decree and for the services performed by him at this term, the further sum of sixty-three dollars and sixty cents in addition to the forty-eight dollars and sixty-seven cents stated in his report to be now due him. And it also appearing to the Court that the said clerk should be allowed, for making his report, for carrying on the correspondence incident to this cause and paying the expense thereof; and also in consideration of any future service to be performed by him in the progress of this cause, the further sum of fifty dollars. It is thereupon ordered and decreed that said Commissioners Hendershott and Minor do pay to the clerk of this Court, in full discharge of all costs and charges that have now accrued or that may hereafter accrue for any service done or to be performed by the said Clerk in the progress of this cause the sum of one hundred and sixty-two dollars and twenty-seven cents out of the first moneys received by them under this decree.

And it appearing that certain advances had been made by the States of Missouri and Iowa respectively to the commissioners, and said advances having been credited, it now appears, that the State of Missouri is bound to pay the further sum of three thousand five hundred and fourteen dollars and seventy-six and a half cents; and that the State of Iowa is bound to pay the further sum of three thousand five hundred and fourteen dollars and seventy-six and a half cents of the charges and costs of this controversy.

And it is ordered and decreed that the State of Missouri pay over the said sum of \$3,514 76½/100, and that the State of Iowa pay over the said sum of \$3,514 76½/100 to the commissioners Henry B. Hendershott and William G. Minor in final and full discharge of their portions respectively of said costs and charges.

And it is further ordered and adjudged that said commissioners receive the several sums of money and distribute and pay over the same to those entitled thereto according to the report of the clerk of this Court.

And it also appearing that certain instruments purchased by the said commissioners are retained by them subject to the order of this Court, it is further ordered that the commissioners dispose of the said instruments at such times and places and on such terms as to them may seem most advantageous for the interests of the parties to this suit; and that they pay the proceeds of the sales into the treasuries of the said States of Missouri and Iowa, respectively: that is to say, one half of the proceeds into each treasury, and take receipts from the proper officers for the moneys paid.

And it is further ordered that said commissioners Hendershott and Minor report to the next term of this Court the manner in which they have executed the duties hereby imposed upon them; and to which end this cause is kept open.

And it is ordered that the clerk of this Court do forthwith transmit to his Excellency the Governor of the State of Iowa a copy of this decree (including the reports of the commissioners, surveyors, and clerk, together with a copy of the field notes of said surveyors) duly authenticated under the seal of this Court. And it is further ordered that a similar copy in all respects be by said clerk forwarded to his Excellency the Governor of the State of Missouri.

And it is further ordered that the clerk forward a copy to each of said commissioners Hendershott and Minor, of the order referring the matter of costs and charges: the clerk's report thereon, and so much of the foregoing decree as respects the costs and charges, for the guidance of said commissioners in the performance of their duties in this respect.

I, William Thomas Carroll, Clerk of the Supreme Court of the United States, do hereby certify that the preceding pages numbered from one to ninety-four inclusive contain a true and perfect copy of the decree of said Supreme Court in the case of the State of Missouri and the State of Iowa, on Bill and Cross-Bill as therein directed to be forwarded to his Excellency the Governor of the State of Iowa—delivered at December Term A. D. 1850, and now remaining on the records of said Supreme Court.

Seal of the Supreme Court
of the United States

In testimony whereof, I hereunto subscribe my name
and affix the seal of said court at the City of Wash-
ington this 13th day of January A. D. 1851.

WM. THOS. CARROLL,
Clerk of Supreme Court United States

BOUNDARY RETRACEMENT SURVEYS

The decision or the decree of the Supreme Court was filed February 10, 1851, and sets forth in detail the findings of the Court, including the report of the commissioners and surveyors as well as the calculations and field notes of the surveyors. An original copy of this decree is on file in the records of the state land office and the copy attached hereto has been prepared from the original copy.

Following the decree locating this line, certain retracement surveys were made in order to "tie in" the existing township and section corners with the south boundary of Iowa. The results of these surveys have been transferred to the township plats on file in the office of the secretary of state and the field notes are on file in the state land office of Iowa.²⁰

Instructions given for special surveys in this connection were issued and those sent to William Shields are included as a sample. They are found in Surveyor General's letter book "E" on page 380. Original records are in the state land office.

SPECIAL INSTRUCTIONS

SURVEYOR GENERAL'S OFFICE,
Dubuque, March 25, 1852

TO WILLIAM SHIELDS
Deputy Surveyor

Your contract of the 5th inst. specifies the survey of so much of the lines between ranges 31 and 32; and 32 and 33 of Township 67 as are situated in the

²⁰ Field notes from the N. W. corner to Mo. River by Wm. Shields. Original field notes in "Iowa-Missouri Boundary 1850-1852-1854."

State of Iowa, and the subdivision of Township 67 of ranges 32, 33, 37, 38, 39, and 40 situated in the same state, and rendered fractional by the boundary between the States of Missouri and Iowa.

You are also to make the proper connections with the said boundary, not only in the townships above named, but also Township 67 of ranges 34, 35, 36, 41, 42, and 43, which have been subdivided some time since, and prosecute the survey of the whole, in the manner hereinafter directed.

On the north boundary of Township 67, range 32, you will find the last half of the sixth mile to be 43.00 chains of length. You will commence your survey of this line at the corner to township 68, ranges 32 and 33, and from thence you will survey the line dividing ranges 32 and 33, *due south*, establishing the proper quarter section corners, thereon at 40 and 80 chains respectively, until you arrive at the south boundary of the state, where you will establish a corner, observing to make your bearings to said corner stand north thereof, and to give your intersection with the nearest monument established as a mile point on said boundary. You will then proceed to corner to ranges 31 and 32 of township 68, and establish the line dividing ranges 31 and 32 in the same manner.

Having completed the survey of your range lines, you will commence your subdivisions at corner to sections 35 and 36, township 68, range 32 and run due south 80 chains, establishing a quarter section post at 40 chains, and a section corner at 80 chains from which you will random for corner in east boundary giving the variation, and noting the falling in your field notes. From corner in east boundary you will then correct back, noting your variation and topography on the corrected line, and so on to the intersection of your survey with the state line, where you will establish a corner, and note your intersection therewith as directed in the survey of the range lines, and in like manner you will proceed with the balance of the township running south instead of north, and closing to the state line by true lines.

Town. 67, range 33 is to be surveyed in precisely the same manner with this exception, that as the west boundary of this township was surveyed under instructions from the office at Saint Louis, it has no reference to the present surveys, consequently you will have to notice the intersection and falling of the west tier with the corners already established.

In the survey of the remaining townships of your district you will continue your survey from the Missouri side, as if there were no state line intervening, with this exception, that the field notes must be separate and distinct; and only, that portion belonging to the State of Iowa must be returned to this office: For instance, commencing in Town. 67, range 37 at corner to sections 35 and 36 in Missouri you will run north and at 45.60 chains you intersect the state line—Your field notes returned to this office will read thus:

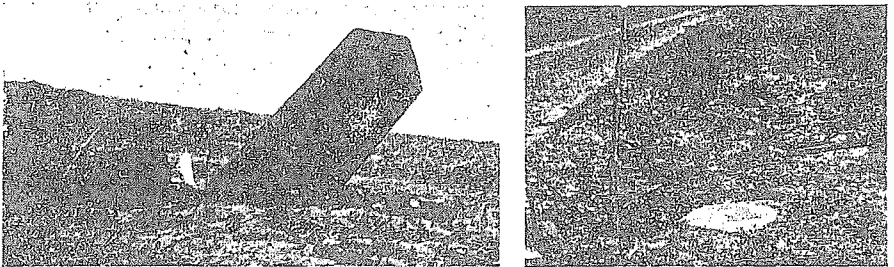
CHS. LKS. Township 67 north, range 37 west of 5th Mer.		
20.19	East of 24th mile post set post in mound pit 8 links north for corner to fractional sections 35 and 36; Thence,	
	North between sections 35 and 36.	Variation 8° 20' east.
34.40	Set post for corner to sections 25, 26, 35, and 36, from which a burr oak 10 ins. in dia. bears N. 31° W. 450 links.	
	East random between sections 25 and 36.	Variation, east.
80.06	Intersected range line 30 links north of post.	
	West corrected between sections 25 and 36.	Variation, east.

CHS. LKS.

- 30.50 Creek 50 lks. wide runs S. E.
 40.03 Set post or qr. sec. corner in mound of earth and sod pit, east 8 lks.
 80.06 Section corner. (And so on, through the township).

As the notes of the Missouri and Iowa sides are entirely disconnected you will see that the complement of the line properly expressed is only what is to be used, and this method has been adopted in order that the survey of these 4 townships may harmonize with those east and west of them, which were surveyed before this boundary was established.

According to the instructions of the Surveyor General of Illinois and Missouri, you are to random and correct the lines between the 10-mile cast iron posts, west of the old North West Corner, setting mile posts on the *true* line, before making



The "60th mile" cast iron post described on p. 472 still stands in the highway, about a mile east of the Missouri River, on the line between Fremont County, Iowa, and Atchison County, Missouri. The view at the left is looking north; at the right looking east, with U. S. Coast and Geodetic Survey marker in foreground.

any connections therewith. The notes of this process it is necessary to repeat in the returns furnished this office, and of course in making your connections with the townships already subdivided, you will use great care to establish monuments on the true line, and have the bearings to the same, as before directed all stand north thereof; and in making said connections in townships already subdivided you are to begin at the nearest corner, that can be positively identified north of the state line, and run south on a random to the nearest corner south of it, correcting this random you will make your corner at the intersection of the true line, with the state line, and report the same precisely as performed in the field.

The field notes of each township must be returned in a separate book, and each book must be signed by your assistants and sworn to by you before some officer, qualified to administer the oath.

You are empowered as deputy surveyor to administer the oath to your assistants.

None of the Streams in your district are to be meandered.

With your field notes you are to return the map of each township of your district herewith enclosed, upon which must be expressed the length and variation of each of your lines, with all the topography thereon neatly laid down: with a view to the completeness of these maps you should make sketches of the topography as you progress with your lines, that you may be able to present not only the points upon your lines at which the same occurs, but also its direction and position between the lines or within each section as every object of topography is to be properly closed or connected. These maps form the bases of all the official plats,

and are by law, denominated the original; as such, they are carefully preserved in this office, where they are much referred to and examined.

By an act of Congress approved Septr. 28, 1850, all of the swamp and overflowed lands made thereby unfit for cultivation which were unsold at the date of the passage of said act were granted to the state or territory in which said lands are located. In order that the field notes of surveys may hereafter clearly present the quantity and locality of the lands thus granted, you will in addition to the objects of topography required by your general instructions note the point upon which you enter and leave all lands which are clearly the subject of the above grant, stating the character of the land thus noted, and whether it is a swamp or marsh, or subject from other cause to inundation to an extent that would in the absence of artificial means, render it uncultivable. The depth of inundation in timber may be easily determined from marks upon the trees, and its frequency may be ascertained either from your knowledge of the general character of the stream which overflows, or from the testimony of those residing upon or near the locality under examination.

The usual phraseology for entering or leaving swamp or marsh, may be employed with the addition of unfit for cultivation, but if the margin of bottom, swamp, or marsh in which uncultivable land exists is not identical with the margin of such uncultivable land, then a separate entry must be made for each, opposite the marginal distance at which they respectively occur.

The four per cent of the gross proceeds of your surveys, as per stipulation of your contract will be applied to a rigid and detailed examination in the field of your own and all other work assigned this season. The recent discovery of imperfections and even frauds in the public surveys, heretofore supposed to have been faithfully and accurately executed, imposes upon this office the necessity of employing all the tests in its power, and of subjecting both the notes of surveys and the surveys themselves to the most rigid scrutiny before payment is made. You should therefore acquaint yourself minutely and thoroughly with your instructions, as a violation of them in any particular will cause a suspension of your work, and unless such violations are satisfactorily explained will result in the rejection of the whole.

GEORGE B. SARGENT

Surveyor General, Wisconsin and Iowa

In 1854, John Wilson Williams, Deputy Surveyor, made retracements of the southern boundary of Iowa and located it in accordance with the Supreme Court order. His work began at the 92d mile post fixed by Sullivan's survey.

The following letter written to Mr. Thomas Duffield, county surveyor of Davis County, Iowa, in October of 1877 by Mr. Williams explains some features of his work in 1854. Mr. Duffield was county surveyor in Davis County for seven of the terms during the period from 1855 to 1881 and thus his period of service covered a large part of the time from the Williams survey in 1854 to the time of the letter in 1877. It is easy to imagine that many times in his practice Mr. Duffield was called upon to locate lines and corners along the Missouri line which is the south line of Davis County.

MR. DUFFIELD:

Huran, Des Moines County, Iowa, Oct. 5, 1877

I take pleasure in replying to your enquiries relative to the last survey of the Missouri boundary made by myself in 1854.

In 1850 (by reference to the House Journal of this state) you will see a full report of this case or by reference to Harvard's Supreme Court report of the U. S. of that date you will find a full report of the survey of the Sullivan line as made by the commissioner on the part of Missouri and Iowa. The Supreme Court at Washington adopted that resurvey of the Sullivan boundary, as the true boundary between the States of Missouri and Iowa and that the corners and monuments as established by those commissioners should be held and considered as designating the true boundary between said states and that boundary should "conclude all other marks."

You will see by examining the field notes of the commissioners that they identified the old NW Corner of Missouri as established by Sullivan in 1816 and also found the most of his mile points in running eastward to the Des Moines River, which they conformed to with the exception that their measurements differed from Sullivan's, by from 8 to 11 chains in the 60 miles, so that the mile points established by the commissioners fell short of the Sullivan mile points all the way.

Sullivan's line was an old Indian boundary and run in an old fashioned manner, hastily and precipitous and with little care as you well know, and therefore every mile has a bearing of its own, peculiar.

The Court decided that a straight line connecting the mile points as established by the commissioners should be the true boundary line between the states: of course the Sullivan mile points would be left a little to the one side owing to the irregularity of his survey.

The Iowa and Missouri surveys made at different periods of time and by different surveyors were intended to close in the Sullivan line but do not show the identification of but one Sullivan's point in 60 miles and the Land department knows well that there must be a variance between them and the Sullivan boundary.

My mission was, by a joint commission of the two officers at St. Louis and Dubuque to place all the corners of the Iowa and Missouri surveys which are intended to be on the state line, on the line as established by the Court—so that the land lines must conform to the state line. Altho, I remember one instance where the land corner of new survey was fifteen rods south of the state line, and another when the resurvey was eight chains north of said line.

I believe at the state office in Des Moines, you can obtain all these notes by writing for them or by sending to the Custodian of Public Surveys in St. Louis you can get them.

Any further enquiries about this matter I shall be pleased to answer.

I am glad to hear from old friend Morris. I often think of his pleasant and genial countenance. Please give him my very best regards. I take friend Hull's paper and have often seen your name. Am glad that you can afford to serve your people so long as county surveyor. I spent twelve years as county surveyor in Hancock County, Ill., but could never be induced to accept it here, altho much of my time is devoted to surveying here and in Illinois at better fees than allowed county surveyors, but could never get above \$3 per day in Iowa, (it's \$6 per day in Illinois) besides some perquisites and the legal fees allowed county surveyors. Shall be pleased to hear from you again.

Most respectfully, Your Obt. Servt.,

J. WILSON WILLIAMS

SUPREME COURT OF THE UNITED STATES

No. 6, Original—October Term, 1896.

THE STATE OF MISSOURI, COMPLAINANT, }
 VS. }
 THE STATE OF IOWA. }

(January 18, 1897.)

This cause coming on to be heard on the application of the State of Missouri, the State of Iowa consenting thereto, for decree on the report of James Harding, Peter A. Dey, and Dwight C. Morgan, commissioners appointed by decretal order herein on February 3, 1896, to find and re-mark with proper and durable monuments such portions of the proper boundary line between the States of Missouri and Iowa, as run, marked and located by Hendershott and Minor, commissioners of this court, under the orders and decrees of this Court of February 13, 1849, and January 3, 1851, as have become obliterated, especially between the fiftieth and fifty-fifth mile posts on the same; and it appearing that a difference of opinion has arisen in respect of certain allowances to be included in the expenses incurred in remarking said boundary line, it is ordered by the Court that Commissioner Morgan be allowed his per diem for forty-six days' services, and that the account of expenses attached to said report be completed by the addition of that per diem in favor of said commissioner, and that said report as so completed in that particular be and the same is hereby in all things confirmed, as follows:

TO THE HONORABLE THE SUPREME COURT OF THE UNITED STATES:

The undersigned commissioners, appointed by the decree of your honorable Court dated February 3, 1896, to find and re-mark with proper and durable monuments such portions of the boundary line between the States of Missouri and Iowa, run, marked, and located by Hendershott and Minor in accordance with decree of your honorable Court dated Jan. 3, 1851, as have become obliterated, especially between the fiftieth and fifty-fifth mile posts on said line, etc., respectfully submit the following report:

On the 27th day of February last the commissioners met in the city of Chicago and fully discussed matters pertinent to the proper performance of the duties imposed upon them. Construing the decree as applying to all portions of the boundary line in question, the commissioners decided to advertise in newspapers published in counties in Missouri and Iowa adjacent to the boundary for information regarding such parts of said line as were in dispute or had become obliterated. This was done and considerable information elicited, but as the officials of one of the states interested declined to authorize the work necessary in retracing the line, excepting where directed in the decree, nothing was done beyond the finding and re-marking "with proper and durable monuments" such portions of the line as was necessary for its proper relocation between the 40th and 60th mile points, as shown hereinafter.

After careful consideration it was decided to apply to General W. W. Duffield, superintendent U. S. Coast and Geodetic Survey, for a detail from his corps of assistants to perform all field-work necessary in carrying out the instructions of the Court. It was decided that the employment of expert officers of the Geodetic Survey corps for the services required would result more satisfactorily to the states concerned than would the selection of any private parties, as the high professional attainments of these officers and their freedom from any possible bias

regarding the boundary line to be established were ample guarantees for the entire reliability and impartiality of any work done by them.

Correspondence was accordingly had with General Duffield, who consented to detail two of his assistants, and also to supply them with a complete outfit of all instruments and appliances necessary in the prosecution of the proposed work. This offer was at once accepted. A meeting was afterwards had in St. Louis, March 11th, ult., when it was decided to meet at Lineville, Iowa, a point immediately upon the boundary line between Missouri and Iowa, for the purpose of personal investigation as to the proper point or points at which to commence operations. Two of the commissioners accordingly met at Lineville on March 18th, ult., and spent three days in the examination of the boundary line and of points on said line claimed to have been established by Hendershott and Minor in 1850. The first step taken was to decide regarding the proper points between which our work of relocation of that part of the line designated in the decree of your honorable Court, namely, from the 50th to the 55th mile points on the Hendershott and Minor line, should be commenced. It appeared to us that the cast-iron monuments placed by Hendershott and Minor at intervals of ten miles would naturally be more reliable than any traditional points, and the first investigations were made as regarding the 40th, 50th and 60th mile points, these being originally marked by Hendershott and Minor with iron monuments as stated. After careful examination and much inquiry the commissioners were satisfied that the monuments marking the 40th and 60th mile points were in their original positions. As regarded the monument at the 50th mile point, whilst no positive evidence could be had as to its removal from its original position, the rumors and statements were such as to render its reliability a matter of doubt, and it was, therefore, determined to use the monuments at the 40th and 60th mile points as fixed points between which to relocate the boundary line.

