

THE CASE AGAINST RESTORING CORNERS FROM TOPOGRAPHIC CALLS

From "General Instructions" issued by the Surveyor General of Wisconsin and Iowa in 1851:

Page 10 - "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 chain men pass each other, the pins must be, in every instance, counted by each of them." (Emphasis added)

From "General Instructions to Deputy Surveyors" issued by the Surveyor General of Ohio, Indiana, and Michigan in 1850:

Page 17 - "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 recol-

lection of the distances to notable objects on the line, and renders a mis-
tally almost impossible." (Emphasis added)

The instructions for chaining in the 1850 "General Instructions to Deputy Surveyors," issued by the Surveyor General of Ohio, Indiana, and Michigan are the earliest we have that use the particular phrasing about "recollection". With only minor modifications, this paragraph appears in all manuals issued by the Commissioner until the 1902 manual, which discontinued it:

1851 Oregon manual	Page 8
1855 manual	" 3
1871 "	" 8 and 9
1881 "	" 20
1890 "	" 19 and 20
1894 "	" 20 and 21

NOTATION OF TOPOGRAPHICAL CALLS ABOUT THE TURN OF THE CENTURY

Thomas A. Tillman

March 17, 1972

I worked as a field assistant on General Land Office survey parties in Oregon during six field seasons from 1936 through 1941. The chief of party for whom I worked in all of those seasons was George F. Rigby, who was in his fifties when I was first hired. Mr. Rigby retired about 1945. He returned briefly to assist in developing the Missouri Basin survey program. From 1948 into the fifties I again spent a lot of time in Mr. Rigby's company. Although retired, he came to the office daily to copy the field notes of surveys for the public and for county surveyors.

During the office season, usually four or five months a year in winter, he made one of a group of surveyors - Norman D. Price, Otis O. Gould, Marvin T. Lytle, Theodore VanderMeer, and myself - who always lunched together. The conversation usually dealt with surveying and surveying problems. Throughout the years, in tent camps, around campfires, and over lunch in the field and office, I listened to many reminiscences by Mr. Rigby. I heard him tell the following anecdote half a dozen times.

Rigby began as a survey assistant with his brother-in-law sometime about the turn of the century. Afterward, he went to work for another contract surveyor. While chaining for his brother-in-law, he had carried a small composition-type notebook in his hip picket and noted down topographic items. On his new job he continued the practice. At the end of the first day the deputy surveyor called the chainmen to his tent and asked for the day's field notes. The other chainman stood and recited the topography from memory for the entire day. The survey was in the Dakotas where the surveys covered a big mileage each day. Nevertheless, Rigby said that the chainman's recollection was not bad. After he had finished reciting, the surveyor asked Rigby if he agreed with the calls. Rigby pulled out his notebook and commenced reading. The surveyor was amazed. He told Rigby that in all his years of surveying this was the first time a chainman of his had made written notes of the topography.

This must have been before, or not long after, the issuance of the 1902 surveying manual. The "process of chaining" described in all previous manuals (1855 to 1894) was stated in the text to be a help in the recollection of the distance to objects on line. I doubt if Mr. Rigby knew of this reference in the old manuals until later. When I spoke dispa-

gingly of such a way of making notes, Rigby said that many of the survey assistants in that era could not read or write. He thought this might account for the practice.

REMINISCENCES OF WILLIAM. R. BANDY

Helena, Montana

May 25, 1972

From June 1st 1905 to July 1906 I worked as a field assistant for Samuel W. Brunt and Arthur H. Brunt contract surveyors for the U. S. General Land Office. For the first month I was cornerman, marking and setting stone corner monuments in the Big Horn Basin, in northern Wyoming. I was working under W. W. Utterback.

Starting July 1st 1905, I was chainman for the same outfit under a Mr. Gratzenberg, transitman for the Brunts. While chaining I was teamed up with Arthur W. Brunt. I was the leadoff man having the odd numbered talleys. With reference to the manner of reporting the items of topography encountered along the section lines, I will say we chainmen had no note books in 1905 and 1906. We kept track of the distances by our pins, sticking one pin for every full chain reached. On steep hillsides where we could not level a whole chain we would make a mark and say mark 25, or whatever it was, and leave a pin when 100 links was reached. All distances were true horizontal distances. Distances to line trees or other definite points along the lines were accurately measured to the nearest link, and reported to the transitman who kept a detailed record. Both chainmen paid particular attention to distances, and checked with each other when reporting to the transitmen from time to time. We fully realized the accuracy of

the map to be made from our record depended upon us, to that extent. We made it a point to report intermediate distances at the first opportunity. The party chiefs prepared their sketch plats of evenings, Sundays and rainy days. If a creek crossing appeared to be missing, the chainmen would be called upon to try to supply the missing data from memory. I would not recommend restoring missing corners from items mentioned in the chainmen's notes except in special instances.

