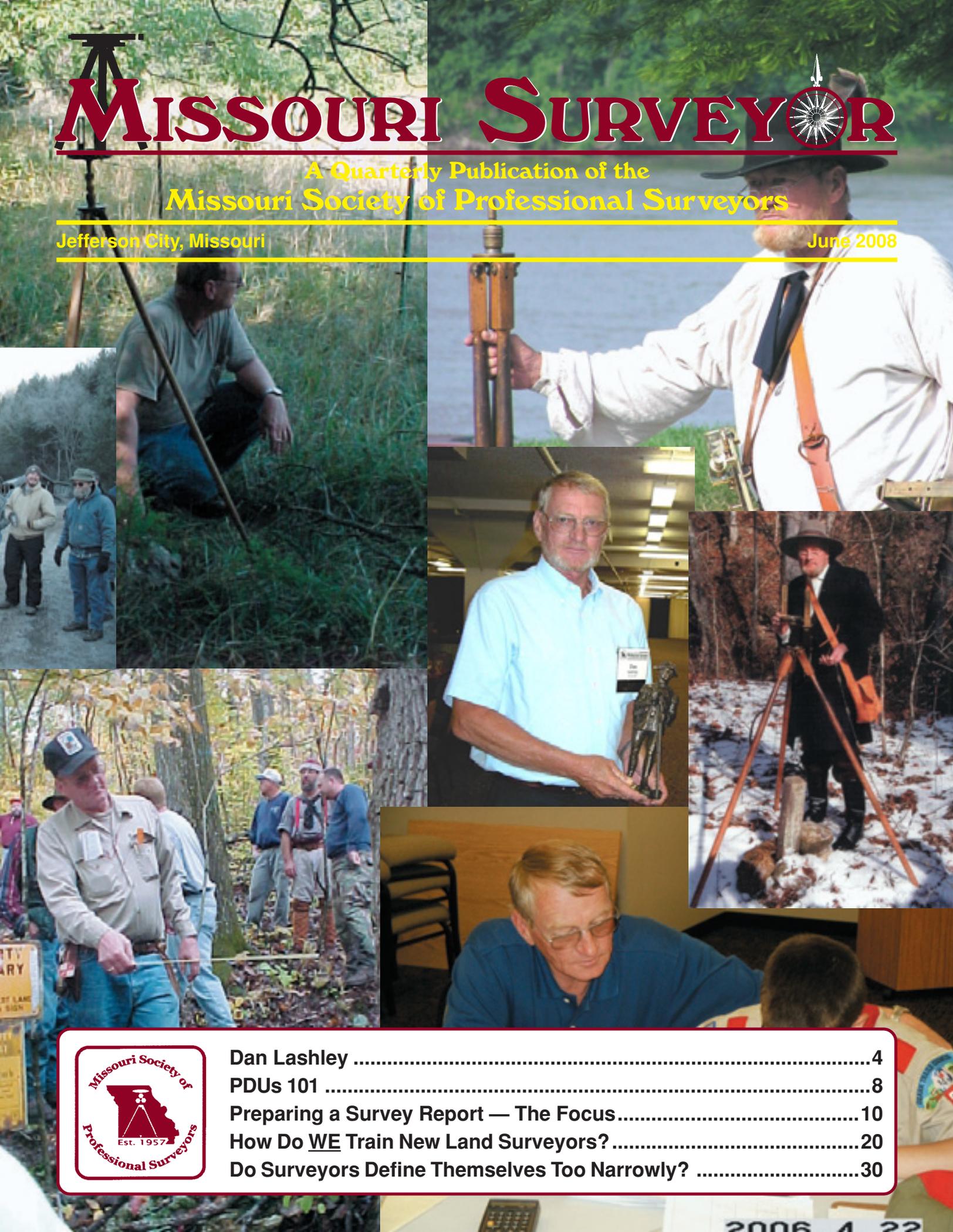


MISSOURI SURVEYOR

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri

June 2008



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CALENDAR OF EVENTS

2008-2009

July 11-12, 2008

Board Meeting and Minimum Standards Workshop
Lodge of Four Seasons
Lake Ozark, MO