It was subsequently arranged for the commissioners to meet at Davis City, Iowa, a point on the Chicago, Burlington & Quincy Railroad adjacent to the 40th mile point, where it was proposed to commence work. General Duffield was accordingly notified, and on Wednesday, April 8th, ult., the commissioners reached Davis City and met Messrs. W. C. Hodgkins (in charge of work) and A. L. Baldwin, of the U. S. Geodetic Survey corps, detailed as per arrangements made with General Duffield. These gentlemen brought with them a very complete outfit of instruments of the best description used in geodetic work, including all necessary equipment for astronomical observations as well as field-work. We proceeded to the 40th mile point on the afternoon of April 8th, ult., and arranged for the commencement of work the following day. On April 9th, ult., a party for field-work having been organized and the necessary teams and wagons hired, the entire party proceeded to Pleasanton, Iowa, a point situated immediately on the boundary line just east of the 45th mile point. Pleasanton and Lineville subsequently became the bases of operation, our parties changing from one of these points to the other as the necessities of the work required.

Work was commenced at the 40th mile point, as arranged. It soon became quite evident that the actual boundary line as indicated by points shown and satisfactorily identified differed from the line as would be established by the field-notes of the Hendershott and Minor survey. In order that the relative positions of the actual mile points between the 40th and 60th mile points could be properly determined, and also their true relation to the theoretical points as found in ac-

cordance with the courses and distances shown in Hendershott's report, it was deemed necessary to establish a chord or base line twenty miles in length between the 40th and 60th iron monuments to which all points actually found and definitely located or shown and claimed as being upon the boundary line could be referred and from which all points finally determined could be accurately located. For the details of the actual field-work and its results we respectfully refer to the accompanying report of Mr. W. C. Hodgkins, in charge of party (Appendix A). It is proper here to state that the field-work, done as it was in accordance with the precise methods of the U. S. Geodetic Surveys, was necessarily very slow and tedious, but its accuracy, in our opinion, cannot be questioned. The measurement of the twenty-mile base line involved a very great amount of labor, whilst the computations necessary in the exact reduction of the measurements were also very laborious. Complete topographical notes were also taken for the entire work, but the commissioners have deemed it unnecessary to have maps prepared, as their preparation would involve a considerable expense without any corresponding benefit. The very unfavorable weather during a great portion of May and a part of June interfered seriously with the prosecution of the field-work, causing a delay of from two to three weeks.

Careful examination was made in every instance for the precise location of the original Hendershott and Minor mile points, but out of twenty-one of these points included in the survey only nine, including three iron monuments, could be satisfactorily identified. The 42d, 43d, 44th, 49th, 54th, and 58th mile points were identified and located by evidence entirely satisfactory to the commissioners. As regards the 50th mile point (iron monument), concerning the reliability of which doubt had existed, the commissioners are satisfied that it is very little, if at all, out of its original position—its relation to the 49th mile point (which was clearly identified as Hendershott's original point) as determined by the base line confirming our judgment. After the work of relocation had commenced and preliminary work on the twenty-mile base well advanced, statements were made to the commissioners to the effect that the iron monument at the 60th mile point had at one time been moved from its original position. This being a matter of importance—the monument in question being considered as a fixed point in establishing the base line—an inquiry was had regarding it and a considerable amount of testimony heard. This testimony was very conflicting, but after its careful consideration and the prolongation of the base line some four miles eastward of the 60th mile point the commissioners were satisfied that the monument was occupying its original position.

The location of the 52d mile point was more difficult and involved a much more extended investigation than for any point established by the commissioners. It was claimed and strongly urged that the original 52d mile point as established by Hendershott and Minor was at a point witnessed by two trees—an elm and an oak—which trees, as well as a point established from them in accordance with Hendershott and Minor field-notes, were shown. The field-notes regarding this point and also the 53d mile point are as follows:

CHAINS

80.00 Set 52d mile post.

Bearings, elm 18 inches diameter, N. $87\frac{1}{4}^{\circ}$ E. $10\frac{1}{2}$ links; burr oak 12 inches diameter, S. 22° W. 28 links.

(Continuing:)

N. 88° 47 E.

CHAINS

- 0.30 A pond 250 links wide; direction of its length, N. & S.
- 5.00 Prairie.
- 15.00 Timber.
- 30.00 Field (Stokes') fence, nearly N. & S.
- 57.50 Left field. .
- 80.00 Set 53d mile post. Bearings, black oak 8" diameter, S. 53° E. 15 links; black oak 6" diameter, N. 53° E. 64 links.

The trees shown and claimed as being the original witness trees for Hendershott and Minor's 52d mile point agree very well with the field-notes as regards their distance from the 51st mile point, and also as to their relative positions to each other. The distances and bearings of these trees from the point shown and claimed as the original Hendershott mile point also agree with the field-notes closely. Beyond these coincidences, however, there is, in our judgment, nothing whatsoever to warrant a conclusion that they were ever marked as witness trees by Hendershott and Minor. In their report (10th Howard, pages 15 and 16) they state: "In timber the number of the mile is marked on the witness trees with the letter appropriate to each state, there being one tree marked on each side of the line whenever possible. The foot of each witness tree is marked with the letters *B L*. The oak tree shown and claimed to be a witness tree for the 52d mile point had a large 'blaze' on its trunk about five feet from the ground. Nothing whatever could be ascertained by the commissioners to in any manner indicate what, if any, marking had been inscribed on the blaze, nor could any information be had concerning such marking. At the foot of this tree, facing N. 45° E., is to be seen a blaze on which is plainly discernible the letters *B X*. The blaze on the trunk of the tree faced directly east, whilst the point to which it is claimed to refer is but 22° east of north from the tree. It is the universal custom of surveyors in marking witness trees, so far as the experience of the commissioners goes, to make such marks so as to face as nearly as possible the point witnessed. The *B X* mark faces certainly 25° east, and the blaze on trunk of tree 68° east of the point claimed to be witnessed. Measurements of the *X* mark at base of tree are as follows, in tenths of one foot:

The mark inclining to the left extends above the letter *B* and is quite close to the upper curved line. The mark inclining to the right runs closely to the lower part of the *B*. It would have been quite as practicable to have cut a letter *L* as an *X* on the blaze found at foot of this tree, and the commissioners were not prepared to accept this letter *X* as an *L* without stronger corroborative evidence than they could obtain. This tree, if marked by Hendershott and Minor, must have been so marked forty-six years ago. A section of the tree at a point eight feet above the ground, the tree being very uniform in size, from three feet above the ground, for eight to nine feet above, was cut and sent to Prof. McBride, botanical expert at the university of Iowa, for his opinion (as expert) as to its age, etc.

In a letter from him to Commissioner Dey, May 19th, 1896, he states:

"I judge that the tree when felled was 70 years old. Its history runs about as follows: Fifty-nine years ago it received an injury (blaze?) of which a scar persists. The tree at the time was about 11 years (11-16) old, and not to exceed, bark included, 3¼ inches thick. I say about 11 years, for it takes some years not recorded on the section for a tree to attain six feet in height. Twenty-five years

later the tree had added about $2\frac{1}{2}$ inches to its radius. The next 17 years a little more than one inch to the radius, making the diameter of the wood (bark not counted) about $8\frac{1}{4}$ to $8\frac{1}{2}$ inches. Since this another inch of wood has been added to the radius. Calling this 17 years, (it is more rather than less, as the annual increment is constantly smaller,) we have the total since the scar, 59 years."

This oak tree, as shown by Prof. McBride, at a point where section examined by him was cut, was $8\frac{1}{4}$ to $8\frac{1}{2}$ inches in diameter when 53 to 58 years old. Being 70 to 75 years old, it would have been 24 to 29 years old in 1850, and its diameter where blaze was found could not have exceeded 5 inches. As the blaze shows a face of fully eight inches, it is evident it could not have been cut on a tree with a diameter of only five inches. The diameter of this tree at base, where *B X* mark was found, is now 15 inches. Applying the proportionate growth of tree as shown by Prof. McBride, and its diameter at base could not have exceeded 8.5 inches 46 years ago, and its size was not sufficient to have received the blaze now shown.

Regarding the elm tree, also claimed to be a witness tree for the original Hendershott 52d mile point. This tree also has a large blaze about four feet from the ground. Nothing whatever was shown to prove that it ever had any mark upon it (prior to the time of a private survey made in 1893) other than the characters *S 28*. The letter *S*, if it ever existed, is now totally obliterated. The figure *2* is still plainly discernible, and a part of the upper portion of a figure *8* to the right of the *2* can also be traced. Nothing was shown to prove that it was ever marked at its base with the letters *B L*, as it should have been were it a Hendershott witness tree. Diligent search had evidently been made at some time for this mark, as is plainly evidenced by the chopping at its base, and had the proper marks ever been found it is quite certain the fact would have been in evidence before the commissioners.

The Hendershott notes show that at 30 links eastward of the 52d mile point the bank of a pond was reached, and that the pond itself was 250 links in width, making a distance of 280 links from the 52d mile point to the east bank of pond. The bank of this pond directly east of the 52d mile point, claimed to be witnessed by the *elm and oak*, has evidently moved eastward to some extent since 1850, as shown by present conditions. Measurements made by the commissioners show that 280 links eastward from the point claimed as the Hendershott 52d mile point reach a point 59 links east of the present bank of the pond. Thirty chains east of their 52d mile point, as seen by their notes, the Hendershott line crossed the 'Stokes' field fence. The line of this fence is still plainly visible. A line straight from the 52d mile point, claimed to be witnessed by the *elm and oak*, to the 54th mile point will pass at least 70 feet south of the 'Stokes' fence line, as noted by Hendershott. For more than thirty years, and after the establishing of the boundary line by Hendershott and Minor, it is claimed a road was maintained and worked as a Missouri road between the 52d and 54th mile points, and that until within the past five years this fact was never questioned. It is claimed that the line recognized by parties living on both sides of the boundary as being the Hendershott line since his survey and until within the past few years is now plainly shown for a very considerable distance between the 52d and 53d mile points by the line of what is known as the *Fugate* fence line. It is claimed this fence was put up by one Fugate, the owner of land in and a resident of Iowa (and who was also a surveyor), and who, living as he did close to the line and present when the Hendershott survey was made, probably knew where the true line was and placed his fence on that

line. This line very closely agrees with a line running directly from Sullivan's 52d mile point to the 54th mile point, the last named having been satisfactorily identified and located by the commissioners. It is claimed to be improbable that Fugate placed his fence north of the proper line.

The commissioners most carefully considered all the conditions relating to the point claimed to be the Hendershott 52d mile point and witnessed by the *elm and oak*, but the more the matter was weighed the stronger became their conclusion that the trees mentioned could not have been the witness trees as claimed. Coincidences of position constitute their claim. It is proper here to state that within a short distance to the north of the 52d mile point as established by the commissioners are the stumps of an elm and burr oak which agree as well as do the other elm and oak as to distance from the 51st mile point, better as to topographical conditions, and are very similar as to the relative position required by the field-notes for the witnesses to the 52d mile point. The commissioners have no idea that these stumps referred to were those of Hendershott's witness trees, but make this statement to show that coincidences such as shown by the *elm and oak* are not impossible. To have crossed the 'Stokes' fence, in a distance of 30 chains, starting from the suppositious 52d mile point claimed to be witnessed by the *elm and oak*, an angle of 2° to the left would have been necessary, and also another angle to the right equally great in order to run directly to the 54th mile point. Hendershott's notes make no mention of any such angles. The angle recorded as having been made at the 52d mile point was .29' to the north, the course having been changed, according to the Hendershott notes, from N. 89° 16' E. to N. 88° 47' E. We are satisfied, from personal investigation and from points found and referred to our base line, that the original Sullivan line can be readily traced from his 51st mile point to his 52d mile point, and we believe it very probable that the Hendershott line between the 52d and 54th mile points is nearly identical with the Sullivan line. Whilst we did not adopt the Sullivan line between the points named, very good reasons could have been given for doing so. The Hendershott notes make no mention of Sullivan's line after leaving his 49th mile point until his 54th mile point was reached. They make no mention of finding Sullivan's 52d mile point or of any trees on his line; but they say in their report (page 4, 10th Howard Report) that they "discovered abundant blazes and many witness trees which enabled us to find and re-mark the said (Sullivan) line as directed by the Court." Also on page 7, same report, it is stated: *But in heavy bodies of timber no difficulty was experienced in discovering evidences of the precise location of the (Sullivan) line, not only by blazes, but by line and witness trees.* [Italics are ours.] And on the same page, "The general topography of the country, and especially the crossing of the streams, greatly facilitated us in following the line, and in some instances, when confirmed by the old blazes, enabled us to establish it with sufficient certainty." Commencing some ten chains east of the 51st mile point, the country through which the boundary line passes was and is heavily timbered, and, as before stated, the Sullivan line in the timber is at this time readily to be found. The inference that the Hendershott line eastward from the 51st mile was nearly identical with the Sullivan line is quite as strong as the contrary, notwithstanding no mention is made by Hendershott of the Sullivan line after leaving a point 6.20 chains east of the 49th mile point until reaching the 54th mile point.

The Sullivan line, between the 51st and 52d mile points, as shown by his

field-notes, crossed the east fork of Grand River (now called Weldon) three times. This line now, by reason of changes in the bed of the stream, will cross the Weldon five times. With the exception of the *elm and oak*, there were no traditional or apparent evidences claimed as indicating the original location of the Hendershott and Minor 52d mile point. A line run eastward with the bearings given by the Hendershott notes from their 51st mile point would pass at least 40 feet south of the point indicated by the *elm and oak*. A line run eastward, as per the Hendershott notes, from the point claimed as the Hendershott and Minor 52d mile point would pass at least 90 feet south of their 54th mile point. The commissioners carefully considered all the comparatively authentic traces of the Hendershott line, together with the topographical conditions given in the notes of the survey. Between the 53d and 54th mile points were found evidences of the Hendershott line, which were satisfactory, and the line established by us was run from the 54th mile point, which, as before stated, was identified, directly to the 52d mile point and passing through the points found between the 53d and 54th mile points. The Hendershott notes show a line direct from the 52d to the 54th mile point.

The line, as finally established and marked by us, between the 52d and 53d mile points is north of the boundary line as claimed for Iowa and south of that line as claimed by Missouri, and, as it happens, very nearly equally divides the narrow territory in dispute, although there was no intention to compromise the difference. We are satisfied that the line, as established by us between the 53d and 54th mile points, is very nearly, if not identical with, the original Hendershott line and in accordance with the marks of that survey. The same line was produced to the 52d mile point, notwithstanding it passes considerably south of the plainly indicated Sullivan line. The 52d mile point, as established and marked by us, was placed as nearly as possible in accordance with the notes of the Hendershott survey, evidenced by the width of the pond and also its distance from the 'Stokes' fence line.

The field-notes of the Hendershott and Minor survey show as follows:

"At 6.30 chains eastward from the Hendershott 42d mile point Sullivan's 42d mile point was found and course changed at that point from N. 88° 53' E. to N. 89° 06' E.

"6.37 chains eastward of Hendershott's 43d mile point Sullivan's 43d mile point was found and course changed at that point from N. 89° 16' E. to N. 89° 16' E.

"7.00 chains eastward of Hendershott's 44th mile point Sullivan's 44th mile point was found and course changed at that point from N. 89° 47' E. to N. 89° 9' E.

"6.20 chains eastward from Hendershott's 49th mile point Sullivan's 49th mile point was found and course changed at that point from N. 89° 9' E. to N. 89° 16' E.

"4.07 chains eastward of Hendershott's 54th mile point Sullivan's 54th mile point was found and course changed at that point from N. 89° 16' E. to N. 89° 2' E.

"2.53 chains eastward of Hendershott's 58th mile point Sullivan's 58th mile point was found and course changed at that point from N. 89° 2' E. to N. 89° 27' E."

In each instance it will be seen that the Hendershott courses are changed at the Sullivan mile points. The decree of your honorable Court made January 3, 1851, declared that the line should be direct between each Hendershott mile point, and it is evident that the actual courses between the points referred to above are not in accordance with the recorded courses. It was found by reference to our base line in all cases where the field-notes show a straight line between such points

that when the distance recorded as a straight line was two or more miles the line is actually a curve. The ordinates measured from the base line do not show any regular rate of curvature, and the curves themselves swing to the south and then to the north, the base line crossing the boundary line three times in twenty miles. The greatest distance of base line from boundary line is at the 55th mile point, which is about 247 feet north of base. The 46th mile point is 160 feet south and 60th mile point 153 feet south of base.

It is difficult to account for the discrepancies found between the recorded line as shown in Hendershott's notes and the line actually found. It is quite possible that the irregularities either grew out of the inaccuracy of the solar compass used on the survey or an inaccurate use of the instrument itself.

We were surprised at the facility with which the Sullivan line could at the time of our survey be traced for considerable distances along the twenty miles of line included in our operations. Of twenty-one mile points from the 40th to the 60th, inclusive, Sullivan had witness trees for fifteen. Some of these witness trees can now be found, and also well-defined line trees mentioned by him. On Hendershott's line only eight mile points out of the twenty-one referred to were witnessed by trees. Had the care shown by Sullivan in marking his line been exercised by Hendershott and Minor the line of the latter would have been much more fully and satisfactorily defined. The hurried manner in which the work of the Hendershott survey was performed (151 miles of relocation, in addition to random lines, having been accomplished in 30 days) may in some measure account for the great lack of witness trees and other evidences necessary for actual location of the boundary line of 1850. We are inclined to the opinion that, so far as regards the twenty miles mentioned, the Sullivan line can be as readily relocated as can the Hendershott line.

The decree of your honorable Court required that the line relocated by us shall be marked with durable monuments. Twenty-one mile points included in the line relocated, being from the 40th to the 60th mile, inclusive, are now marked as required. The 40th, 50th and 60th miles are marked with the cast-iron monuments originally placed by Hendershott and Minor, in 1850. Mile points intermediate are marked with stone monuments. These are of the best quality of Missouri red granite, are twelve inches square, and from 6'2" to 6'6" in length. The stones stand 2' above ground (this portion being hammer-dressed) and are well finished in every particular. On the north side of each stone is plainly cut the word *Iowa*, on the south side the word *Missouri*, on the east side the words *State Line*, and on the west the figures denoting the number of the mile point.

The iron monuments were reset so as to show about 18 inches above ground. The granite monuments were set with great care, their apices being exactly on the line. They were well rammed when placed in ground and will need no witness trees. Their weight averages 1,050 pounds each, and we think they can safely be pronounced both durable and permanent. The amount paid for them includes all freight charges and expenses of delivery and setting.

Attached hereto (Appendix B) is a statement of the expenses consequent upon the relocation and marking that portion of the boundary line between the 40th and 60th mile points, which statement is respectfully submitted for the action of your honorable body.

Attached hereto (Appendix C) is a photograph of the section of the oak tree examined and reported on by Prof. McBride.

JAMES HARDING
Comm'r for Missouri
 PETER A. DEY
Comm'r for Iowa
 DWIGHT C. MORGAN
Of Illinois

Chicago, Illinois, September 18, 1896.

APPENDIX A

U. S. COAST GEODETIC SURVEY
Salina, Kansas. June 20, 1896

GEN. JAMES HARDING, HON. PETER A. DEY, DWIGHT C. MORGAN, ESQ.,
*Commissioners in the matter of the boundary line between
 the States of Missouri and Iowa.*

DEAR SIR: I have the honor to submit the following report upon the operations conducted under my direction for the purpose of enabling you to locate and mark by *durable monuments*, as required by the decree of the Supreme Court of the United States dated February 3rd, 1896, that portion of the boundary line between the States of Missouri and Iowa which lies between the fortieth and sixtieth mile posts east of the old northwest corner of Missouri, as marked in 1850 by H. B. Hendershott and W. G. Minor, commissioners.

It appears unnecessary for me to make any mention in this report of the antecedent circumstances leading up to this survey, as you are well acquainted with them, and will, no doubt, take occasion to allude to them in your own report to the Supreme Court.

I therefore pass at once to my own work.

Your board having applied to General W. W. Duffield, superintendent of the U. S. Coast and Geodetic Survey, for the detail of an officer to make the necessary surveys, I was selected for that duty, and Mr. A. L. Baldwin, also of the C. and G. Survey, was assigned to the party as assistant observer.

In compliance with the request of your board, received through Mr. Morgan, we met you on April 8th, 1896, at Davis City, Iowa. A preliminary inspection of the western portion of the field of work was made on that day and the organization of the party was completed by engaging laborers and teams.