As a transitman in 1906 and 1907, or I should say as a U. S. Deputy Surveyor, I made notations in my field note book as I walked the section lines, of streams, ridges, fences or other items of topography and filled in the distances when the chainman found time to report. If they had missed something, we filled it in the best we could, while fresh in our memory and on the ground.

EXCERPT FROM DRAFT OF 1972 MANUAL

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5-15. A line tree or a definite connection to readily identified natural objects or improvements may fix a point of the original survey in latitude or departure in the absence of an original monument. The mean position of a blazed line, when identified as the original line, may help to fix a meridional line for departure, or a latitudinal line for latitude. Such blazed lines must be carefully checked, because corrections may have been made before final acceptance of the old survey or more than one line may have been blazed.

5-16. The proper use of topographic calls of the original field notes may assist in recovering the locus of the original survey. Such

evidence may merely disprove other questionable features, or it may be a valuable guide to the immediate vicinity of a line or corner. At best, it may fix the position of a line or corner beyond reasonable doubt.

Allowance should be made for ordinary discrepancies in the calls relating to items of topography. Such evidence should be considered more particularly in the aggregate; when it is found to be corroborative, an average may be secured to control the final adjustment. This will be governed largely by the evidences nearest the particular corner in question, giving the greatest weight to those features that agree most closely with the record, and to such items as afford definite connection.

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A careful analysis should be made by the surveyor before using topographic calls to fix an original corner point. Indiscriminate use will lead to problems and disputes where two or more interpretations are possible. Close attention should be given to the manner in which the original survey was made. Instructions for chaining in the earlier manuals indicate that memory was an important factor in recording distances to items of topography. Early field notes often appear to have shown distances only to the nearest chain or even a wider approximation.

In comparing distances returned in the original field notes with those returned in the resurveys, gross differences appear in a significant number of instances. In some cases the original surveyor apparently surveyed a line in one direction, but then reversed the direction in his record without making corresponding changes in distances

to items of topography. These facts have sometimes caused distrust and virtual avoidance of the use of topography in corner restoration where proper application might be extremely helpful. Misapplication usually may be avoided by applying the following tests:

(1) The determination should result in a definite locus within a small area.

(2) The evidence should not be susceptible of more than one reasonable interpretation.

(3) The corner locus should not be contradicted by evidence of a higher class or by other topographic notes.

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The determination of the original corner point from even fragmentary evidence of the original accessories, generally substantiated by the original topographic calls, is much stronger than determination from topographic calls alone. In questionable cases it is better practice, in the absence of other collateral evidence, to turn to the suitable means of proportionate measurement.

EXCERPT FROM J. M. BEARD (ON REHEARING)

52 I. D. 451

Decided July 25, 1928

Beginning on Page 456

It should be remembered that the position of items of topography in the interior of sections, as shown upon the plats of the public-

lands surveys, have been in the past and are in surveys executed by the cadastral engineering service at the present time, almost invariably based upon estimates by the surveyor, rather than upon actual measurements thereto. It is ordinarily only the distances at which section lines intersect various items of topography that are actually measured on the ground. The platted position of topography in the interior of sections therefore depends entirely upon the individual skill and ability of the surveyor in estimating directions and distances, and at best represents only an approximation of the actual position of the topography.

The weight to be given an item of topography noted in the field notes of an original survey, and shown upon the plat thereof, should be commensurate with the importance attached thereto in the execution of such original survey. The survey of the north half of T. 2 N., R. 11 W., S. B. M., by W. H. Norway in 1875 was executed under the provisions of the Manual of Surveying Instructions for 1855, which by the act of May 30, 1862 (12 Stat. 409), "shall be taken and deemed a part of every contract for surveying the public lands of the United States."

On page 3, under Process of Chaining, the Manual of 1855 provides:

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 mistake almost impossible.

And under "Of Field Books," on page 15, it is provided:

The field notes afford the elements from which the plats and calculations in relation to the public surveys are made. They are the source 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, as far as possible, a full and complete topographical description of the country surveyed, as to every matter of useful information, or likely to gratify public curiosity.

Under the circumstances there appears little justification for counsel's contention that items of topography, the positions of which in the interior of sections were based solely upon an estimate or guess on the part of the surveyor, and the record distances to which on the section lines were dependent upon the "recollection of the chainmen," and which were noted as "matters of useful information or likely to

gratify public curiosity," should thereafter be accorded the dignity of natural monuments to which both courses and distances must give way.

No such importance has been attached to items of topography by the General Land Office, the department, or the Federal courts. In Galt et al. v. Willingham et al. (300 Fed. 761) the United States District Court for the Southern District of Florida held (syllabus):

A section corner as fixed by a Government surveyor being more important, and one in which he would ordinarily take more care, will prevail over minor conflicting points in the lines as fixed by him.