October 16-18, 2008

51st Annual Meeting and Convention — Joint Conference with Kansas Society of Land Surveyors & Oklahoma Society of Land Surveyors
University Plaza Hotel
Springfield, MO

December 6, 2008

Board Meeting, MSPS Office
Jefferson City, MO

May 7-9, 2009

Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

October 8-10, 2009

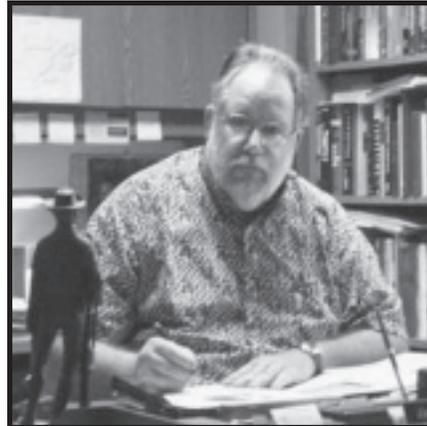
52nd Annual Conference
St. Louis Airport Marriott
St. Louis, MO

John Alan Holleck, Editor



Notes from the Editor's Desk

by John Holleck



It is May Day 2008 and Sandy has just left after we put the June issue of the *Missouri Surveyor* together. For those of you who are interested, I have been home for two and a half weeks and am getting around pretty well after my sojourn in Centerpoint Hospital, Kindred Hospital, Woodbine Skilled Nursing Home and a final sixteen days at North Kansas City Hospital-Acute rehab (27 November 2007 to 14 April 2008). I had to learn how to walk all over again as my muscles atrophied during the six weeks of mostly intensive care after emergency colon surgery. Right now, I am on 2 liters of oxygen and using a walker to get around in the house and outside when my PT sees fit. The

Visiting Nurses Association provides my therapists (physical and occupational), a bathing assistant and a wound care nurse who specializes in ostomey care. I have managed to lose over one hundred pounds but I would not recommend the method employed.

Well, that is enough about my travails, which luckily I will never know the whole story about. I am just glad that my good friend Kandice Jenkins found me and took charge of my life until I could handle it myself. You just never know how good your friends are until a disaster occurs. Sandy and I dedicated the early portion of the newsletter to a remembrance of our good friend and colleague, Dan Lashley, whose untimely passing has affected us all. Mike Flowers offers an obituary for Dan followed by a thank you from Dan's wife Pat. Added to these are a couple of other notes about Dan as well as information about the new Lashley Scholarship. Next up is Michael D. Gray, Chairman of the Land Survey Division, with "PDU's 101." A simple primer on the Professional Development Units we all must accumulate—a pretty lenient requirement compared to various other states. Next is a significant contribution by Knud Hermansen entitled "Preparing a Survey Report—The Focus." This is the first of a multipart series that Knud is writing for Marc Cheves and the *American Surveyor*. He is followed by a personal memoir from Dick Elgin about his father finding a living witness tree from an 1816 survey. Brian Dietz, a Maryland Land Surveyor, discusses job duties that no longer exist due to modern technology.

In the second half of the *Missouri Surveyor*, Gary John Bockman offers his own insight into "How do WE train new land surveyors?" Most of which is quite thought provoking. Russell E. Kastle, a North Dakota surveyor, describes the life of a rather colorful Deputy U. S. Surveyor, General Theodore Harvey Bennett. His surveying career was put on hold during the War Between the States. Karen Zollman, a Washington state LSIT, gives us some perspective on GIS/LIS, which most of us would agree with her, "Do Surveyors Define Themselves Too Narrowly?" Next in order is a book review from my good friend Wilhelm Schmidt, Measuring America, by Andro Linklater. If you have a chance, you ought to read this book. It is not very long and you will find Linklater's British perspective quaint. The final two articles for this issue are also historically oriented, "Report to the Surveyor General of the United States of America" from James Coan Sr., a Washington state surveyor. It is a commentary from a Deputy U. S. surveyor (James B. Preston) responsible for surveying along the Willamette Meridian. Barbara Belyea, in "Some Thoughts on the Writing of Dark Storm Moving West" offers the reader some insight into the settlement of what we euphemistically refer to as the West or west of the Mississippi River.