On the following day the whole party was transferred to the village of Pleasanton, Iowa, that place being centrally located for the western half of the work; as it is directly on the boundary and just east of the forty-fifth mile post.

A partial examination of the line, as identified by more or less reliable traditions current in its neighborhood, made it evident that its course in many places deviated widely from the description given in the field-notes attached to the report of the former commission. (*Howard's Reports*, Supreme Court U. S., vol. X.)

Not only do the bearings differ from those recorded in that report, but portions of the line which are there called straight were found to be curved or composed of broken lines.

Under these conditions it seemed inexpedient to attempt to reproduce upon the ground the courses and distances of the former survey.

Such an attempt would undoubtedly have led to serious confusion, and would have furnished little information of real value, while the labor of making the necessary corrections would have been excessive.

In place of that undesirable plan I adopted, with your approval, the method of measuring a base line straight across the country for the twenty miles to be surveyed.

All of the old points which were recovered and all new points which it became necessary to locate upon the ground were directly referred to the base line, which, from a mathematical point of view, is the axis of abscissae in a system of rectangular co-ordinates.

It seems scarcely necessary to mention the advantages which this method affords in point of simplicity and accuracy of work, but it may do no harm to allude very briefly to a few of them.

Thus the relative positions and bearings of different portions of the boundary can be readily found with far greater precision than would otherwise be easily practicable.

Moreover, in this system of work each point of the boundary is fixed independently of every other point, all being directly referred to the base line. This characteristic permits any desired local correction to be made at any point without necessarily affecting points on either side, a feature which I consider very essential in work of this character. The base line was so selected as to lie along the general direction of the boundary, which in fact crosses it three times, eleven of the twenty-one monuments being north of the base and the other ten south of it.

This statement well illustrates both the irregularity of the boundary and the fact that the base line is very close to the general direction of the line.

Another important consideration in the selection of the base line was to make it pass through the towns of Pleasanton and Lineville without meeting obstructions and without damaging private property.

This was successfully accomplished, and in the whole course of the line remarkably little tree-cutting was needful. The base line was ranged out with an eight-inch theodolite, the standards of which were high enough to permit the telescope to transit. The telescope was of excellent quality and was provided with an eye-piece micrometer, by means of which slight deviations from the straight line could be measured and corrected.

As the work of locating the base line advanced eastward the party was moved to Lineville, Iowa, which town is situated just north of the boundary line and between the fifty-sixth and fifty-seventh mile posts, and thence-forward operations were conducted from either Lineville or Pleasanton, as was found more convenient from time to time.

As soon as the line was opened, and even before the final adjustment of its eastern terminus, the linear measurement was begun by Mr. Baldwin, with the assistance of the commissioners, working westward from the east end of the base, near the sixty-mile monument.

When about five and one-half miles had been so measured I was ready to take personal charge of the measurement, and began at the west end of the base, near the forty-mile monument, working thence eastward to a junction with the line above mentioned.

The system of measurement employed was that ordinarily used in the Coast and Geodetic Survey for direct measures not requiring the base apparatus.

A narrow steel tape, twenty-five meters in length between end marks, was stretched under a tension of ten kilogrammes, as indicated by a spring balance attached to one end of the tape. The successive tape-lengths were marked on stakes driven into the ground.

As the tape necessarily follows very closely the inclination of the ground, the horizontal distance will be less than the measured distance, and the correction for slope must be computed for each tape-length, the difference of height between the ends being determined by spirit-level. The very irregular profile of this line made these differences of height unusually great, and correspondingly increased the amount of correction.

A small correction for catenary is also necessary when the tape swings clear of the ground, the "sag" of the tape slightly decreasing the distance between its ends. Further, as all metallic measures vary in length with changes of temperature, it is necessary to apply a correction for such variations, the length of the tape being known at the temperature of zero, Centigrade.

Temperatures were accordingly noted at frequent intervals, usually at every fourth tape.

The direct measurement was completed on May 8th, although the eastern part of the line had still to be levelled.

The computations were at once taken in hand and the resulting distances were furnished you as rapidly as possible.

These results, for present purposes and as compared with ordinary measures, may be considered practically exact, and they show that the chain used by the surveyors of 1850 was too long, probably from the combined effects of abrasion and of high temperature.

The distances between such of the old points as were recovered are nearly always too great. The ratio of excess is not constant, as, indeed, would hardly be expected, but shows a tendency to increase in going from west to east.

A marked exception to this rule of excess in distance is found in the fifty-second mile. The eastern end of this mile was not recovered, but was found with reasonable certainty from various considerations, while the reputed point at the western end was recovered. The mile so determined is noticeably less than a statute mile. The western part of this mile traverses a very steep, rough, and wooded country, while its eastern part crossed the Weldon River three times in 1850.

These natural difficulties in the way of accurate measurement probably caused the shortage in this particular mile.

In my own work I found it desirable to avoid the direct measurement of this mile, which is even more unfavorable now than in 1850, the Weldon having changed its course sufficiently to cross the base line five times at present.

For this purpose a branch base about seven-eighths of a mile in length was measured on the flat ground east of the Weldon, and the distance across the broken section was then obtained with great precision by triangulation. The distances across the Grand River and Little River were also obtained by triangulation.

Whenever in the course of the measurement we passed a point which it was desirable to refer to the base line, the point at which its rectangular ordinate met the base line was noted and the length of the ordinate itself was measured. The

relative positions of these various points thus became known, including not only such of the mile points as could be identified, but also numerous objects commonly reputed to mark the boundary, as fences, trees, stones, etc.

As far as possible in connection with the measurement, notes were made to provide material for a topographic sketch of the strip of country traversed by the boundary.

As stated above, the measurement was completed on May 8th. As rapidly as the reductions were computed the places for the milestones were marked on the ground from the fortieth to the forty-ninth.

The weather, which up to that time had been generally favorable, now became very wet. The frequent and heavy rains seriously interfered with the work, and rendered progress across the country very slow, the roads being nearly impassable and the fords quite so. On May 18th the exigencies of the regular work of the Coast and Geodetic Survey compelled the detachment of Mr. A. L. Baldwin, who had rendered energetic and efficient assistance in the work.

On the same day I moved from Pleasanton to Lineville to resume work on the eastern part of the line. In the intervals between rains I completed the levels, and, after computing the distances, marked the places for the mile posts, a work in regard to which further details will be given below. The topographic notes were also completed.

In order to furnish as much information as possible in regard to this portion of the boundary line, observations for the approximate determination of the latitude and longitude and of the astronomical azimuth or bearing of the base line were made at Pleasanton and at Lineville.

Bad weather interfered with the observations at Pleasanton, and at Lineville the lack of time and unfavorable local conditions somewhat affected the precision of the results, which answer, however, the purpose desired. Latitude and azimuth were obtained by observations on Polaris (a Ursae Minoris) with the theodolite. Time was obtained by sextant observations of the sun, using a mercurial horizon and the method of equal altitudes. For longitude the local time was compared with the railroad telegraphic time signals. It remains for me only to state briefly the old points which were recovered and the conditions which, under your decisions, governed the location of these points which were not identified by local marks.

The fortieth, the fiftieth, and the sixtieth mile points were found marked by the iron monuments placed there by Commissioners Hendershott and Minor in 1850. There was some dispute as to whether No. 60 was in its original position or not, but the weight of evidence and the continuity of the traditional line on either side of it indicated pretty conclusively that it had never been disturbed.

The remaining points were originally marked by stakes, sometimes witnessed.

No. 42, while not directly identified by marks, was satisfactorily recovered by means of a "line tree" four chains W. and by topographical notes at crossing of Grand River, as shown in original record.

No. 44 was restored by measurement from the two witness trees, the decaying stumps of both of which were found.

No. 49 was also identified by the stumps of both witness trees.

No. 51 was marked by a "mound and pit." which have been accepted for years as the true marks.

No. 54 was marked by a stone, and was further identified by one witness tree.

No. 58 was recovered by traces of the stakes in addition to the remains of the witness tree, and the point established by J. C. Sullivan in 1816 was also found a little further east, and also the stump of an elm tree, noted as a "line tree" in both Sullivan and Hendershott notes, being 4.10 chains W. of Hendershott's 58th mile point. The remaining points were located in the following manner:

No. 41 was placed midway on line between 40 and 42.

No. 43 was so placed as to preserve the relations with 42 and 44 required by the field-notes of 1850, and after being so located was found to agree with the stump of the witness tree on the Iowa side of the line.

No. 45 was placed in the middle of the street bounding Pleasanton on the south, which middle line is shown as the boundary on the official plat of the town on file at the county-seat, and at the proper distance along the line averaging to the 49th mile.

No. 46 was similarly located on the line passing from 45 through a stone pointed out by tradition as marking the line.

No. 47 was placed at the proper distance on a line drawn straight from 49 westward through a witnessed section corner between 47 and 48.

No. 48 was placed on the same line midway between 47 and 49.

No. 52 was located at a point west of the pond or lake in the Weldon bottom agreeing with the topographic description given by the former commissioners and on a line agreeing as closely as possible with all of the apparently authentic traces of the line surveyed in 1850.

No. 53 was placed a mile west of 54 on the straight line between 52 and 54.

No. 55 was placed a mile east of 54 on the extension of the line drawn from 54 through a witnessed stone at the corner common to Wayne and Decatur Counties, Iowa.

Nos. 56 and 57 were placed at mile distances on the straight line drawn from 55 through an iron pin at the southwest corner of the streets surrounding the public square at Lineville, which pin was universally accepted as a point marking the boundary. Unsuccessful search was also made for the remains of a wooden post which formerly stood a little further east.

No. 59 was placed midway between 58 and 60, in the manner required by the field-notes of 1850.

While this work was in progress many of the inhabitants along the line asked that additional points, intermediate between the mile points, might be furnished them, and with your approval this was done.

In accordance with the decree of the Supreme Court dated January 3rd, 1851, such points were always placed on the straight line between the adjacent mile posts. The final observations were made on the afternoon of June 13th, and the instruments were then packed, and on the 15th were shipped to Washington.

I left Lineville on June 15th, also, to resume my regular duties in the Coast and Geodetic Survey.

In closing this report permit me to express my appreciation of the uniform courtesy and consideration shown my assistant and myself by all the members of the commission, and my hope that our earnest labors in this interesting work have proved satisfactory in methods and results, and that they may be instrumental in permanently settling this controversy.

The appended pages give in summarized form the results of the observations and measurements, as well as the mathematical formulæ employed.
Respectfully submitted.

W. C. HODGKINS,
Assistant, Coast and Geodetic Survey, Chief of Party.

* * * * *

APPENDIX B

Account of Expenses Incident to the Relocation and Remarking the Boundary Line Between the States of Missouri and Iowa from the 40th to the 60th Mile Point, under Decree of the Supreme Court of the United States, February 5, 1896.

Pay of engineers:	
W. C. Hodgkins, (U. S. Geodetic Survey Corps,) 74 days	
@ \$5.00	\$ 370 00
A. L. Baldwin, (U. S. Geodetic Survey Corps,) 41 days	
@ \$5.00	205 00
Transportation from Washington, D.C.	77 75
Transportation to Salina, Kansas	41 14
Freight on instruments returned to Washington	8 32
	\$ 702 21
Pay of one assistant (14 days @ \$2.50) and laborers	190 50
Subsistence of parties in field	421 75
Hire of teams and drivers and feed for teams	342 25
Paid for eighteen granite monuments in place	922 00
Miscellaneous expenses paid, (telegrams, township plats, signal materials, clerical work and typewriting, repairs of instruments, storage, &c., &c.)	171 60
Advertising, Missouri and Iowa	133 30
Commissioners:	
James Harding, Comm. for Missouri, 78 days @ \$10.00	\$ 780 00
James Harding, travelling expenses	161 85
	941 85
Peter A. Dey, Comm. for Iowa, 60 days @ \$10.00	\$ 600 00
Peter A. Dey, travelling expenses	189 47
	789 47
Dwight C. Morgan, Comm. 46 days @ \$10.00	\$ 460 00
Dwight C. Morgan, travelling expenses	198 63
	658 63
Total	\$5,273 56

And it is ordered, adjudged and decreed that the boundary line between said States of Missouri and Iowa in controversy herein be, and it is hereby, established and declared to be, as delineated and set forth in said report.

It is further ordered, adjudged and decreed that the compensation and ex-

penses of the commissioners and the expenditures attendant upon the discharge of their duties be, and they are hereby, allowed at the sum of five thousand two hundred and seventy-three dollars and fifty-six cents (\$5,273.56), in accordance with their report as confirmed as aforesaid, and that said charges and expenses with the costs of this suit to be taxed be equally divided between the parties thereto.

And it is further ordered, adjudged and decreed that the clerk of this court forthwith transmit to the Chief Magistrates of the States of Missouri and Iowa copies of this decree, duly authenticated under the seal of this court.

SUPREME COURT OF THE UNITED STATES

I, James H. McKenney, Clerk of the Supreme Court of the United States, do hereby certify that the foregoing printed pages, numbered from one to fourteen, inclusive, contain a true copy of the Decree of the Supreme Court of the United States of January 18th, 1897, in the case of

The State of Missouri, Complainant,

vs.

The State of Iowa

No. 6, Orig'l, October Term, 1896, as the same remains upon the files and records of said Supreme Court.

In testimony whereof I hereunto subscribed my name and affix the seal of said Supreme Court, at the City of Washington, this 21st day of January, A. D. 1897.

James H. McKenney
Clerk of the Supreme Court of the
United States.

Chapter VIII
THE IOWA-MINNESOTA BOUNDARY
STATUTES

Iowa's north boundary was suggested by act of the citizens of Iowa in the constitutional convention of October 1844 as up the middle of the main channel of the Missouri River "to the mouth of the Sioux or Calumet River; thence in a direct line to the middle of the main channel of the St. Peters River, where the Watonwan River (according to Nicolet's map) enters the same; thence down the middle of the main channel of the Mississippi River."¹

This proposal was debated in Congress and Mr. Nicolet (whose map is referred to above) was called in to discuss the geographical and physical features of that territory. Then followed the congressional act of March 3, 1845, which was an Act for the Admission of the States of Iowa and Florida into the Union. This act changed the north boundary to "a parallel of latitude passing through the mouth of the Mankato, or Blue-Earth River, thence west along said parallel of latitude to a point where it is intersected by a meridian line seventeen degrees and thirty minutes west of the meridian of Washington, etc."²

Constitutional representatives for the State of Iowa met again on May 18, 1846 and redefined the state boundaries as follows:³

"Beginning in the middle of the main channel of the Mississippi River, at a point due east of the middle of the mouth of the main channel of the Des Moines River, thence up the middle of the main channel of the said Des Moines River, to a point on said river where the northern boundary line of the State of Missouri—as established by the constitution of that state—adopted June 12, 1820—crosses the said middle of the main channel of the said Des Moines River; thence westwardly along the said northern boundary line of the State of Missouri, as established at the time aforesaid, until an extension of said line intersects the middle of the main channel of the Missouri River; thence up the middle of the main channel of the said Missouri River to a point opposite the middle of the main channel of the Big Sioux River, according to Nicolet's map; thence up the main channel of the said Big Sioux River, according to the said map, until it is intersected by the parallel of forty-three degrees and thirty minutes north latitude; thence east along said parallel of forty-three degrees and thirty minutes until said parallel intersects the

¹ Journal Constitutional Convention, 1844-1857, p. 187.

² U. S. Statutes at Large, Vol. 5, p. 742.

³ *Laws of Iowa*, General Assembly, 1846-1853, p. 11.

middle of the main channel of the Mississippi River; thence down middle of the main channel of said Mississippi River to the place of beginning."

Congress on August 4, 1846, and December 28, 1846, passed enabling acts which securely established the northern boundary of Iowa between the Big Sioux and Mississippi Rivers at the latitude of 43° 30' north.

SURVEYS

The Congressional act of March 3, 1849 entitled "An Act to cause the northern boundary of the State of Iowa to be run and marked" provided that the work should be done by the Surveyor-general of Iowa and Wisconsin under the direction of the Commissioner of the General Land Office. George B. Sargent, the Surveyor-general of Public Lands issued his instructions promptly but the prevalence of Asiatic cholera during that summer delayed the starting of work until the season was too far advanced for field work. The survey started, finally, in the spring of 1852.

The Commissioner of the General Land Office, J. Butterfield, issued instructions for this survey to George B. Sargent, Surveyor-general for Wisconsin and Iowa as follows.⁴

The many important considerations which are wrought up with the critical ascertainment of such a boundary—the evils political and social naturally incident to *uncertainty* as to County and electoral limits,—the liability to double taxation of the citizens residing on the debateable fields,—the hostile feelings likely to be engendered and to lie smouldering in the minds of the settlers within and near to such contested grounds, and ever ready to break out into some overt act destructive of the public peace,—all of which evils we know, have occurred and therefore, from similar causes, may be expected to occur again,—together form so many admonishing reasons to the Department why a line which is to satisfy hereafter two great states should now be determined, under the law by the most efficient astronomical data, affording results, the evidences of which both in the field and on the record, stand the test of all scrutiny, and place the subject beyond cavil and doubt for all time. Therefore it is the direction of the Department that the parallel of latitude aforesaid be ascertained and established on the ground by a series of celestial observations to be taken under your direction, at intervals of not more than thirty miles apart. (At each point of observation some suitable and distinctive memorial will be set up (to be cited in the notes) and therefrom will the *guide line* be established in its course from station to station, where such observations will be taken) and the Deputy Surveyor to be appointed for that service, shall be directed where to and you will run the *true line* of the parallel, as your observations shall determine; all offsetted distances are to be most accurately measured, and the measurements shall be set forth in the notes of survey; and as the terminating points of

⁴ *Iowa and Minnesota Boundary*, Instructions, Reports, Field Notes of Chief Surveyor, Vol. 1, p. 1.

such offsets will indicate the position of the true line, some distinctive monument is to be established at each.

The position of the line at its connection with the Mississippi River has been ascertained by astronomical observations and will be maintained as established by Capt. Lee. You will *extend* to the *true line* the range line from below which will intersect the same at the point nearest to the river, and upon such range line, so continued, you will plant the usual mile and half mile corner boundaries, and at such point of intersection, (which would seem to be the northeast corner of Township 100 of Range IV west of the fifth principal meridian, likely to be made a fractional township by the true line) a corner boundary for the township is to be set, which will be the starting point for the measurements on the state line to the east and west thereof. And having planted the necessary corners between such intersection point, and the monument on the Mississippi River, you will thence proceed westward on the true line, from station to station, as ascertained and determined by the astronomical observations, measuring the necessary offsets and measuring and *marking the true line*, and establishing thereon the township corner boundaries at intervals of six miles, those for the sections at intervals of one mile, and those for the quarter sections at intervals of a half mile.) By these operations the parallel aforesaid will become a *correction line*, and eminently so, and whereon it is designed that the surveys proceeding from the 3rd correction line, already begun below shall close by *course* lines on the corners to be pre-established on the parallel. Double corners on the parallel will thus be avoided, and in as much as the 3rd correction line is less than the length of two townships from the parallel, the meridional convergence is small, and there is no conceivable reason why *double* corners should be made thereon. That line will prove the best possible basis for all the surveying operations hereafter to be undertaken on the north of it, and the effect of so closing on it the surveys from below, will be to make fractional all the series of townships numbered 100 next below, and to start from it hereafter a series of full townships to be numbered 101, in continuation.

Looking into the future, and that not very remote, when the parallel of $43^{\circ} 30'$ will have to be continued and elongated as the great practical surveying base for the vast public domain north of it and far to the west of its present terminus at the Big Sioux, the Department esteems it a matter of no little public moment, that the most critical methods of determining terrestrial positions from celestial data should be adopted in prosecuting this work, and that the means of arriving at the practical results should be spread forth in a separate paper,—the results themselves being shewn on the Plat and Report as to the *guide line*, and which will also shew the offsets therefrom. They should be in duplicate and should further shew the *true line*, the township mile and half mile corners thereon, the crossings of streams, the character of the soil, timber and general topography of the country on the line, and in its immediate neighborhood.

The best modes of marking the line in the plainest and most distinct manner, will have to be determined in some measure by the character of the country over which it passes. Where the country is densely timbered, the trees immediately on line are to be uniformly marked by a *distinctive chop facing the line*; and when the tree is cut by the line a chop to be on the east and west sides of it; and the trees within *five feet* of the line on each side are to be *blazed* on the sides facing the line.

Where wood is used for the corner boundaries the most durable kind of timber must be taken for the purpose; and the posts for the township corners must square three (six) inches, and those for the section and half section corners must

square two (four) and a half inches, protruding from the surface two feet, and extending beneath the surface two and a half feet at least.

Where timber is not to be had *mounds of earth* or *stone*, must be constructed around posts denoting what they stand for in the usual method. "Mounds of earth are to be conical, 3 feet high for township corners, and 2½ feet high for all other corners. The mound to be surrounded by a *quadrangular trench* of 6 feet side for township mounds and 5 feet side for all others. The (trench to face the cardinal points, and a) pit wherefrom the earth is taken to construct the mound is to be dug on *each* side of the trench according to the diagram furnished."

At the termination of the line on the Big Sioux, it is desirable to have its position indicated, if practicable by an *iron post* similar to that on the Mississippi, but if such a monument cannot now be carried there, then by a *Stone Column*, three feet high above ground, or one of hard and durable wood of the same elevation *sixteen inches square* with a pyramidal head, the monument to be sunk four feet beneath the surface.

The posts at the corner of every *fourth* township or twenty-fourth mile of the line from that township corner whence the township lines will be started, will have to be *distinctive* in their formation, and be set *diagonally* in the ground, with two sides facing the state they indicate, the word, "IOWA" to be deeply cut or branded on two sides and the word "MINNESOTA," on the other two, and "43° 30' north" below each word, and the same kind of marks will be made on the monument to be planted on the Big Sioux.

The other township posts, (those intermediate between the posts at every twenty-fourth mile) and also the sectional posts along the line are to be marked, in addition to the ordinary descriptions, with the initials I. B. cut or branded below the township or sectional designation on the *Iowa* side, and on the other the initials M. B.

At the intersection of the boundary with the Big Sioux in order still more prominently to designate the boundary point, four other posts distant therefrom ten feet each way conforming with the cardinal points, are to be set diagonally in the earth, making the boundary point the centre; each of such posts to be *eight* inches square, *three* feet above ground, and three feet in the ground, surrounded by a mound five feet in diameter, and *two and a half feet* high, and outside of all is to be a quadrangular trench a foot deep, with the earth piled upon the *inside* so as to form a regular elevated margin, which margin and the four mounds are all to be covered with sod.

Thus will the parallel of latitude designated in the act referred to become distinguished by the township, mile, and half mile corners, and be as effectually defined as could be desired, by its identification with the lines of public surveys.

A copy of the Instructions furnished to Captain Lee of the Topographical Bureau for his direction in establishing the initial point, together with the Report made by that officer, will be furnished to you together with any further instructions which shall be deemed necessary.

BEGINNING OF THE SURVEY

The initial point referred to above was established by Captain Thomas J. Lee of the Topographical Bureau of the U. S. Army late in 1849. This determination, as well as that of the entire boundary line, re-

quired special instruments not possessed by the deputy surveyors. He established the initial point at the intersection of the parallel 43° and $30'$ with the Mississippi River. Over the point he erected an iron post marked *Iowa* on one face, *Minnesota* on a second face, and *1849* on a third face. The post stands near the north edge of the town of New Albia, Iowa.

The survey of the boundary line was started at Lee's initial point in the spring of 1852 under the direction of Captain Andrew Talcott, who had a crew of forty men. The instructions from the Surveyor general to Captain Talcott follow:⁵

SURVEYOR GENERAL'S OFFICE

Dubuque, March, 1852

Herewith you will receive for your guidance in the survey of the boundary between the State of Iowa and Territory of Minnesota the following named documents, viz:

Sketch, of the vicinity of the intersection of the parallel of 43° $30'$ north latitude with the Mississippi River.

Copy, of the report of Capt. Thos. J. Lee of the U. S. Topog. Engineers of the computation of the observations made under direction of Col. Abert to ascertain the intersection of the parallel of 43° $30'$ north, with the Mississippi River.

Copy, of the "Report of Capt. Lee," addressed to Col. Abert in reference to tracing the said parallel, and to which your attention is particularly directed.

Copy, of instructions to Capt. Sitgreaves for running the boundary between the Creeks and Cherokees, and three copies of the printed instructions prepared for the use of Deputy Surveyors in this district.

The act of 4th of August 1846 "to define the boundaries of the State of Iowa &c" establishes the northern boundary of that state on the parallel of 43° $30'$ north latitude extending on said parallel from the middle of the main channel of the Mississippi River.

To establish this line beyond all cavil and doubt, it has been determined that the parallel aforesaid shall be ascertained and established by a series of Celestial observations to be taken at intervals of not more than Forty-eight (48) miles apart.

At each point of observation some suitable and distinctive memorial must be set up which will be described in the notes and therefrom, will the guide line be established in its course from station to station, where such observations will be taken. And you will run the *true line* of the parallel as your observations shall determine; all offsetted distances are to be accurately measured and the measurements set forth in the notes of survey; and as the terminating points of such offsets, will indicate the position of the true line, distinctive monuments are to be established as each, as hereinafter directed.

The position of the line at its connection with the Mississippi River has been ascertained in a proper manner and will be maintained as established by Capt. Lee.

You are to *extend* to the true line the range line from below, which will intersect the same at the point nearest the river (and which will in all probability be the line dividing ranges 3 and 4) upon this range line so continued you are to establish a quarter section corner at the end of the first 40 chs. and a section corner at the

⁵ *Iowa-Minnesota Boundary*, etc. Vol. 6, p. 6.

end of the first 80 chs. and observing the same order and intervals of establishing quarter section, and section corners to its intersection (which will be the northeast corner of Township 100, Range 4 west of the fifth principal meridian) you will set a township corner in the manner hereinafter directed, which corner will be the starting point for the measurement on the state line to the east and west thereof. Having established the necessary corners between the intersection of the range with the state line and the monument on the Mississippi River you will thence proceed westward on the true line from station to station, as ascertained and determined by your astronomical observations—measuring the necessary offsets, and measuring and marking the true line, and establishing thereon the township corner boundaries at intervals of six miles, the section corners at intervals of one mile, and quarter section corners at intervals of half a mile.

As the Department justly considers it a matter of great importance, that the most critical method of determining terrestrial position, from celestial data, should be observed in this work, you are hereby required to exhibit the means by which you arrive at the results in a separate paper—and the results themselves must be shown on the plat and report as to the *Guide line* and on which must also be set forth the offsets therefrom.

These you are required to return in duplicate and must further show the true line, the township section, and quarter section corners thereon, (the crossings of streams, timber and topography of the country generally on the line and its immediate vicinity.

At the termination of the line on the Big Sioux River it is desirable to have its position indicated if practicable by an iron post which will be furnished as your survey progresses. Should it however, be found impracticable to carry it there a *Stone Column*, three feet high above ground or one of hard and durable *Wood* of the same elevation, sixteen inches square sunk 4 feet in the ground and having a pyramidal head, may be substituted.

The posts at the corner to every fourth township or twenty-fourth mile of the line from the township corner already designated as the starting point must be distinctive in their formation and be set diagonally in the ground with the two sides facing the state they indicate deeply branded thereon and the same kind of marks will be made on the monument to be planted on the Big Sioux.

The other township posts (intermediate the posts at every twenty-fourth mile) and also the sectional posts along the line are to be marked in addition to the ordinary descriptions with the initials I. B. cut or branded below the township or sectional designation on the Iowa side, and on the other the initials M. B.

At the intersection of the boundary with the Big Sioux River, in order still more permanently to designate the boundary point, four other posts distant therefrom ten feet each way conforming with the cardinal points are to be set diagonally in the earth making the boundary point the centre; each of these posts to be eight inches square, three feet above and three feet below the ground surrounded by a mound five feet in diameter and three feet high and outside of all is to be made a quadrangular trench a foot deep with the earth piled up on the inside so as to form a regular elevated margin which margin and the four mounds are all to be covered with sod.

For the method of marking the line, establishing and marking the proper corners thereon which have not been described you are referred to pages 4, 5, 6 and 7 of my printed instructions to Deputy Surveyors.

Your attention is again especially directed to the enclosed copy of "Report of Capt. Lee" in reference to the survey of this boundary. The directions therein given for taking the observations and for tracing the parallel are very plain and it is expected that you will make them your guide as far as applicable in the performance of this work.

SURVEY OF THE GUIDE OR REFERENCE LINE

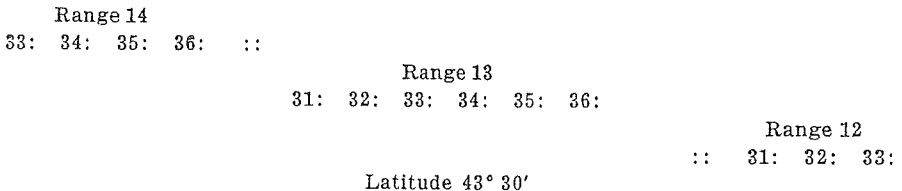
Captain Talcott divided his corps into three surveying parties. The principal party traced the guide line which was to serve as a base for measuring offsets to the parallel and for connecting the astronomical stations. This party was under the direction of Harry Taylor, Deputy Surveyor. Captain Talcott's instructions to Taylor were:⁶

May 28th, 1852, CAMP WASHINGTON

You are charged with tracing a line from this point westward with a transit instrument to serve as a guide line in determining the parallel of latitude of $43^{\circ} 30'$, the northern boundary of Iowa. The line will be commenced on the meridian of the transit instrument 12.87/100 feet north of it and will form an angle of $89^{\circ} 39' 50''$ with it measuring from the north meridian mark.

This line must be chained with great exactness and monuments of a temporary character, placed at every half mile, reckoning from the corner of sections 35 and 36 range 13 west of the fifth principal meridian, which is the nearest monument east of the camp.

The temporary mile monuments will be marked to indicate the numbers of the sections that will be hereafter surveyed north of the boundary line according to the following diagram.



You will on the principal ridges survey a connection with the line, traced by Deputy Surveyor Marsh who preceded you using Burt's solar compass and who has been directed to leave perspicuous signals at such places.

The object of making these connections is to test the accuracy of a line surveyed by a solar compass.

You will make notes of these connections as well as of the guide line and to lessen the inconvenience that would be experienced if your temporary marks should be removed before the offsets for the parallel are made, you will note the distances to crossings of streams and to any other well defined topographical features by which the place of the missing monument can be ascertained.

The transit by Draper is placed at your disposal for making this survey and such other auxiliary instruments, signals, chains, &c as you may require that the camp contains.

⁶ *Iowa-Minnesota Boundary, etc., Vol. 1, p. 20.*

The quartermaster will be directed to furnish such camp equipage, transportation, provision and stores as you may require and for which you will make a requisition as soon as practicable so that they may be separated from the general stock.

I leave to your discretion and judgment the details of tracing the line, well knowing that your experience in similar work will be a sufficient guide to you, and that you are well aware of the importance of the greatest accuracy that can be attained.

You will soon be in a country, frequently traversed by Indians, from whom you need expect no molestation except by stealing your horses and provisions. Care should be taken to guard against that by keeping everything as close as possible to or within your camp.

The following named persons will be directed to report to you and will form your party for this survey.

R. J. Cleveland, topographer; Bartholomew, Sheridan, Lewis, chainmen; W. C. Alexander, for a flagman; E. W. Crittenden, back flagman; William Stratton, Jacob Myers, axemen; John T. McDuffie, instrument bearer; Samuel Jackson, teamster; Donahoe Williams, Cook.

As often as opportunity offers whilst the camp is in your rear you will send a report of progress.

June 3rd, 1852

In addition to the regular $\frac{1}{2}$ -mile corners you will also place and designate by letters or a different character number station where the line crosses the principal ridges, streams and ponds and record the distances in your notes.

You have herewith a copy of my instructions to Deputy Surveyor Shellar whose party will for the present operate in conjunction with yours.

CAMP JEFFERSON, June 24th/52

The fifth guide line will commence at the point occupied by your signal which is 5170 links south and 309 links west of Station Jefferson. From that point you will lay off an angle from the fourth guide line of $179^{\circ} 45' 35''$ on the north: this angle will make the fifth guide line perpendicular to the Meridian at the point of beginning. This line you will run west about 48 miles to a good point for another astronomical station. Should you reach 48 miles before the astronomical party and be ready to proceed on the sixth guide line you will then lay off on the north an angle of 179° and proceed with the sixth guide line on that course for a second 48 miles, and for the seventh you will lay off an angle of $179^{\circ} 20'$ and continue on that until you reach the western terminus of the boundary.

LAKE OKEMAUPADUR, June 30th 1852

After having prepared your instructions for laying off the angle of the fifth guide lines with the meridian I found the point of intersection of the two lines was further south than I had expected. The effect of this will be to render the offsets inconveniently long if you continue on your present course to the next station. It is advisable therefore at the first good opportunity to make a deflection in your line to the north of 30 minutes of arc taking care to measure the angle with the utmost accuracy by repeating the measurement on different parts of the limb.

IOWA AND MINNESOTA BOUNDARY STATION MADISON

The sixth guide line will be laid off from a point south of this station 1553

links and will form an angle with the meridian established by the transit of $89^{\circ} 38' 40''$. This angle will bring you to the parallel about 26 miles west of this station and on a prime vertical at the same distance you will continue on the same line until you reach some convenient point for another astronomical station about half way to the Big Sioux River, say 40 miles west; at that place your line if accurately traced from Station Jefferson should be between 100 and 200 feet south of the boundary. A deflection then of about 30 minutes will give a very convenient line for the remainder of the distance.

You will leave well defined marks at that point so that the azimuth of the two guide lines at the intersection can be measured, after I reach the point.

It is supposed by Deputy Surveyor March who has just returned from surveying a line with the solar compass, that the parallel continued will cross the Big Sioux River three times; you will employ your party in extending the line west of the first intersection to ascertain the fact—and in meandering the river between the points of intersection until my arrival and final determination of the true boundary from observation—after which further instructions will be given you.

STATION MONROE, *July 31st, 1852*

As early as practicable you will furnish section drawings of the guide lines with each transit station marked thereon and the distances between them. The stations will be numbered from east to west on each section and designated by the Roman numerals.

These section drawings are required for delineating the offsets caused by deflection as well as those to mark the parallel; they should therefore be on a scale of one inch to a mile and so placed on the paper as to allow of the largest practicable scale for the offsets which should not be less than one inch to forty feet.

The astronomical stations and the points of intersection of the guide lines with the meridian should be exhibited at each end on a suitable scale and all the measured lines noted thereon, with the Lat. as determined by observation.

Such data as the astronomical observations afford are communicated herewith.

SMITH ASSISTS TAYLOR ON GUIDE LINES

The running of the guide lines and the general directing of the survey and astronomical operations from the iron monument on the Mississippi River up to Station Washington was under the immediate direction of first assistant I. W. Smith, deputy surveyor. Mr. Smith had done some preliminary work in making astronomical observations before the arrival of Capt. Talcott upon the ground. Instructions and orders issued to assist Deputy Surveyor Smith follow:⁷

STATION JACKSON, *July 23rd./52*

You will furnish me with the position of your stations No. 1 & 2 referring to the iron monument erected by Capt. Lee: stating the latitude and departure from that as a zero point; also the latitude of your guide lines where they intersect the meridian of your stations.

⁷ *Iowa-Minnesota Boundary, etc.*, Vol. 1, p. 34 and 37.

IOWA AND MINNESOTA BOUNDARY
STATION MADISON, Aug 9th 1852

ORDER

From this date, 1st assistant Surveyor Isaac W. Smith will superintend the marking of the north boundary of Iowa and all unfinished field work in connection therewith.

Under the direction of Asst. Smith, Deputy H. Taylor is charged with collecting such topographical information and in making notes and sketches thereof as will afford data for making a complete map of the country adjacent the line. W. Alexander will aid Mr. Taylor in the foregoing duty.

For the transportation of Messrs. Taylor and Alexander, the bay mare purchased from Quigley this day and the horse obtained in exchange for the chestnut mare are hereby assigned.

Any offsets that Mr. Taylor may require to have measured to noted points and which will serve for remarking the line, Deputy Surveyor Shellar will have made and duly recorded in his field notes with the point of intersection of the same with the parallel or guide line.

Dr. Birkup having tendered his services for this purpose is charged with making observations with the Dip circle along the parallel as often as may be practicable and also with taking notice of the state of the barometer and thermometer. The Dip circle by Gambey and the aneroid barometer are hereby assigned to Dr. Birkup to be used as aforesaid. On reaching the eastern terminus of the line they will be delivered to the quartermaster of the expedition to be transported to Dubuque.

Deputy Surveyor Shellar will superintend the erecting of the monuments on the boundary and at such other points as are required by instructions from the Sur. Genl. and for this service all the persons and teams not otherwise appropriated are placed under his orders.

Too much care cannot be bestowed on the monuments to make them permanent. In every case where stone can be procured; it should form a portion of the mound, 3 or 4 of good size placed round the post and covered with earth will form a most enduring monument. Mounds will be erected on the meridian of the astronomical stations where the parallel of $43^{\circ} 30'$ intersects them. These mounds will be circular and 14 links in diameter; they will be surrounded by a trench 20 links in diameter on the inside and 3 or 4 links wide; these mounds need not be over 5 links in height and should have a post in the centre and surrounded with a pyramid of stone within the earth. The inst. stations that have not already been marked with a stone monument should be so marked. At Station Washington the site of the transit should be the Mont point.

It is required to extend the line east to the Mississippi River and to mark the corners to that point before the party is discharged.

Mr. Smith will give to each individual a written certificate of discharge with the duration of his service.

The record of the barometric and magnetic observations will be handed to the Sur. Gen. on the return of the party at the completion of the work.

The undersigned takes this opportunity of thanking the corps for the zeal with which they have prosecuted the work of the surveying the boundary and marking it. The amt. of work already finished renders the completion of the whole line this season almost certain; this will entitle each member who faithfully serves until it is completed to the extra per diem provided for in the contract of services with the

Government. It is believed that in no similar operation under this government has so much work been accomplished in the same period.

The corps individually have my best wishes for their health and happiness.

The guide or reference line was a transit line run in tangents 48 miles in length. It was chained with great exactness and temporary monuments were placed at half-mile intervals. These were marked to indicate the numbers of the section to be surveyed to the north of the line. Astronomical stations were established at the ends of the 48-mile sections. Observations at these points gave the true latitude. The difference between this calculated latitude and $43^{\circ} 30'$, the latitude of the parallel marking the boundary, was the distance, north or south, that the observation-transit point must be moved to place it on the boundary line. Offsets for all of the temporary township, section, and quarter section points previously set were then calculated, and the points were set permanently in their true positions.

CHECK SURVEY OF THE GUIDE LINE

A second party was organized under the direction of John S. Sheller, deputy surveyor, to rechain the guide lines as a check behind the guide line party, and to prepare and have ready suitable boundary corner markers. The latter was no small assignment in the prairie country. It was necessary at times to drive a day or more with team and wagon to find suitable rocks. Some of these weighed a ton.

Captain Talcott's instructions to Sheller were:⁸

CAMP WASHINGTON, *July 2nd 1852*

The following named persons will form a party for the survey of the boundary line and will operate under your directions: P. Moriarty, W. P. Campbell, chainmen; Robert Cushow, Charles M. Christie, axemen; William Tood, Jacob Myers, teamsters.

Your following named persons will form a party with that on the guide line. The line will be rechaind under your directions and the exact distance from station to station, as placed by the guide line party will be entered in your notes.