It is nice to be back and I would like to thank our President Don Martin for adding the editing of the March issue to his already overworked shoulders. Many thanks, Don. You all have my e-mail address, so if you feel like talking, I am always available. 

THE MISSOURI SURVEYOR

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The *Missouri Surveyor* is published quarterly by the Missouri Society of Professional Engineers, to inform land surveyors and related professions, government officials, educational institutions, contractors, suppliers and associated businesses and industries about land surveying affairs. Articles or opinions appearing in this publication do not necessarily reflect the viewpoints of MSPS but are published as a service to its members, the general public and for the betterment of the surveying profession. No responsibility is assumed for errors, misquotes or deletions as to its contents. Articles may be reprinted with due credit given.

President's Message



by Donald Martin

The spring that is now past was not only marked by natural sights and sounds of the season, it was marked by the sights and sounds of MSPS members *leading the way* in matters associated to the practice and profession of surveying. Expected was the annual trek to Jefferson City for the "Capitol Visitation" by members of the Legislative Committee. This gathering was marked by direct personal contact of MSPS members with the legislative offices of our elected officials as well as an in-person visit during the Board of Directors meeting from Senator Lager and Representative Sutherland. This was a good and successful event. Another "sight" of the

season was Governor Blunt's issuance of the Surveyor's Week commemoration and proclamation. As has been our tradition MSPS members met with the Governor for the signing and photographs.

Not so traditional in the past season has been the means used by members to undertake the development of a legislative agenda. While debate and dialog are common in the formulation of political goals and activities, the robust email-based exchange of ideas is new. Never before have members of our organization relied so greatly on remote media as the conduit for debate and communication. It has been a marvel to watch as issues have unfolded and motivated, concerned members turn to the give and take of opinions. Particular points of view aside, these "blogs" reveal a membership that is brilliant in its capacity to research, reason and write. Whether the topic is educational requirements for surveyors, the application of GIS thematic mapping of the cadastre or the debate on mandatory recording, our members are sincere in their desire to do what is best for the profession. But have we chosen the best venue for this exchange of ideas? While email and blog do facilitate connections that reach across barriers of distance and time, something is lost. It is like two parties conducting a debate not by meeting, not by dialog, but by individually posting bills and pamphlets on a sign post at different times. It does provide a means of exchange, and there is an opportunity for many passing by to read the opinions. But there never is an actual engagement to dialog between the parties. Instead of a dialog derived solution to differing ideas, there is only a reactive continuum of review, response and rationalization. I suggest that the posting of ideas has fulfilled a purpose, but has not defined our legislative goals. The purpose has been to provide opportunities to brainstorm, cast notions before interested parties and let them pick and ponder what shall be significant. Now is the time to move from this purpose to planning. The legislative agenda that is debated today is that which we shall pursue in the coming legislative season and beyond. We have shared a virtual carnival of ideas, but let's now move from carnival to commitment - commitment to setting our course for political goals and endeavors in the coming legislative sessions.

Before closing this message I wish to reflect for a moment on the passing of our brother surveyor and former MSPS President, Dan Lashley. I had the honor to attend his homegoing where family, friends and fellow surveyors gathered to say good-bye to this wonderful man. Reflecting as we do during such events, it was lovely to hear so many in our community describe Dan and pay homage to the impact he has had on Missouri surveying. This man has left us a legacy by sharing his cadastral mastery, and where ever surveyors subdivide the public land system in Missouri, Dan Lashley will be there - *leading the way.* 🇺🇸

Cover photos:
Memories of Dan Lashley
provided by Mike Flowers and Bob Shotts.