When long ranges can be obtained with the transit, some of the intermediate stations may be established by the aid of the compass if the progress of the work will be advanced thereby. Offsets to important points with reference to the topography will be surveyed under your direction.

In addition to the foregoing duties you will have prepared and placed ready for erecting suitable monuments to mark the corners on the boundary line for the land surveys—also boundary monuments which will be placed at all conspicuous and important points such as the summits of ridges and the inner margin of the low grounds bordering streams (where they will be safe from freshets) also on the margin of lakes and ponds.

⁸ *Iowa-Minnesota Boundary*, etc., Vol. 1, p. 24.

Any other services you can render by your party to advance the survey of the guide line and which the chief of that survey may require of you will of course be promptly rendered, should he require temporary aid by a detail from your party to supply any deficiency in his own you will supply him with the services required.

It is desirable, however, that the party be maintained in their integrity and that they mess separately, so that at any moment when your party shall be required for other duty there need be no delay for separating baggage, stores or equipage.

IOWA AND MINNESOTA BOUNDARY

STATION JACKSON, *July 22nd/52*

The parallel of $43^{\circ} 30' N.$ lat. is seven hundred and seventy links south of the monument marking the position of the zenith instrument. You will measure that distance on the meridian of the station south and erect monuments to mark the intersection of the boundary with the river in accordance with the instructions received from the Surveyor General. You will also make a profile of the line when it crosses the river on such a scale that the distance of the middle of the main channel from the monument may be ascertained and the configuration of the surface on both sides exhibited.

I have directed Mr. Taylor to prepare a topographical sketch of the adjacent country: any measurement of distance that he may require for that object, you will have made for him.

STATION JACKSON, *July 23rd/52*

Preparatory to calculating the offsets from the guide line to the parallel, it is indispensable that I receive from you a report of the number of the guide line stations and their distances from the commencement of each line as well as the range and section number corresponding thereto. You will therefore supply this information as early as practicable. If the distance between stations is in all cases forty chains, it will suffice if you give the number of the first and last station on each guide line and the distances from the beginning and end of the line with the township and section numbers corresponding.

EXPLORATORY LINE WITH SOLAR COMPASS

A third party under the direction of James Marsh, deputy surveyor (who made many of the surveys elsewhere in Iowa) was detailed to run an exploratory line along the boundary to the Sioux River with a Burt's solar compass. The purposes of his survey were: first, to gain early information as to the nature of the country and to test the accuracy of a line surveyed with a solar compass in the hands of a surveyor skilled in its use. He was directed to chain the line and to leave markers on the line at the principal ridges and other conspicuous points. Marsh's instructions from Captain Talcott were:⁹

CAMP WASHINGTON

IOWA AND MINNESOTA BOUNDARY SURVEY

You have been detailed to survey with Burt's solar compass an exploring line from this camp to the Big Sioux River, the western terminus of the northern bound-

⁹ *Iowa-Minnesota Boundary, etc., Vol. 1, p. 17.*

dary of Iowa. The survey has two objects in view: The first is to procure positive early information of the nature of the country to enable the Q. M. and Commissary to prepare for transporting the instruments, baggage and supplies necessary for the party, as well as to enable me to be prepared for running the line over any difficult parts that may require special preparation for its accomplishment, such as scaffolding, boats, etc.: the second object is one that the Commissioner of the General Land Office deems of great importance to the national surveys, viz., to test the accuracy of a line surveyed by a solar compass in the hands of a surveyor expert in the use of that instrument. The instrument you have is, I understand, one of the best and contains the latest improvements of the inventor and therefore is a proper instrument to be used in this survey; and I am further advised that you have a perfect knowledge of the most improved method of adjusting and using the instrument.

The opportunity therefore presented at this time is one of rare occurrence and should be improved. The estimated distance is 230 miles: this will enable you to prepare an estimate of the supplies and transportation you will require for the service. The necessary assistance of chainmen, axeman, & c., will be detached from the party employed by the Surveyor General and they will be directed to report to you for the duty so soon as they can be collected. Special instructions for your guidance will be prepared for you.

CAMP WASHINGTON, *May 24th 1852*

Special instructions for Deputy Surveyor Marsh who is charged with surveying an exploratory line to the Big Sioux River, with Burt's improved solar compass and equatorial.

SIR:

You will commence your line at a point to be designated and run on a due west course to be determined by the solar instrument without any reference to the lines that have been determined at this camp by the astronomical instruments; and you will by the aid of the instrument alone run as near as practicable a parallel of latitude. When long sights are taken with your instrument, the proper offsets calculated for that distance should be made, otherwise the line will slightly diverge from a parallel of latitude towards the south. You will be furnished the calculated offsets from the prime vertical for each half mile for 20 miles to enable you to make the connection.

The railroad transit made by Blunt will be placed at your disposal, that you may use that during cloudy weather if you should see fit to do so. Should you use the transit you will be particular to place a stake on your line marked *Transit work commences* and on resuming the solar instrument, mark *Transit work ends*, the same notes should be made in the field book.

The line must be carefully chained its entire length, but no mark should be left on the line by which the second chainmen may compare their distance with yours without your notes, but durable marks and monuments should be made on your line that a rigid comparison of the two chainings may be made. Signals should be left on all the ridges where they can be best seen from the east and the distances noted to each as well as to every crossing of streams, sloughs, swamps, &c., &c.

Should your surveys develop any impracticable points with the present means of the party, tracing the guide line, that fact should be communicated, that if necessary additional means of transportation may be procured. In short you are to consider yours as an exploratory party. Any information you may obtain which in

your opinion may be essential to the progress of the main body of the work, should be communicated even if by so doing the operation of your own body should be retarded.

I shall endeavor to push on the transportation so that some portion of the party may be as near you as practicable, with the view of rendering you assistance should any be needed, as well as to communicate information derived from your surveys. Should any opportunity present of reporting progress, you will of course avail yourself of it, to send any information that will be interesting if not essential to the progress of the work.

It is desirable that you keep independent of your field notes, a diary of your operations and topographical notes of the country you pass over.

Wishing you success in the experiment and a speedy accomplishment of the work assigned you.

Years later a deputy surveyor of Marsh's surveying period was quoted:¹⁰ "Wm. A. Burt, the inventor of the solar compass, sent out Captain J. M. Marsh of Dubuque to run the line with the solar compass ahead of the government party to test the practicability of that instrument. His line proved to be perfectly correct. The line is about 260 miles long. Had the United States let the contract to Captain Marsh at \$25 per mile it would have cost the government but \$6,500 (the actual cost was about \$32,000) and would have been run and marked as well."

THE COMMISSARY DEPARTMENT

The commissary department is always of great importance in such operations. Orders issued to D. B. Sears, Quartermaster and Commissary by Captain Talcott are interesting reading:¹¹

I & M BBY

CAMP WASHINGTON, 22nd May/52

You will forthwith make suitable arrangements to insure the transportation of rations for 40 men 60 days, equal to 2,400 rations, and for placing $\frac{1}{2}$ of the quantity so far west as the river Des Moines where crossed by the Bd'y line in 30 days. Also provide transportation for the personal baggage of the same number of men and allow an average per man of 50 lbs.; for the camp equipage, and for instruments and books estimated at 1,000 lbs. over the entire line and back. If you should require grain for your teams, extra harness, tools, &c., for your department, additional transportation must be provided for them.

It will be necessary for you to visit Lansing; you will find there five cases of instruments that are much wanted. Please forward them to camp as early as practicable: a box containing instruments and personal baggage marked "Harry Taylor" if not at Lansing when you arriv e may be very shortly expected. It is necessary that you make arrangements to have it forwarded to the camp I may be at, as soon as it reaches Lansing. You will please purchase for the Survey the following named articles:

¹⁰ Butler, Nathan. *Minnesota Historical Society*, Vol. 12, p. 649, 1907.

¹¹ *Iowa-Minnesota Boundary*, etc. Vol. 1, p. 12, 34, 36a.

1 pair white blankets (best quality) 1 dozen forks 1 box lemons
 1 tin wash basin large size and such additional mess furniture as may be required by four parties of about 10 persons in each—also such extra articles as will be required by the teamsters, when moving detached from the surveying parties.

IOWA AND MINNESOTA BDY

You will please proceed forthwith to Fort Dodge and procure there such supplies as you think necessary for the subsistence of the party on the line. You will return with them as speedily as possible, taking if practicable a route that will enable you to meet the party at some point east of the Des Moines; unless you find on inquiry that the nature of the country is such that you will gain time by striking the line at this point. You will take with you such means of transportation, camp equipage, &c., as you may require on this service.

IOWA AND MINNESOTA BDY

STATION JACKSON, *July 26th/52*

You will receive with this 7 cases and 2 bundles containing astronomical instruments to be transported to Dubuque. You are aware that from their nature, easy carriage is necessary and that they must be kept perfectly dry.

The outer cases you are aware were left on the line from the want of adequate means to transport them: Should these boxes be found, it is advisable to place the instruments in them and pack around them well dried grass to save them from the jolting they would otherwise experience.

It was stipulated that a spring wagon, capable of carrying the instruments should be furnished; the one provided was found not to answer and the springs were removed prior to my arrival; and as a consequence, the instruments have thus far been transported in waggons without springs, most decidedly to their injury; and it is feared that on the homeward journey, they will become still more eccentric. To save them as much as possible, I would suggest that they be placed on a thick layer of well dried grass and that it be well stuffed between the cases and that in the event of its getting wet it be removed and other grass dried to replace it.

It will be seen by reference to the report that the whole of guide lines 1 & 2 with the exception of the last six miles was checked by setting up the zenith and azimuth instrument at three points, and corrections made for any deflections which were found to exist.

The running of the guide line was assigned to Mr. G. R. Stantz and the running and marking on the parallel to Mr. J. S. Sheller.

The work previous to your arrival was much retarded by the continual rains and scarcity of grass, rendering the transportation of supplies slow and difficult.

In accordance with instructions left by you, mounds have been erected at the intersection with the parallel of the meridians of Stations Jefferson, Adams and Washington.

The mound at Station Adams fell upon the soft and marshy ground to the south of the guide line, but at Stations Jefferson and Washington the position of the mounds and the large size of the stones, which formed their bases, was such as to secure them against removal or injury.

At Station Washington the post used for transit observations was removed and a large stone substituted in its place.

The whole of the field work including that between the monument and the Mississippi River (which was left unfinished in the spring, on account of the height of the water) was finished by the ninth of September, and the field notes returned to the office of the surveyor general by Mr. Sheller, under whose superintendence the whole of the parallel was chained and marked.

The difference between the latitude established by Captn. Talcott and that by Captn. Lee (according to offsets from guide line No. 2 being 64.4 links, the latter being to the north, it is provided for by lessening the offsets on guide line No. 3 52.2 links, thus throwing the curve further to the north, (the offsets being south) and diminishing the offsets; (which are south) on guide line No. 2, throwing that portion of the curve further south.

The corrections in the offsets for guide line No. 3, commence at No. 52, where the correction is one link, and increase to No. 1, where the correction is 52.2 links, the intermediate corrections increasing in arithmetical progression, the difference being one link.

Note. The remaining 12.2 links of the difference of latitude by direct observation at Station Washington and that given by the guide line from the iron monument was corrected by deducting progressively from 1 to 12 links from the southern offsets measured from stations 39 to 50, inclusive on guide line No. 2.

TALCOTT'S REPORT ON BOUNDARY SURVEY

Captain Talcott, principal deputy surveyor, in charge of the boundary survey, submitted his report to Surveyor General Sargent as follows:¹²

RICHMOND, VA.

February 19th, 1853

On delivering to you the maps, notes of survey and registers of observations made for determining and marking the parallel of 43° 30', north latitude, to serve as the northern boundary line of the State of Iowa, I feel that nothing further will be expected from me than a brief description of the instruments used and means adopted for obtaining the results set forth in the notes and records.

The principal instruments used on the survey were a 42-inch equal altitude and zenith telescope furnished with a micrometer, which with a 30-inch portable transit was lent by the superintendent of the Coast Survey for this service. These instruments were used at the principal stations for determining the latitude, the local time and the meridian of the stations. A transit theodolite, made by E. Draper of Philadelphia for the survey of the northeastern boundary, was procured, by the commissioner of the General Land Office, for this survey from the Department of State. A theodolite by Ertel was lent by the Secretary of the Interior, it was found very useful in measuring horizontal angles at and near the astronomical stations. Two chronometers, one by Fletcher, No. 1351 regulated to keep sidereal time, and the other by Hutton, No. 166 regulated for solar time, and belonging to the General Land Office, served for noting the time of the observations. Several other instruments were provided for the survey: under authority of the General Land Office, a dip circle was purchased for the survey and carried over the line, but in consequence of the pressure of other duties, but few observations could be made

¹² *Iowa and Minnesota Boundary, etc.* Vol. 1, page 42.

with it for ascertaining the inclination of the needle. Several reflecting instruments were provided to be used in cases of emergency, they were carried over the line, but in consequence of nothing occurring to render a resort to them necessary, any description of them is needless.

The corps you had employed for the survey was, on my arrival at Camp Washington, divided into four parties:

One, eleven in number, under the direction of Deputy Surveyor J. M. Marsh, was directed to survey a line with Burt's solar compass to the Big Sioux River, to chain the same, and to leave monuments to mark his line on the principal ridges and other conspicuous points. A copy of his instructions is appended to this report.

A second party for surveying a guide line to serve as a base for measuring offsets to the parallel and for connecting the astronomical stations was placed under the direction of Deputy Surveyor Harry Taylor: this party was of the same number as the first. Appended is a copy of the letter of instructions given him for his government.

The third party, six strong, was under the superintendence of Deputy Surveyor Shellar and was charged with re-chaining the guide line and in preparing material for monuments, &c. See copy of his instructions.

To the fourth party, which was usually in the rear of all the others, and under my personal superintendence, belonged the duty of making the astronomical observations for determining the latitude of the stations and the azimuth of the signals placed on the guide lines, as well as the measurement of the horizontal angles at the stations for bringing the several parts of the survey into connection with each other and with the astronomical stations, which were in every instance at short distance from the guide line, where were more eligible positions than could be found, on the guide line. The number in this party, including the surgeon and quartermaster, varied from ten to twelve in number.

The latitude was ascertained of six stations, which with the monument erected by Capt. T. I. Lee, Corps of Topographical Engineers, gives seven points on the boundary, at distances varying from 50 to 36 miles, which were used for checking and correcting the deviations unavoidably incident to running a guide line over an unusually level country. The azimuths of the guide lines were checked at each of the astronomical stations, by measuring their inclination to the meridian at some point near the meridian of the station, if not on it.

The guide lines west of Station Washington were run by the aid of the transit theodolite made by E. Draper: Seventy miles of it, east from the Big Sioux River, were re-examined by the portable transit and the deflections of the line were measured by a micrometer; they were found to be so unimportant, and the north and south so nearly balanced, any further verification was deemed unnecessary further than that before referred to at the several stations, where the deviation of the observed from the computed azimuth never much exceeded one minute.

It was deemed advisable to combine with the notes of Deputy Surveyor Shellar all the important data by which the boundary was determined; such as the latitude of the stations, the azimuth of the guide line for each section and quarter section corner, tables of which were furnished to the deputy surveyor to enable him to locate the corner and boundary monuments on the true line, all of which will be found embodied in the notes or survey.

The organization of the party and my instructions contemplated the running and marking of the line in a single season; this could only be done by making a

hasty and therefore imperfect reduction of the observations in the field, and by using the results so obtained for placing the monuments; it was attempted without the aid of any person skilled in computations of this character, but I was most ably seconded in this undertaking by the secretary, a surgeon of the expedition, and the success exceeded my expectations. It will be seen on referring to the position of the monuments, that the greatest error as indicated by the revised calculations is but 85/100 of a second, south, which is at Station Jefferson; at Station Monroe, the error is 51/100; at Adams 4/10; at Washington 21/100; at Madison 12/100; and at Jackson the field and office computations give the same results.

The latitude of each mound, marking the corners of townships, has been computed, and will be found recorded in the notes of the survey, so that at any time hereafter when more permanent monuments shall be required, they may be placed on the parallel of 43° 30' at those points, and can readily be calculated for the five intermediate section corners.

The offsets entered on the maps and in the notes are but copies of those computed in the field to enable the deputy surveyor to locate the monuments by measuring, north or south, from the half mile points marked upon the guide line.

The guide line was chained east and west from the range line between Ranges IV and V, which range line was surveyed north to its intersection with the parallel of 43° 30', and served as a zero point for the measurements. The distance of each station from this point is set forth in the accompanying table.

NAME OF STATION	LENGTH OF GUIDE LINE			DIST. W. OF INITIAL POINT OF MEASUREMENT.			
	MILES.	CHS.	LKS.	MILES.	CHS.	LKS.	
INITIAL POINT							
Station 2	24	2	15	24	2	15	
Washington	25	2	99	49	5	14	
Adams	47	57	14	96	62	28	
Jefferson	40	19	80	137	2	08	
Madison	51	28	68	188	30	76	
Monroe	35	44	24	223	75	00	
Jackson	37	22	39	261	17	39	
Big Sioux River	}	0	17	76	261	35	15
Centre of Main Channel							

TABLE SHOWING DISTANCES EAST OF INITIAL POINT OF MEASUREMENTS

NAME OF STATION	DISTANCE			DIST. E. OF INITIAL POINT OF MEASUREMENT.			
	MILES.	CHS.	LKS.	MILES.	CHS.	LKS.	
INITIAL POINT							
Lee's Iron Monumt	4	38	86	4	38	86	
Centre of the Mississippi River	}	3	34	22	7	63	08
Length of line west of Initial Point of Measurements.	}				MILES.	CHS.	LKS.
Length of line east of " "					261.	35.	15
				7.	63.	08	
Total length of line—				268.	98.	23	

The chaining of the guide line and the offsets to the monuments was under the superintendence of Deputy Surveyor Shellar, who was also charged with in-

specting the monuments erected to mark the boundary and other important points, and with entering in his field notes a description of them.

The guide line west of Station Washington was run by Deputy Surveyor Taylor, who placed signals at points sufficiently near to give direction to the chainmen, who were further guided by the aid of a compass in the hands of Shellar. From the iron monument to the Mississippi River and to Station Washington, the running of the guide line, as well as the general direction of the surveying and astronomical operations, was under the immediate superintendence of first assistant I. W. Smith, deputy surveyor, who had extended the guide line to Station Washington before I joined the party. A detailed report from Mr. Smith of the operations previous to my joining the party, and after leaving it at Spirit Lake, on the return of the party, is appended to this report. I also append to it, and I beg leave to refer for further details to a statement of the result of the observations on each pair of stars observed for the latitude, the number of observations of which the result is the mean, and the mean result for each station, allowing weight for each result, as the number of observations, and also the arithmetical mean of the results on each pair.

As an appendix to the report I submit the record of the observations for latitude, with the catalogue places of the stars observed, and the calculated quantities used in reducing the observations for the latitude, also the value of micrometer screw and level scale, the record of the transits of heavenly bodies observed, and of the measurements of horizontal angles for ascertaining the azimuth of guide lines and for other purposes.

It should here be remarked that these observations were designed to effect a practical marking of the parallel of $43^{\circ} 30'$, sufficiently near to serve as a boundary to two important states, but not by multiplying observations indefinitely to make the nearest possible approximation to the latitude of one or more points. It will be found I believe on an examination of the records referred to, that there is no reason to doubt that every portion of the line is much within the limit of maximum error specified in the report of Col. I. I. Abert to the Secretary of the Department of the Interior as allowable.

I trust that you will feel satisfied, after examining the records and results in detail, that all has been done as well as you required, and that you will not object to standing sponsor for the work.

To the untiring industry of those you selected to aid in this survey you are indebted for its so speedy accomplishment.

Deputy Surveyor Shellar has inserted in his field notes the usual description of the surface of the country as required by the General Land Office. Geologically the country presents no interesting features until the line strikes the Big Sioux River, where a formation of altered sandstone appears, highly crystalline, and in many places the cliffs have much the appearance of trap in their formation.

Boulders of the sandstone formation are scattered over the surface of the country as far east as Spirit Lake, mixed with those of granite and limestone. This sandstone formation was noticed on the margin of a creek on our return 13 miles east of the river. The residue of the line is over a limestone formation, but after leaving Red Cedar River, going west, in but one place was an outcrop noticed, and which was near the west side of Range 40 and not many yards south of the line. Granite boulders are abundantly scattered over the surface, agates, cornelians, and fragments of the primary rocks can be picked up on the tops of any of the emi-

nances, where the soil has been washed away. Limestone, usually in small fragments, is generally found intermixed with those of the primary formation.

LIST OF DOCUMENTS ON FILE

In addition to the written reports submitted by the deputy surveyors, there existed a considerable amount of important instruments and documents. Field notes, miscellaneous letters, reports, calculations, and maps, which were necessary and pertinent to the work as finally completed, are on file in the office of the Secretary of State, Land Office. They are in bound volumes and the contents are listed herewith:

Volume 2. *Field Notes by Deputy Surveyors, Iowa and Minnesota Boundary.*

1. Part 1, pages 1-57, Field Notes of Exploring Line by Deputy Surveyor J. M. Marsh.
2. Part 2, pages 64-219, Field Notes of Survey by Deputy Surveyor John S. Shellar.
3. Part 3, pages 235-337, Partial copies of Field Notes as contained in part 2.

Note: See Field Notes compiled by Capt. Andrew Talcott, deputy surveyor in charge, from the reports and notes of the several deputy surveyors engaged in the Iowa and Minnesota Boundary Survey, and which are contained in Volume 1, *Iowa and Minnesota Boundary.*

Volume 3. *Miscellaneous Letters, Oaths of Assistants, Agreements. Iowa-Minnesota Boundary.*

1. Miscellaneous correspondence, pages 1-47, inclusive.
2. Oaths, pages 48-79, inclusive.
3. Agreements, pages 80-135, inclusive.

Volume 4. *Iowa and Minnesota Boundary Plats*

1. Map of northern boundary of the State of Iowa being part of the parallel of 43° 30' north latitude. Approved July 1, 1853, by Warner Lewis, Surveyor general of Iowa and Wisconsin.
2. Twelve maps of the guide lines drawn by Deputy Surveyor Harry Taylor,
3. Sketch of the initial point of the northern boundary of Iowa intersections of the parallel of 43° 30' north latitude, with the Big Sioux River.

Volume 5. *Iowa-Minnesota Boundary, Register of Observation of Zenith Distances and Location of Stations along the Boundary.*

Chapter IX

EAST AND WEST BOUNDARIES OF IOWA

THE EAST BOUNDARY

The constitution of the state provides that the eastern boundary of Iowa shall be the middle of the main channel of the Mississippi River between the southern and northern boundaries. Large streams, subject to flood flows, are constantly changing their courses. In some instances, the changes are slight and of little importance, while in other cases, the changes may be of considerable magnitude, both in location and influence upon properties involved. While the constitution provides that the boundary is the middle of the main channel of the river, the question arises as to where the middle of the main channel of the river actually is.

The best evidence upon which to base an opinion as to this location is contained in the decrees of the Supreme Court of the United States, which are applicable. This court has stated its opinion concerning the main channel of a stream in a number of cases, viz. :

By the doctrine of *Thalweg*, the middle of the main navigable channel of a river is the true boundary between independent states. (*Arkansas v. Tennessee* 246 U. S. 158, L. R. A. 1918 D. 258, 38 Sup. Ct. Rep. 301.)

Where a river is the boundary between states, it is the main channel which constitutes the boundary. (*Missouri v. Kentucky*, 11 Wall 395.)

The middle of the principal channel of navigation—not necessarily the deepest channel—is commonly accepted as the boundary line where navigable water constitutes the boundary line between states. (*Minnesota v. Wisconsin*, 252 U. S. 273, 40 Sup. Ct. Rep. 313.)

The true line in navigable rivers between states of the Union, which separates the jurisdiction of one from the other, is the middle of the main channel of the river. The jurisdiction of each state extends to the thread of the stream,—that is, to the “mid-channel”—and; if there be several channels, to the middle of the principal one, or rather, the one usually followed. (*Iowa v. Illinois*, 147 U. S. 1, 13 Sup. Ct. Rep. 239.)

All of the previously cited cases were applicable to the Mississippi River. The latter case was between the states of Iowa and Illinois, and was decided January 3, 1893.

All land surveys which closed upon the Mississippi River on the eastern boundary of Iowa terminated at meander corners on the bank of the river, set according to the judgment of the deputy surveyor, at the intersection of the section lines with the bank of the river.

The actual corners as set by the surveyors did not, of course, indicate actual termination of the settler's land. The actual legal boundary is subject to the riparian rights of each owner as determined in each case by the sinuosities of the stream as it marks its border line along the shore.

ISLANDS

In the upper reaches of the Mississippi River opposite the northeast part of the State of Iowa are extensive islands. Some of these have considerable importance because they are of value from an economic point of view and often times questions of law enforcement enter into the case. For this reason, it is best to clarify the jurisdiction of the adjoining states respecting the islands located in the stream forming the boundary. Fortunately, here again, we have cases adjudicated by the ruling legal body of the land.

Where it is found extremely difficult to locate the boundary between two states described as running along the main channel of a river which contains islands, and the boundary is fixed in the Enabling Act of the later state to enter the Union, so as to give all islands to it for a portion of the river and all islands to the other state for the remainder of the course, in accordance with which surveys are made and jurisdiction exercised over part of the islands awarded to it by the later state, the other states will not, after the lapse of a long period of time, be permitted to claim the islands awarded such state. (*Michigan v. Wisconsin*, 270 U. S. 295, 46 Sup. Ct. Rep. 290.)

Long acquiescence in the possession of territory and the exercise of dominion and sovereignty over it, may have controlling effect in the determination of a disputed boundary. (*Massachusetts v. New York*, 271 U. S. 46 Sup. Ct. Rep. 257.)

The township plats prepared by the deputy surveyors and furnished to the Surveyor General with the field notes have formed the basis for the proper location of the islands as they existed at the time of such surveys.

At the formation of the Iowa territory, jurisdiction was assumed over the islands shown on these plats, and this jurisdiction was transferred to the state upon its admission to the Union. Since that time the State of Iowa has exercised domain over these islands and by long possession of sovereignty now controls them.

THE WEST BOUNDARY

The constitution of Iowa provides that the middle of the main channel of the Missouri River to a point opposite the middle of the main channel of the Big Sioux River shall be the western boundary of Iowa and that the boundary shall continue up the main channel of the Big Sioux River to its intersection with the parallel of 43° 30' north latitude. The Missouri River is subject to extreme floods and in the course of the existence of the state of Iowa, has moved the location of its main channel considerable distances, in some cases several miles. In an attempt to adjudicate differences arising because of changes in channel the Supreme Court has entered decrees in a number of cases appearing before it, involving our western boundary. Briefs of their findings follow:

The legal western boundary of Iowa is the middle of the channel of the Missouri River. (*Union P. R. Co. v. Hall*, 91 U. S. 343.)

During flood times the Missouri has changed its course by cutting through and forming new channels leaving a considerable area of land on the opposite side of the stream from its former position. This capricious action has led to litigation and here again the Supreme Court has established the law of the land respecting such matters.

Where a stream which is a boundary, from any cause, suddenly abandons its old and seeks a new bed, such change of channel, termed avulsion works no change of boundary; the boundary remains as it was, in the center of the old channel, although no water may be flowing therein. (*Nebraska v. Iowa*, 143 U. S. 359, 12 Sup. Ct. Rep. 396.)

Avulsion by the Missouri River, the middle of whose channel forms the boundary line between the states of Missouri and Nebraska, works no change in such boundary, but leaves it in the center of the old channel. (*Missouri v. Nebraska*, 196 U. S. 23, 25 Sup. Ct. Rep. 155.)

Where the Missouri River above Omaha, which had pursued

a course in the nature of an ox-bow, suddenly cut through the neck of the bow and made for itself a new channel, the boundary between Iowa and Nebraska was not changed, and it remained, as it was prior to the avulsion, the center line of the old channel. (*Nebraska v. Iowa*, 143 U. S. 359, 12 Sup. Ct. Rep. 396.)

A decree establishing the boundary between Nebraska and Iowa, having been postponed in order that the parties might agree to designations of the boundary between the states, was entered after agreement had been made. (*Nebraska v. Iowa*, 145 U. S. 519, 12 Sup. Ct. Rep. 976.)

This decision was handed down February 29, 1892.

In 1923 an attempt was made to relocate certain portions of the Iowa and Nebraska boundary because of the difficulties of law enforcement and providing for schools. Very little was accomplished because of the insistence of certain members of the commissions that specific portions of the boundary be excluded from consideration. The Iowa boundary commission ceased active duties after some six months of negotiations, turned in their report, and disbanded.

In 1936 Governor Clyde L. Herring appointed a boundary commission consisting of Messrs. John S. Dodds, chairman, E. N. Hall, and W. R. Lee. This commission has met, done the preliminary work and reported to the executive council.

As a result of their findings, this commission¹ recommends:

In view of the conditions existing along and on the islands in the Missouri River as herein briefly referred to and the possibility of the Federal Government being able to bring the Missouri River under control and the main channel fixed in a permanent manner, it seems to us that we are justified in placing before the Executive Council recommendations that are beyond the scope of our commission.

We believe that the Boundary Line between the states of Iowa and Nebraska should be made so plain and definite that the people of each state would know beyond a doubt its location.

That there would be no land along the border line where the jurisdiction of the courts could be questioned; that "No Man's Land" would cease to exist as a haven for questionable characters and criminals.

To that end we recommend.

1. That the states of Iowa and Nebraska enact uniform laws under which boundary commissions could be named by each state to locate and recommend a new boundary line along the main channel of the Missouri River as now being confined, established and mapped by the United States through its engineering department.
2. That such new boundary line be by proper action of the respective

legislatures of Iowa and Nebraska and of Congress of the United States adopted and established as a new boundary line between said states.

3. That the commission to be named by each state as above contemplated be empowered to gather the facts as to taxation, bond issues, and other matters that might arise for adjustment and report the facts to the Executive Council.

Respectfully submitted,
(Signed)

E. N. HALL
W. R. LEE
J. S. DODDS, *Chairman*

At the time this is written, the status of our western boundary is as stated in the above judicial rulings. The desirable conditions hoped for in the state are still only recommendations by the boundary commission.

The following quotation from *The Des Moines Register* for Thursday, December 24, 1942, indicates that the location of the line between Iowa and Missouri is still causing trouble. It seems unfortunate that now, with the main channel of the Missouri under stream control proper action is not promptly taken to fix the present channel as the boundary.

LINCOLN, NEB. (AP)—A legal argument over whether lands on the east side of the Missouri River are in Iowa or Nebraska was sent back by the supreme court Wednesday to the Washington County district court for a new trial.

The issue arose in an ejection action brought by the First National bank of Missouri Valley, Iowa, against Elvin E. McFerrin and others. The court discharged the jury and ruled in favor of the bank.

McFerrin, contending the land is not in Nebraska and the Washington County court is without jurisdiction, claims it was cut off by avulsion in 1856 before Nebraska became a state.

The bank argued that the land was beyond the western boundary of Iowa and, though cut off by a channel change from Nebraska, was part of the Nebraska territory and has been a part of the state.

The supreme court held that the middle of the channel of the Missouri river at the time of purchase of the territory constituted the state's eastern boundary.

Editor's Note:—The Legislatures of both states passed bills, which must now be approved by Congress, fixing, except for Carter Lake, the boundary between the states as the middle of the main channel of the Missouri River as it exists today under control of the United States Engineers.

¹ Executive Council, State of Iowa, Report of the Iowa Boundary Commission, unpublished report January 25, 1937.

Chapter X

INDIAN BOUNDARY LINES AND OTHER ITEMS OF INTEREST

No settlements were permitted in the lands of the Indians until the United States government had extinguished the Indian claims by suitable treaties. This practice was in accordance with the proclamation of the Colonial Congress of September 23, 1783, which prohibited all persons from settling on land claimed by the Indians without the authority of the United States government.

Early Iowa historians have left an interesting account of these Indian treaties and the life in Iowa at that time. The dates of the early treaties had an important bearing on the direction and progress of the public surveys. The deputies were instructed to run their lines only in those territories that had been properly acquired by the United States government and to stay out of the Indian claims. By comparing the Indian Boundary Lines map, Fig. 7, with the map which traces progress of the surveys one will understand why outlines of the latter were irregular. Many of the accounts of the Indian affairs have been published in the *Annals of Iowa*. For a very complete listing of such published material available in the *Annals* the reader is referred to the following table on page 547. Since the material included in this list is so comprehensive it seems impracticable and unnecessary to try to cover it in this book.

It will be obvious that since the Indian land titles were not quieted until the Iowa Surveys were well advanced the boundaries of the Indian tracts were very important to the surveyors and made a lot of extra work in closing the surveys thereon.

As soon as Indian tracts were purchased and the title clearly in the United States all previous surveys closing upon the Indian boundaries were resumed and fractional townships and sections made regular. This brings about many special conditions in such locations and offers many problems to the surveyor on retracements. Here again the aerial photographs will frequently show where the settlement had been temporarily stopped at the old Indian lines.

No attempt has been made in this book to include the surveys of the Indian Boundary lines as they are available in the articles listed in the table herewith. Although the boundary lines were run and marked they

ARTICLES ON INDIAN BOUNDARY LINES APPEARING IN THE THIRD SERIES OF THE
Annals of Iowa PUBLISHED BY THE HISTORICAL DEPARTMENT OF IOWA.

TITLE	VOL.	NO.	DATE	PAGE
Early Iowa Indian Treaties and Boundaries	VII	4	Jan. 1906	233
The Half-Breed Tract	XI	4	Jan. 1914	256
Musquaka Band	XI	4	Jan. 1914	255
Dr. Galland's Account of the Half-Breed Tract	X	6	July 1912	450
Neutral Line in Iowa	XI	4	Jan. 1914	241
Survey of the Neutral Line	XI	4	Jan. 1914	243
Field Notes of the Neutral Line	XI	4	Jan. 1914	256
Survey of the Sioux 20-Mile Cession	XI	4	Jan. 1914	244
Field Notes of the 20-Mile Cession	XI	5	April 1914	353
Survey of Sac & Fox 20-Mile Cession of Neutral Ground	XI	4	Jan. 1914	245
Field Notes of Sac & Fox 20-Mile Cession of the Neutral Ground	XI	5	April 1914	377
The Black Hawk Purchase	XI	4	Jan. 1914	250
Second Black Hawk Purchase	XI	4	Jan. 1914	252
Cession of 1842 (Sac & Fox) Purchase of Central Iowa	XI	4	Jan. 1914	254
White Breast Boundary Line with Field Notes	X	1	April 1911	1
Cession of 1851	XI	4	April 1914	377

were in effect erased when the final subdivisions were completed and all monuments were supposed to be destroyed. In spite of this provision the old marks are still useful, when not fully eradicated and serve as evidence of the original location of the subdivision lines.

Roscoe L. Lokken in chapter 1 of his book, *Iowa Public Land Disposal*,¹ has outlined very completely how the progress of land surveys was retarded at the Indian boundaries. He also relates in chapter 2 many incidents which indicate the hardships encountered by the early surveyors.²

ITEMS OF INTEREST

The following notations cover a number of interesting items that have been found in the various letter books. Although lack of space makes it impossible to reproduce all of them here, many will be found in chapter IV in this volume. For the others the reader must go to the original books on file at the State House in Des Moines. All of the material which bears upon the actual surveying procedures has been taken from the original records and is to be found herein. It is suggested that the reader refer to the original letters of special instruction in chapter IV for any of the following references before going to the trouble of searching the records at Des Moines for the material indicated as especially interesting. Each reference is made as brief as possible to conserve space.

¹ Roscoe L. Lokken, *Iowa Public Land Disposal* (Iowa City; The State Historical Society of Iowa, 1942), pp. 13-53.

² *Ibid.*, pp. 54-64.

The field notes also contain many interesting references, several of them will be found in the *Annals of Iowa*.

Here is a sample of a surprise surveying record on a line near Sioux City taken from the notes of Deputy Surveyor Alex. Anderson in 1852:

Ivy Johnson, one of my men, was accidentally shot yesterday and died almost instantly.

North between Sections 21 and 22, variation $11^{\circ} 30'$ East.

30.00 leave bottom N.W.

40.00 Set $\frac{1}{4}$ section post in a mound of earth and sod pit East and West 8 links.

Ivy Johnson's grave from this $\frac{1}{4}$ post bears S. $71\frac{1}{2}^{\circ}$ West offset

North $14\frac{1}{2}$ $\begin{matrix} \text{West} \\ \text{East} \end{matrix}$ [sic] 5:00 chains bears S. $67\frac{1}{2}$ West.

80.00 Set post for corner to sections 15, 16, 21 and 22 in a mound of earth and sod pit South 8 links.

Later in the week he wrote the surveyor general that he was in Council Bluffs looking for a man to take Ivy Johnson's place. It is reliably reported that Ivy was a practical joker and tormented one of the other men in that party about his "beliefs" until the "accident" terminated the matter.

A monument was placed over Ivy Johnson's grave the next spring (1853) by Alex Anderson. This monument is still (1942) visible but the field in which the grave is located has been cultivated and the grave stone has been removed to a nearby fence line. The *Sioux City Tribune*, in 1922, published an account of this affair.

SELECTED REFERENCES

Appointment of Warner Lewis as Sur. Gen'l. of U. S. for Districts of Wisc. & Iowa. Letter Book "F," page 3.

Letter to Hon. James Shields, Comm'r. G.L.O., relative to Moorehead's accuracy, character and reputation. Letter Book "C," page 26. [See p. 286.]

Letter from Geo. W. Jones, Sur. Gen., to Hon. James Shields, Comm'r. Gen'l. "\$2.50 per mile not sufficient to engage competent dep. for resurvey of Barrows work." Very interesting. Letter Book "C," pages 95 and 96. [See pp. 290-291.]

As to the hardships and experiences of the early Iowa Surveyor a typical letter will be found on page 140 of Letter Book "D."

Appointment of Geo. B. Sargent as Sur. General. Page 378 of "D."
Special Instructions of particular importance:

"D" page 405 Finley & McKeogh. [See p. 317.]

"D" page 411 Ed James Jr. [See p. 318.]

"D" 416 Conkey's. [See p. 318.]

See letter of Sur. Gen'l. to Richard M. Young, Comm'r of G.L.O. relative to measurements in line dividing Ranges 27 and 28, Twp. 72, and Ranges 28 and 29.

On page 260 of Letter Book "F" is a letter relating to measures. This letter is addressed to Lt. G. K. Warren, Top. Eng. at Washington, D. C., and pertains particularly to the first correction line and second correction line. This gives the differences in miles and chains and links from River to River by ranges.

Letter to county surveyor relative to re-establishing lines and corners. Specific instructions and references are given. "C," page 202, also page 159, Book "F." A very important letter as to measurements. In this letter it is stated that the law can be complied with as to Township lines but not as to subdividing (adjusted to a standard). Recommendation given as to measurements to conform to rectangular surveys.

Letter relative to obliterated or lost corners will be found in Book "B," page 142, to Sam'l. D. King, Esq., from James Wilson, Sur. Gen'l.

Relative to irregularities found in surveying. On Dec. 25, 1848, a letter was addressed to Thos. Baker inclosing contract and bond in triplicate, together with general instructions "D" 29. January 11, 1849, special instructions were issued because of irregularities. Letter Book "D," page 33. Sp. Inst. "D," page 34. [See p. 306.]

Letter of refusal of plats and field notes relative to Twp. 70, Rg. 11 and 12. "C," p. 76. Letter of reprimand "C," page 73. Sp. Inst. "B," page 413. [See p. 279.]