Dan Lashley: May 27, 1947 - March 15, 2008

by J. Michael Flowers, State Land Surveyor



Orvis Daniel “Dan” Lashley died at his home on March 15, 2008 after a long courageous battle against cancer. Dan was a section chief of the Cadastral unit of the Land Survey Program at the time of his death. He will be remembered as a mentor to many and a professional land surveyor who made a difference in the surveying field throughout his career that had it’s beginning 1967.

Born the youngest child of John Samuel and Naomi May Lashley in Belleview, Missouri, Dan grew up on the family farm with four brothers and one sister. He graduated from the Arcadia Valley High School and attended the University of Missouri-Rolla and the Mineral Area Junior College. Dan’s first job in surveying was with the St. Joe Lead Company. He became the head surveyor for Mine #28 and surveyed both underground and on the surface. He became licensed in 1973 as RLS #1538. Dan started and was the sole owner of his own company for several years, offering

boundary and construction survey services with an office in Potosi, Missouri.

The majority of Dan’s career was with the Department of Natural Resources’ Land Survey Program in Rolla. He was hired as a project surveyor in 1979 and spent the next 29 years in the Cadastral and Geodetic Sections of the program. As a project surveyor, he accomplished a number of important surveys around the state. Dependent retracement surveys were his specialty and he surveyed in hundreds of townships, restoring and reestablishing over 1,010 corners of the Public Land Survey System. High-profile and sensitive surveys never scared him away. He completed surveys that now define the statutory boundaries between Pike and Ralls Counties, Ripley and Oregon Counties, Jefferson and St. Francois Counties and the common boundary between Ste. Genevieve and St. Francois Counties. While working in the Geodetic Section, he embraced the new technology of using GPS for densifying 1st and 2nd order horizontal control in several counties.

In 1995, Dan was promoted to the head of the Cadastral Section and spent the last 13 years supervising PLS and technical staff, contracting with county commissions, county surveyors and private sector survey companies to restore thousands of corners and the surveys of state and county boundaries.

Dan’s service to MARLS/MSPS includes serving as President, Vice-President, Secretary-Treasurer and Board Director. He was a long-standing member of the Standards Committee, Legislative Committee, Education Committee and County Surveyor Committee. In 2002, he received the Robert E. Myers Award and in 2005 received the Surveyor of the Year Award. In Dan’s 25 years as a member, he also presented at workshops and meetings. His service to the Society will be missed.

Dan was a student of history on the Missouri General Land Office. Several years ago he began to share his interest and knowledge of early Missouri surveys by acting out this time period of our history in character. He made numerous presentations to surveyors and local groups as a United States Deputy Surveyor. His presentations were historically accurate, entertaining and it will be difficult to replace him.

Dan Lashley: May 27, 1947 - March 15, 2008 (continued)

Dan had a private side and was somewhat of a country boy. With his rural roots, he liked old John Deere tractors, raising a garden, fishing and hunting. He was always generous with the vegetables and the crops he raised. He will be missed by his wife, Pat, and children

Sharon, David, Linda and Dana, along with his nine grandchildren. He had a productive life and will be remembered by many for his good nature, humor, wit and all he gave to the surveying profession. Farewell, Dan, may God rest your soul. 🇺🇸

Thank You

Dan said many times how fortunate he was to have a job doing what he loved and working with people whom he respected. One of his greatest joys was sharing his knowledge of surveying and the history of surveying with anyone who would listen. Young and old, those with technical training and others, like me, who didn't know the difference between cadastral and GLO, couldn't help but catch Dan's enthusiasm for his subject. We all came away with a better understanding of the contributions made by the surveying profession and by you, the professional surveyors.

The land surveyors and technicians of Missouri were "family" to Dan. Words cannot adequately express my appreciation for all the cards, calls, prayers, gifts, and time you spent visiting, cutting and hauling wood, building fence and barn and lending support, as so many of you did for us during his year-long fight against cancer.

Please know how much each act of kindness meant to Dan, and to me. Thank you so much for being there for him when he needed you.