Re: Irregularities. Letter Book "F," page 58. [See p. 341.]

Letter Book "E," page 196, 3rd par.. A report on the findings of Maj. McKean of his examinations of surveys as to accuracy in late surveys.

Book "E," pages 255-270. Letters addressed to Pres. Millard Fillmore relative to Northern boundary well worth reading.

Letter stating a third deputy would be sent out to examine T. 70, R. 23, "C," page 284, Sp. Inst. to Sam'l. Jacobs, D. S., the third Surveyor will be found in Book "C," p. 281. [See p. p. 299-300.]

"A," pages 199-201, Sp. Inst. to Perrin Kent—survey and irregularities to be observed due to convergency. There is an additional 2 chains added at the West end of each town line. (Twp. 67 and 68, Rgs. 8-9-10-11.) [See pp. 253-254.]

Letter Book "C," page 43. Sp. Inst. to U. Biggs, Dep. Sur., Twp. 68, Rgs. 23, 24, and 25. Mode of survey relative to irregularities. "C," page 45. [See pp. 286-287.]

Letter Book "D," page 255. Re: Depositions against Sur. Gen'l. Booth.

Letter Book "D," page 462. Twp. 68 and 69, Rg. 39 and 40—irregularities—1st correction line closings. [See p. 319.]

Letter Book "C," page 15. Letter states "whenever town lines vary materially from rectangular form they be actually protracted upon the plats, I beg leave to state that I regard compliance therewith impracticable." This letter is of importance.

Letter to Geo. W. Jones from James Shields, Comm'r., telling of his appointment by the President, as Sur. Gen. of the Terr. of Wis. and Iowa. Letter Book "A," page 115.

Letter to E. M. Huntington from James Wilson; stating that he has received his commission from the President bearing date of September 10, 1841; also receipt of his official oath. Letter Book "B," page 139.

Commission to Geo. W. Jones as Sur. Gen. by James K. Polk, Pres. Letter Book "B," page 400.

Original corners established by U. S. Survey can in no case be changed. Letter Book "C," pages 107 and 108.

Appointment of C. H. Booth as Sur. Gen. by the President James K. Polk—Jan. 12, 1849. Letter Book "D," page 45.

Lines were all ascertained by trigonometrical calculation and consequently at a much greater expense to the deputy than if it had been done

by chain—and use of the “Needle” by Mr. Dunn to cross meandered lakes—“the whole length sweeps upon the accompanying maps”; also asks decision so that his inst. may be made to correspond therewith. Letter Book “C,” page 277.

Letter in regard to the Solar Compass and what good it is supposed to do. Letter Book “D,” page 179.

Letter to J. Butterfield. Telling of the difficulties encountered by Theo. Conkey in filling his contract. Men had to carry supplies. Assistants struck for higher wages. Illness of Conkey. Letter Book “D,” page 284.

Establishment of the Fifth P. M. Letter to J. Butterfield. Letter Book “E,” page 417.

Letter Book “F,” page 15. Letter to John Wilson stating that competent surveyors can not be obtained at the salary rate.

Letter relative to Mr. Yerby’s work and declarations that work was destroyed by fire. Letter Book “F,” page 450.

Letter to Thos. Hendericks, Comm’r. of G.L.O., from Warner Lewis in answer to the charges against him and offering his explanation of them. Letter Book “F,” page 501.

Appointment of Thos. J. Townsend as Sur. Gen’l. of Wisconsin and Iowa by the President, Abraham Lincoln. Letter Book “G,” pages 377 and 398.

Appointment of Henry A. Wiltse as Sur. Gen’l. for Wis. and Iowa by the President, Abraham Lincoln. Letter Book “G,” page 503.

Stiles S. Carpenter—resurveyed Barrows work in Twp. 76, 77 and 78, R. 15, and Tp. 76, Rg. 16, Letter Book “C,” pages 178, 179, 269. [See pp. 297-299.]

Letter Book “D,” page 17, Northern Boundary.

Letter Book “D,” page 16, Indian Title.

Letter Book “F,” pages 88 and 89, Chas. F. Legate, list of twp. to exam. and insp.

MISCELLANEOUS

This section will deal with a number of unrelated items, each too small for a separate chapter yet important enough for inclusion in this book. Among these items are: The contract and bond for the Wisconsin-Minnesota boundary survey; the oath of Deputy Talcott, oath and affidavit of his helper³; Congressional act for survey of towns in the county of Du Buque, Territory of Wisconsin; the "private land claims;" and two letters to the Commissioner of the General Land Office.

CONTRACT OF DEPUTY SURVEYORS

THIS AGREEMENT, Made This fourth Day of June, 1852, between George B. Sargent, Surveyor General of the United States for Wisconsin and Iowa, acting for and in behalf of the United States, of the one part, and George R. Stuntz of Lancaster, Grant Co., Wisconsin, of the other part.

WITNESSETH, That the said George R. Stuntz, for and in consideration of the conditions, terms, provisions and covenants hereinafter expressed, and according to the true intent and meaning thereof, doth hereby covenant and agree with the said GEORGE B. SARGENT, in his capacity aforesaid, that he the said George R. Stuntz in his own proper person, with the assistance of such chainmen, axemen and flagbearers as may be necessary, agreeably with the laws of the United States, and with the General Instructions to Deputy Surveyors, and such Special Instructions as he may receive from the said Surveyor General, will faithfully survey and establish that portion of the boundary between the State of Wisconsin and Territory of Minnesota, commencing in the main channel of the St. Louis River at "the first rapids in the same, above the Indian Village, according to Nicollet's map: thence due south to the main branch of the River St. Croix," and that he will complete this survey, in the manner aforesaid, and return the true and original field notes thereof to the office of the said Surveyor General on or before the first day of January next ensuing the date hereof (acts of God excepted), on penalty of forfeiture, and paying to the United States the sum mentioned in the annexed bond, if default be made in any of the foregoing conditions.

And the said GEORGE B. SARGENT, in his capacity aforesaid covenants and agrees with the said George R. Stuntz, that on the completion of the surveys above named, in manner aforesaid, there shall be paid to the said George R. Stuntz on account of the United States, by the Treasury Department, upon the receipt of account at the General Land Office, properly certified by GEORGE B. SARGENT, in his capacity aforesaid, and accompanied by the approved plat of the survey for which the account is rendered, as a full compensation for the whole expense of surveying and making return thereof, the sum of eight hundred dollars.

And It Is Further Understood and Agreed, between the parties to this agreement, that the said GEORGE B. SARGENT reserves to himself in his said capacity, or his successor in said office. -----per cent. of the whole amount accruing on the survey aforesaid, to be applied in defraying the expenses and salary of a Deputy Surveyor to be appointed by GEORGE B. SARGENT, in his capacity aforesaid, as his assistant for the purpose of a general inspection and examination of surveys, whilst in progress in the field, or after completion thereof. Provided, no member of Congress or subcontractor have any part in this Contract.

³ Original Iowa Surveys, Drawer File A-1.

IN TESTIMONY WHEREOF, the parties to these articles of agreement have hereunto set their hands and seals, the day and year first above written.

Signed, sealed and acknowledged }
 before us:
 THOS. S. NAIRN
 E. K. RUGE
 both of Dubuque Iowa

GEORGE B. SARGENT
Surveyor General.
 GEO. R. STUNTZ
Deputy Surveyor.

I, George R. Stuntz, Deputy Surveyor, do solemnly swear that I will faithfully and impartially execute the surveys mentioned in the foregoing contract, to the best of my skill and ability.

GEORGE R. STUNTZ

Sworn to and subscribed by said Stuntz before me at my office in the City of Dubuque this fourth day of June 1852.

} GEORGE B SARGENT
Sur. Genl.

BONDS OF DEPUTY SURVEYORS

KNOW ALL MEN BY THESE PRESENTS, That we, George R. Stuntz of Lancaster, Grant County, Wisconsin, as principal, and J. T. Mills & Dwight T. Parker both of Lancaster, Wis., as sureties, are held and firmly bound unto the UNITED STATES in the sum of Sixteen hundred dollars, lawful money of the United States (being double the estimated amount which would be due by the United States to the said George R. Stuntz, on the completion of the survey named in the foregoing contract), for which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, and each and every of us and them jointly and severally, firmly by these presents, signed with our hand and sealed with our seals, this eighth day of June, 1852.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That if the above bounden George R. Stuntz shall well and truly and faithfully, according to the laws of the United States and the instructions of the said Surveyor General, make and execute the survey which is required of him to be made by the foregoing contract, and return the field-notes of the said survey to the Surveyor General, in the manner and within the period named in the said contract, then this obligation to be void, or otherwise it shall remain in full force and virtue.

Signed, sealed and acknowledged }
 before us:
 J. W. BLANDING
 GEO. H. COX
 both of Lancaster, Grant Co., Wis.

GEORGE R. STUNTZ
 J. T. MILLS
 D. T. PARKER

I, J. C. Squires, Clerk of the Circuit Court in and for Grant County, State of Wisconsin, do certify that in my opinion the sureties to the above Bond are sufficient; and I hereby approve the same.

Witness my hand and seal at Lancaster this eighth day of June in 1852.

J. C. SQUIRES, *Clerk.*

You are to sign the foregoing Contract, writing your name in full over or opposite "Deputy Surveyor," before two witnesses, whose residence must be given immediately underneath their signatures, and fill the existing blank at the top thereof with the day and month in which you thus sign the same.

The bond must be dated on the day it is signed by yourself and sureties. The remaining blank must be filled with the names and residence, written in full, of two sureties, whose sufficiency for the amount must be certified, in the above blank, by the proper officer of a Court having a seal. Yourself and sureties must sign the Bond, writing your names in full, in the presence of two witnesses, whose residence must be stated immediately below their signatures.

The officer who certifies as aforesaid, must fill the said blank with the style and location of his office, and accompany his signature in every case with an impression of the seal of the Court. He may also administer the oath at the bottom of your Contract, after you have signed the same, giving an impression of his seal in each case.

All erasures, mutilations and interlining must be avoided.

OATH OF ANDREW TALCOTT, DEPUTY SURVEYOR

I, *Andrew Talcott*, do solemnly swear that I will well and faithfully perform the duties of a Deputy in the survey of the United States lands, in my own proper person, to the best of my skill and ability, and in strict accordance with the laws of the United States and the instructions of the Surveyor General for the District of *Wisconsin and Iowa*.

Subscribed and sworn to before me, at my office, Dubuque, Iowa, this 13 day of May, 1852.	}	ANDREW TALCOTT GEORGE B SARGENT <i>Surveyor General</i>
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THIS AGREEMENT made this first day of April, 1852, Between George B. Sargent, Surveyor General of the United States for Wisconsin and Iowa, acting for and in behalf of the United States of the One Part and William C. Alexander of Dubuque, Iowa, of the other part, Witnesseth, that the said William C. Alexander for and in consideration of the conditions, terms, provisions and covenants hereinafter expressed and according to the true intent and meaning thereof doth hereby covenant and agree with the said George B. Sargent in his capacity aforesaid that he the said William C. Alexander will faithfully perform the duties of Chain-carrier, Axeman or Flagman, or such other duties as may be required of him upon the service of running the Northern Boundary of Iowa (under direction and control of Captain Andrew Talcott and such Assistant Surveyors as the Surveyor General of Wisconsin and Iowa may appoint). That he will continue for the full term of service as may be required by said Surveyor General unless compelled to resign by sickness, in which case he must procure a written discharge from Captain Talcott or his first Assistant. Upon a written certificate from Captain Talcott or his first Assistant of the faithful performance of the service as above described the said Surveyor General agrees to pay to the said William C. Alexander the sum of Two Dollars per day, from the date of this agreement, until the party shall be disbanded.

The Surveyor General reserves the right expressly for Captain Andrew Talcott or his first Assistant to discharge at any time the said William C. Alexander when in his or their opinion there is the slightest neglect of duty.

It is further agreed on the part of the Surveyor General that if the full and entire survey of the said boundary line is completed within the year 1852 that he will pay to the said William C. Alexander an additional per diem of fifty cents.

In Testimony whereof the parties to this *Agreement* have hereunto set their hands and seals this first day of April 1852.

Witness

THOS. S. NAIRN.

GEORGE B. SARGENT

Surveyor General

W. C. ALEXANDER

AFFIDAVIT

I, William C. Alexander of Dubuque Co., Iowa, do solemnly swear that I will well and faithfully execute and fulfill the duties of Chain-carrier, Axeman, or Flagman as required upon the survey of the Iowa and Minnesota boundary under direction of Captain Andrew Talcott; and such Assistant Surveyors as may be appointed by the Surveyor General of Wisconsin and Iowa, That I will level the chain in measuring over uneven ground, and plumb the tally pins, whether sticking or dropping the same, so as to obtain the true horizontal measure, That I will report the true distances to all notable objects, and the true length of all the lines that I assist in measuring, and mark the letters and numbers plainly and correctly at all corners that I may be required to mark to the best of my skill and ability.

W. C. ALEXANDER

Subscribed by said William C. Alexander and sworn to before me at my Office in the City of Dubuque this thirtieth day of March, 1852.

Surveyor General, Wisconsin and Iowa.

SURVEY OF TOWNS ORDERED BY CONGRESSIONAL ACTS

Bellevue, Burlington, DuBuque, Ft. Madison, and Peru

While Iowa was still a part of Wisconsin, settlement was proceeding along the Mississippi River at such a rate that it was deemed advisable to survey the principal ports along this river. For this reason the Congress of the United States passed an act ordering these surveys which provided as follows:⁴

Chap. CCLXII.—An Act for laying off the towns of Fort Madison and Burlington, in the county of Des Moines, and the towns of Bellevue, DuBuque, and Peru, in the county of DuBuque, Territory of Wisconsin, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tracts of land in the Territory of Wisconsin including the towns of Fort Madison and Burlington, in the county of Des Moines; Bellevue, DuBuque, and Peru, in the county of DuBuque; and Peru, in the county of DuBuque; and Mineral Point, in the county of Iowa, shall, under the direction of the Surveyor General of the public lands, be laid off into town lots, streets, avenues, and lots for public use called the public squares, and into out-lots having regard to the lots and streets already surveyed, in such manner and of such dimensions as he may think proper for the public good and the equitable rights of the settlers and occupants of the said towns: Provided, The tracts of land so to be laid off into town-lots, &c., shall not exceed the quantity of one entire section, nor the town-lots one-half of an acre; nor shall the out-lots exceed the

⁴ *United States Statutes at Large*, vol. 5, p. 70.

quantity of four acres each. When the survey of the lots shall be completed, a plat thereof shall be returned to the Secretary of the Treasury, and within six months thereafter the lots shall be offered to the highest bidder, at public sale, under the direction of the President of the United States, and at such other times as he shall think proper; Provided, That no town-lot shall be sold for a sum less than five dollars: And provided further, That a quantity of land of proper width, on the river banks, at the towns of Fort Madison, Belleview, Burlington, DuBuque, and Peru, and running with the said rivers the whole length of said towns, shall be reserved from sale, (as shall also the public squares,) for public use, and remain forever for public use, as public highways, and for other public uses.

Sec. 2. And be it further enacted, That it shall be the duty of the said Surveyor to class the lots already surveyed in the said towns of Fort Madison, Burlington, Belleview, DuBuque, Peru, and Mineral Point, into three classes, according to the relative value thereof, on account of situation and eligibility for business, without regard, however, to the improvements made thereon; and previous to the sale of said lots as aforesaid, each and every person or persons, or his, her, or their legal representatives, who shall heretofore have obtained from the agent of the United States a permit to occupy any lot or lots in the said towns, or who shall have, by building or enclosure, actually occupied or improved any lot or lots in the said towns, or within the tracts of land hereby authorized to be laid off into lots, shall be permitted to purchase such lot or lots by paying therefor, in cash, if the same fall within the first class as aforesaid, at the rate of forty dollars per acre; if within the second class, at the rate of twenty dollars per acre; and if within the third class, at the rate of ten dollars per acre: Provided, That no one of the persons aforesaid shall be permitted to purchase, by authority of this section, more than one acre of ground to embrace improvements already made.

Sec. 3. And be it further enacted, That the sum of three thousand dollars be, and the same is hereby, appropriated, to be paid out of any money in the Treasury not otherwise appropriated, to defray the expenses of surveying the lands covering the said towns of Fort Madison, Burlington, Belleview, DuBuque, Peru, and Mineral Point.

Approved, July 2, 1836.

This act was amended the following year and on March 3, 1837, such amendment was passed by congress:⁵

Chap. XXXVI.—An Act to amend an act entitled "An Act for laying off the towns of Fort Madison and Burlington, in the county of Des Moines, and the towns of Belleview, DuBuque, and Peru, in the county of DuBuque, and Mineral Point, in the county of Iowa, Territory of Wisconsin, and for other purposes," approved July second, eighteen hundred and thirty-six.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all acts and duties required to be done and performed by the Surveyor for the Territory of Wisconsin, under the act to which this is an amendment, shall be done by a board of commissioners of three in number, any two of whom shall be a quorum to do business; said commissioners to be appointed by the President of the United States, and shall, previous to their entering upon the discharge of their duties, take an oath or affirmation to perform the same faithfully and impartially: Provided, That the action

⁵ *United States Statutes at Large*, vol. 5, p. 178.

of the commissioners appointed under the present act shall not interfere with any of the acts performed by the Surveyor General, prior to the time of the passage hereof, in pursuance of instructions under the act to which this is amendatory.

Sec. 2. And be it further enacted, That the said commissioners shall have power to hear evidence and determine all claims to lots arising under the act to which this is an amendment; and for this purpose, the said commissioners are authorized to administer all oaths that may be necessary, and reduce to writing all the evidence in support of claims to pre-emption presented for their consideration; and when all the testimony shall have been heard and considered, the said commissioners shall file with the proper register and receiver for the district within which the towns are situated respectively, the testimony in each case, together with a certificate in favor of each person having the right of pre-emption under the provisions of the act of which this is amendatory; and upon making payment to the proper receiver of public moneys for the lot or lots to which such person is entitled, the receiver shall grant a receipt therefor, and the register issue certificates of purchase, to be transmitted to the Commissioner of the General Land Office, as in other cases of the sale of public lands.

Sec. 3. And be it further enacted, That the proper register and receiver of public moneys, after the board of commissioners have heard and determined all the cases of pre-emption under the act to which this is an amendment, shall expose the residue of the lots to public sale to the highest bidder, after advertising the same in three public newspapers at least three months prior to the day of sale, in the same manner as is provided for the sale of public lands in other cases; and after paying the commissioners the compensation hereafter allowed them, and all other expenses incident to the said survey and sale, the receiver of the land office shall pay over the residue of the money he may have received from the sale of lots aforesaid, by pre-emption as well as at public auction, into the hands of the trustees of the respective towns aforesaid, to be expended by them in the erection of public buildings, the construction of suitable wharves, and the improvement of the streets in the said towns of Fort Madison, Burlington, Belleview, DuBuque, Peru and Mineral Point.

Sec. 4. And be it further enacted, That the commissioners appointed to carry this act into effect, shall be paid by the receiver of public moneys, of the proper land district, six dollars each, per day, for their services, for every day they are necessarily employed.

Approved, March 3, 1837.

Subsequent to the passage of these acts, Willard Barrows, Deputy Surveyor, was authorized to close the surveys on these town boundaries. The instructions given to him by the Surveyor General follow:⁶

Special Instructions to Willard Barrows, D. S.

for closing the public surveys around the Towns of F. Madison, Burlington, Belleview, Dubuque and Peru, in Iowa Ter.

SIR:

At the time the surveys of the public lands adjoining these several Towns, were made, the Towns had not been laid out. It was therefore impracticable for the Deputies to connect their work with the boundary lines of these Towns.

⁶ Secretary of State, Land Office, Surveyor General's Letter Book "A," p. 273. 1838.

This service is committed to you; and you are hereby authorized and instructed to execute this unfinished portion of the surveys, for which you will be allowed and paid, on the completion thereof and approval of the work, at the rate of three dollars per mile, and any additional allowance which may be authorized by the Commissioner of the General Land Office.

You will apply to the Commissioners for laying off these Towns, for authenticated Copies of the *field notes* and *plats* of the *boundary lines* of the several towns laid off and surveyed by them.

Having obtained these copies, you retrace these boundary lines, and close thereon all the sectional and township lines of the public surveys which may be intersected thereby; and at each such intersection, set posts, and take bearings, where there are any to be had, and also make conspicuous mounds of earth, covered with sod, and constructed with a view to their durability.

From each intersection of the lines of the public surveys with the boundary lines of the Towns aforesaid, you will measure along each of those sectional or township lines, to the nearest section or quarter section corners thereon, beyond the Town boundaries. And you will likewise measure the distance from each angle in the boundary line of each of the Towns, to the nearest intersections thereon of the lines of the Public Surveys. From the upper and lower corners of each of the Towns, on the Mississippi or other river; or bayou, you will take the meanders to the first meander post of the public surveys, above or below such corners.

You will take full and minute *field notes* of all the corners established by you and of all measurements made and meanders taken, in pursuance of the foregoing instructions; which field notes, together with the copies of the field notes and plats of the boundary lines of the several Towns which you may obtain, are to be returned to this Office, as early as practicable after completing the work here assigned to you. For the execution of this work, and return of the field notes thereof, you are allowed until the 10th of Sept. next; but it is enjoined on you to make surveys and returns in as much shorter time as may be practicable.

Surveyor General's Office
Cincinnati, July 11, 1838 }

(Signed) E. S. HAINES

Sur. Genl.

The field notes prepared by Mr. Barrows are on file in the state land office. The township plats prepared from the surveyor's notes are also on file.

PRIVATE LAND CLAIMS

Early historians have handed down to us records of four distinct special claims acquired by Iowa's early white citizens. They were respectively, Julian Dubuque, Louis Honore Tesson, Basil Giard, and Antone LeClaire. A summary of these claims with proper notes as to the surveys and title is presented herewith.

Julian Dubuque Claim

While the colonists were fighting with the British in the eastern part of the United States, a Frenchman by the name of Julian Dubuque was

trapping and trading within the vicinity of northeastern Iowa. At one time he obtained an extensive claim for mining lead from the Indians under which he operated for many years. Upon his death his claim reverted to the Indians who were the grantees, so that his mining operations were really carried on under what one might have called an indeterminate lease granted by the Indians. Local historians' have given us the following records of this claim:

On September 22, 1788, Julien Dubuque, a Frenchman from Prairie du Chien, obtained from the Foxes a cession or lease of land on the Mississippi River for mining purposes on the site of the present city of Dubuque.

Lead had been discovered here eight years before in 1780 by the wife of Peosa Fox. Julien Dubuque's claim embraced nearly all the lead bearing lands in that vicinity. He immediately took possession of his claim and commenced mining, at the same time making a settlement. The place became known as the "Spanish Mines" or more commonly, "Dubuque's Lead Mines." In 1796, Dubuque filed a petition with Baron de Carondelet, the Spanish Governor of Louisiana asking that the tract ceded to him by the Indians might be granted to him by Patent from the Spanish Government. In this petition he set forth rather definitely the boundaries of this claim as "about seven leagues along the Mississippi River," intending to include as is supposed, the river front between the Little Maquoketa and the Tete des Mertz Rivers, embracing more than 20,000 acres. Carondelet granted the prayer of the petition and the grant was subsequently confirmed by the Board of Land Commissioners of Louisiana.

Dubuque died March 24, 1810. The Indians understanding that the claim of Dubuque, under their former act of cession, was only a permit to occupy the tract and work the mines during his life, would at his death revert to them, took possession. They continued the mining operations but were suspended by the military authority of the United States, notwithstanding the decision of the Commissioners.

When the Black Hawk Purchase was consummated, the Dubuque claim, thus held by the Indians, was absolved by the United States and the Sacs and Foxes made no reservations of it in the treaty of 1832.

In due course the United States of America sold this property to a number of individual purchasers. After these sales were made certain questions arose as to the title and an action was brought in court by Henry Chouteau, a citizen of Missouri, to recover his interest in an undivided seven-eighteenths of the Dubuque claim. Litigation proceeded for some time and the case was finally brought before the Supreme Court of the United States in the December term, 1853. The district court had held in favor of Patrick Maloney, the defendant and the decision of the district court was upheld by the Supreme Court of the United States.⁸ An extended discussion is set forth of the facts which appeared before the Supreme Court of the United States which brief summarizes the law of the land with reference to the rights which were acquired by Dubuque and

⁷ Ham, Hon. M. M., *Annals of Iowa*, edited by Charles Aldrich, A. M., Published by Historical Department of Iowa, Des Moines, vol. 2, 3rd series, 1895-1897.

⁸ United States Supreme Court Report, 16 Howard, p. 224.

by Henry Chouteau who acquired seven-eighteenths of Dubuque's claim. Information contained in the matter presented before the court is interesting history in this case as is the very excellent land book entitled *Iowa the First Free State in the Louisiana Purchase* by William Salter, published by A. C. McClurg & Co. This early history dates as far back as the earliest recollection of the white man.

Basil Giard Land Claim

CLAYTON COUNTY

Parts of Sections 15-16-17-18-19-20-21-22, T. 95 N., R. 3 W., 5th P.M., Iowa
 Parts of Sections 13-14-15-22-23-24-27, T. 95 N., R. 4 W., 5th P.M., Iowa

This individual was a trader who entered the Northwest Territory at about the time the Revolutionary war was in progress. Traders were not of the disposition to remain stationary. Upon the other hand they transferred their location in the interest of more profitable trading. We do know that Basil Giard located in Prairie du Chien before 1800 and that he occupied a rather pretentious claim on the west side of the Mississippi River which was later confirmed to him as his land claim.

A complete record of this colorful individual, his dealings with the Indians, the method by which he acquired his claim and the subsequent court litigations and adjudication has been compiled and presented by Mr. P. L. Scanlan and Marian Scanlan.⁹ In brief his claim holds the distinction of claiming title through a Spanish grant which was issued November 20, 1800, by Don Charles DeHault Delassus, Lieutenant Colonel of the armies of His Catholic Majesty and Lieutenant Governor of the western part of Illinois and dependencies.¹⁰ This is rather an imposing title to be carried by any single individual but the worthy Delassus was not content with a single title but carried also that of Lieutenant Governor of Upper Louisiana.¹¹

The transfer of the Louisiana grant from Spain to France and immediately thereafter to the United States required that all private land claims be confirmed. This started litigation, which remained before the courts for many years.

It is recorded¹²

At Prairie du Chien Basil Giard engaged in trade, although it appears that he was not successful in business. During the War of 1812 the first American fort at Prairie du Chien, Fort Shelby, was captured by the British. It appears that Basil Giard was one of those who signed a petition asking the British to send aid to Prairie du Chien and during the nine months of British control he supplied

⁹ Scanlan, P. L. and Marian, *Iowa Journal of History and Politics*, v. 30, p. 219-247.

¹⁰ Scanlan, P. L. and Marian, *Iowa Journal of History and Politics*, v. 30, p. 225.

¹¹ *Bremont County History*, p. 164, and *Supreme Court Reports*, 9 Peters, p. 27, *Delassus v. United States*.

¹² Scanlan, P. L. and Marian, *Iowa Journal of History and Politics*, v. 30, p. 222 and 223.

the commanding officer with gunpowder, at least indirectly. This has been taken to mean that he was friendly with the British, but it is not necessary to assume this, for any hesitancy on the part of a trader might well have resulted in the seizure of his goods. The French traders who came from the Illinois country were, in the main, very loyal to the American cause and suffered jeopardy of life and property at the hands of the Winnebagoes and other Indians who were incited by the British.

One must not judge this individual too harshly for making claim to the United States Government for his land west of the Mississippi River when he was at the same time supplying the British with powder. However, no reasonable explanation can be given as to why he would petition the British to come to the aid of the fort unless he was "Trader of parts."

Difficulties as to title were finally decided, the patent prepared and signed by President Van Buren February 7, 1839.

The state land office of Iowa has no field notes or other surveying data concerning this claim. The field notes of the deputy surveyor who subdivided the township and sections abutting on the Giard claim, locate this claim through their ties to it. The legal description follows:¹³ Beginning in the southeast quarter of Section No. 25, Township No. 35, north of Range No. 5, east, at a post, a corner of John Capehart's survey, and runs thence S. 8° W., with Capehart's line, five chains, eighty-three links, to Capehart's and D. Murphey's corner; sixty-four chains, sixteen links, to D. and S. Murphey's corner; one hundred and seven chains, ninety-one links, to S. Murphey and Coen's corner; one hundred and thirty-seven chains and forty-one links, to the southwest corner of W. Murphey's survey; two hundred and forty-five chains, to a point in the northwest quarter of Section No. 13, in Township No. 35 north, Range No. 5 east; thence N. 82° W. 245 chains to a point in the southwest quarter of Section No. 9, in Township No. 35 north, Range No. 5; N. 8° E. 245 chains, to a point in the southeast quarter of Section No. 28, in Township No. 36 north, Range No. 5 east; thence S. 82° E. one hundred and sixty-three chains, ninety-eight links, to the southwest corner of Joseph Murphey's; seventy-two hundred and thirteen chains and forty-five links to Joseph Murphey's southeast corner, on the west boundary of John Capehart's survey; thence S. 38° W., with Capehart's survey, one chain and thirty-two links to his southwest corner; thence S. 82° E., with Capehart's line, thirty-one chains and fifty links, to the place of beginning.

Much of interest to the person fond of history can be gained through a perusal of the *Annals of Iowa*.¹⁴ A record of the correspondence, interested parties and a plat can be found in the *Annals*.

Louis Honori Tesson (Fresson) Claim

LEE COUNTY

Parts of Sections 10-11-14-15, T. 66 N., R. 5 W., 5th P.M., Iowa

An interesting article concerning this tract has been prepared in the

¹³ Supreme Court Reports, 9 Peters, p. 117, *Delassus vs. United States*. description

¹⁴ Harlan, Edgar R., *Annals of Iowa*, 3rd series, v. XVI, No. 8, p. 622.

contained therein, but
is not signed!

*Annals of Iowa.*¹⁵ It may be assumed that Jenifer T. Sprigg made the survey of this claim while he was in the southeastern part of Iowa engaged in surveying the Sacs and Fox's Half Breed Lands. The township-plats on file in the secretary of state's office show the proper surveying ties to this grant but the field notes have been recorded locally.

In the *Iowa Journal of History and Politics*, Louis Honoré Tesson or sometimes known as Fresson, was termed "much of a hypocrite and possessing great gasconism."¹⁶ Settlers in Lee County after 1833 found an old apple orchard, the oldest in Iowa, which has always been ascribed to Tesson. In the biographical sketch of the first white men it is stated that Mr. Tesson excelled in a variety of trades, such as farming, blacksmith, cabinet maker, etc. and could take a piece of calico and make his wife a dress. A year after his marriage he undertook to invent a new type of diaper but in this he failed and went back to farming and fur trading with the Indians. He devoted much time to the planting of the first apple orchard.

"On investigating the title of the late Thomas F. Riddick, who died in the year 1830, * * I found that he claimed a regular derivative title from Louis Tesson Honoré, an Indian trader who settled among the Indians in the year 1799, at the head of the Lower Rapids on the Mississippi River at the location now known as the 'old Orchard' in the town of Montrose, under a permit to settle from the Spanish Government dated March 1799. That he cultivated the land and resided there until 1805 or 1806." The "claim to a league square originated under the treaty between France and the United States in the year 1804. In the year 1810 this land was sold at St. Louis as the property of Joseph Robidoux deceased and was purchased by Thomas F. Riddick at that sale and date." Under an act of Congress, June 7, 1836,¹⁷ commissioners were appointed to adjust the French and Spanish claims to lands in the territory of Louisiana. Thomas Reddick proved up his claim for a league, which claim was rejected and only 640 acres were confirmed in 1816. Not being satisfied with this confirmation he appealed his case to the higher courts but before action could be taken he died and the supreme court only confirmed 640 acres.¹⁸ The heirs declined to receive and take a patent under the same.

An *ex parte* survey of the Riddick claim was made by Jenifer T. Sprigg under an order from the War Department but this survey was not approved by the General Land Office at Washington. William Milburn, surveyor general in 1837, was directed to have the claim surveyed in

¹⁵ *Annals of Iowa*, 3rd Series, v. XVII, No. 7. Documents and correspondence relative to the subject claim in 1834 will be found on p. 547 through 553.

¹⁶ Edward Brooks, *Iowa Journal of History and Politics* 977.7 VIO9J, v. 13, p. 238.

¹⁷ *United States Statutes at Large*, v. 5, p. 34.

¹⁸ *United States Supreme Court Report*, 16 Howard, p. 224.

This is Chouteau v. Molony

April 1838, and ordered Isaac T. Woods, deputy surveyor, to proceed from St. Louis and make the survey. He made the survey of the exterior boundary lines of the mile square and as a result United States Patent No. 3095 was issued in confirmation of 640 acres tract known as the Montrose tract on February 7, 1839.

The Lee County recorder's office at Ft. Madison is the repository for the field notes and subdivision of the whole tract under date of July 30, 1853.

Antoine Le Claire

SCOTT COUNTY

Parts of Sections 34 and 35, T. 79 N., R. 5 E., 5th P.M., Iowa

Parts of Sections 2 and 3, T. 78 N., R. 5 E., 5th P.M., Iowa

For almost thirty years, until his death in 1861, Antoine Le Claire was a well known figure in Davenport and the surrounding country.

His swarthy complexion and black eyes were inherited, it may be, from his French-Canadian father, friendly to the Americans during the war of 1812, but more likely from his mother, a granddaughter of a Pottawattamie chief. As the years passed, he became more and more portly, weighing it is said over three hundred pounds, but he never lost his ability to dance nor his interest in public affairs.¹⁹

Another private claim accrued to an individual named Antoine LeClair who, in 1832 acted as an interpreter at the Indian Treaty, at which time the Black Hawk purchase was obtained from the Indians. In this treaty the Indians (Sac and Fox) reserved one section at the Rock River Rapids, where Davenport now stands, as a gift to Mrs. LeClair, who was a granddaughter of Chief A-coqua of the Sac tribe, providing that she build her home on the spot where the treaty was made, and a section at the head of the Rapids (on which the town of LeClair is built) was granted to LeClair. The LeClairs were granted two sections of land in Illinois by the Pottawattamie Indians also. He was a postmaster and also justice of the peace. He built the first ferry across the Mississippi River and in his shrewd business ways built himself an enormous income. Being a remarkable linguist, considering the opportunities for schooling at that time, he was able to speak a dozen different Indian tongues, besides French and English.

This claim is fully described and shown by a map drawn by B. F. Wick of Cedar Rapids, Iowa, of which publication was made in the *Annals of Iowa*.²⁰ The location of this property as given in the *Annals*²¹ states:

¹⁹ Briggs, John Ely, *Palimpsest*, published monthly by the State Historical Society of Iowa, Iowa City, Iowa, v. 14. 1933.

²⁰ *Annals of Iowa*, No. 3, p. 2. 1863.

²¹ *Annals of Iowa*, No. 4, p. 2. 1863.

The council at which the treaty was formed, was held on the west of the Mississippi, in the marquee of Gen. Scott used for the purpose, where afterwards was the home of Mr. and Mrs. Le Claire for many years, until it and the ground around gave place to the depot of the Mississippi and Missouri railroad in Davenport, as it now is.

We have no record of the survey for reserving this claim but the location was established by the surveyor who made proper reference to the claim of LeClair when he was locating property lines in this township.

HARDSHIPS OF EARLY SURVEYORS

SURVEYOR GENERAL'S OFFICE

Dubuque, August 8th, 1851

SIR:

It is with great regret that I have to inform you of the death of John M. Smith, Esqr., Deputy Surveyor.

This gentleman was one of my most faithful and competent Deputies, and was engaged in extending the surveys West from Wolf river to line of Ranges 12 and 13, inclusive, in the Menomonee Cession, east of the Fourth Principal Meridian in the state of Wisconsin.

I received a Telegraphic Dispatch, dated at Oshkosh, from which he was about 70 miles distant, stating that Smith and one of his assistants were killed, but was in hope that it would prove a mere rumor; unfortunately the intelligence has been confirmed by the return of the remainder of his company to this place.

They state that he, with O. W. Tyman, was instantly killed, and another of the company, Mr. Davis, dangerously wounded by the fall of a tree during a hurricane.

By this unfortunate calamity, I have lost a valuable assistant, and this community two, if not three of its most estimable citizens.

HON. J. BUTTERFIELD

*Comm'r. Gen'l. L. Office
Washington, D. C.*

I am very respectfully

Your obedient servant,

GEORGE B. SARGENT,

Surveyor General.

INDIAN OUTRAGE NEAR SITE OF FORT DODGE

SURVEYOR GENERAL'S OFFICE

Dubuque, August 15, 1849.

SIR:

By a communication this day received from James M. Marsh, Esqr., one of my deputies, I am informed that dairing and unprovoked robbery has been perpetrated upon him by a band of Sioux Indians. He was employed in continuing the 2d Correction line to the Missouri river, in Range 30 West of the 5th Principal Meridian in the State of Iowa, he was met by a band of eleven Sioux Warriors, completely armed. They rushed suddenly upon him, but manifested friendship by shaking hands. Their real design doubtless was to ascertain the strength of his party and whether they were armed; for they shortly left and Mr. Marsh proceeded with his line. He had advanced but a short distance, however, when he heard the report of a gun and again saw the Indians running on a line converging with his own and firing as they ran. They were soon ahead of his teams, and with guns

pointed ordered him to stop, unharness and camp. His party consisted of seven unarmed men. Resistance was out of the question. After camping he explained to the Chief of the band the character of his survey; that it was by authority of the Government and that he was upon United States land; of all which the Chief seemed aware, for he expressed credence in all that was said and seemed perfectly friendly. The Indians staid over night in his tent, ate supper and breakfast with him and received presents of provisions and clothing. The Chief left his camp immediately after breakfast. He was no sooner gone than the Indians assumed an air of insolence, appropriating to their own use everything upon which they could lay their hands, not excepting his tent which they cut to pieces.

They then emptied his wagon, selected his best blankets and such other articles as they could pack, and left him. The ensuing night, however, they returned and openly stole all of his horses—nine in number—and were sitting upon them near his camp the next morning. Immediately upon receiving this information, I communicated it to the Superintendent of Indian affairs at St. Louis, Mo., by Telegraph, at the same time I learned that Maj. Murphy, Sub agent for the Sioux Indians, was at Galena, Illinois, on his way to St. Louis. To him I also Telegraphed the substance of Mr. Marsh's Communication, to which he replied that there were no Dragoons at Ft. Snelling, but that he would try to get some at Jefferson Barracks and send them to the relief of my deputies, six of whom, I informed him were similarly located with Mr. Marsh and equally exposed to depredations from the same Indians, still the distance of Jefferson Barracks from the scene of this outrage, leaves reason to fear that timely aid will not be rendered. The south boundary of the Sioux land is common to the north boundary of the ceded land of the State of Iowa, from the Mississippi to the Missouri river, and there are not at present any Troops stationed within three hundred miles of this boundary. I deem it important to communicate these facts to you, as the progress of the surveys have been interrupted in a manner to excite serious apprehensions, not only for the progress of the surveys, but the safety of the Deputies.

HON. J. BUTTERFIELD

*Commissioner of
General Land Office
Washington, D. C.*

I am very respectfully

Your Obt. Serv't.

C. H. BOOTH
Surveyor General.

The original records of the early surveys contain many volumes of interesting historical material. For this volume the editors selected those matters which aid in the understanding of the early surveys and as a help to their present day restoration and preservation by surveyors.