Sincerely,

Pat Lashley

MISSOURI ASSOCIATION OF COUNTY SURVEYORS SUMMER WORKSHOP

July 25 and 26 ▲ Montauk State Park ▲ Salem, Missouri

Float Trip and Fishing Tournament on 7/25;
and on 7/26 MACS Meeting, various workshops from 10 to 3 p.m.
including 2 hours of minimum standards.

To register call Mary Frye or Paul Dopuch – 573-486-2879 or email jclsl@centurytel.net

Dan Lashley, Land Surveyor

Gale Conservation Access, Camden County, 11 Feb 2003

Leon McGee, LS had recovered what he thought to be accessories of a GLO corner. He did what many have done for so long when they were not confident in their own analysis of evidence — he called on the Master of the Cadastre, Surveyor Lashley.



Here is Dan on that cool, sunny break in the middle of winter. On this Ozark hillside in the 21st century, Dan used a compass, a tape marked in links, and his own good judgment to recover the intentions and works of his survey predecessors in the first half of the 19th century.

Dan concluded his traverse the other day. It was a good effort that was just a bit shorter than we would have liked. With a great number of segments, Dan had to plot his course many times, and clear the lines to take their measure. And along the way, when he may have wandered out on a long side-loop that left him unsure of where he was, he did what surveyors do. He looked to the heavens. You see, surveyors know that if you are lost on this world, if you are unsure of your place on this world, you can resolve your position by looking beyond this world. You look for celestial and heavenly guidance. Well, the loop is complete now; closure was made this weekend past. The precision? Well, for this one-in-a-million surveyor, it was 1:1,000,000. Not perfect, but it was getting awfully close. You traversed a good loop Dan. 🇺🇸

Dan Lashley's Scholarship

In this issue, Dan Lashley's obituary was published for a statewide notification to all Missouri Society of Professional Surveyors (MSPS) members. Prior to Dan's death, the staff of the Land Survey Program met with Dan to discuss his pending retirement on April 1, 2008. Because he was not able to participate with a retirement dinner and sharing of his 28 years of service to the Land Survey Program, we elected to collect monetary gifts for a scholarship. He was very enthusiastic about this and wanted the scholarship to be given to a second year adult student of the Rolla Technical Institute.

To date, we have received almost \$2,500 in donations from staff in the Department of Natural Resources' Land Survey Program, Division of Geology and Land Survey and Water Resources Center along with family and friends, private land surveyors and the Missouri Association of County Surveyors. I have relayed this to Pat Lashley and she is very pleased with the generosity of Dan's friends.

Should you wish to donate to the scholarship fund, Sandy Boeckman has volunteered to accept the donations and keep the appropriate records. By donating through MSPS, your donation is tax deductible and should be specifically designated in Dan Lashley's name. Should you have any questions, you may contact Pat Lashley at (573) 341-9949 or J. Michael Flowers at (573) 368-2302.



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PDU's 101

by Michael D. Gray, PLS, Chairman, Land Survey Division

I was asked to write a short article on the PDU requirements for renewal as a reminder for the membership. After our last PDU audit I think it is probably a good idea. The following is my understanding of the board rules covering PDU requirements for license renewal.

As required by 20 CSR 2030-8.020 every licensed surveyor will be required to complete a minimum of 20 PDUs for a two year renewal in the 2 year period immediately preceding renewal. Of these 20 hours not more than 12 hours can be non personal contact hours. Non personal contact hours are correspondence courses, internet or email courses. So in every two year renewal period at least 8 hours of PDUs must be in the presence of the instructor.

If you were licensed in an even numbered year you will renew in an even numbered year and likewise with the odd years. If you are newly licensed in January or June of this year you may be required to renew at the end of the year for a two year period to stay on the even interval. That will require you to obtain an average of 1 PDU per month for each month of licensure. If you obtain more than the 20 PDUs required for renewal, you may carryover up to 10 PDUs for the next renewal period, assuming they meet the requirements. The Licensee is required to maintain a log and evidence of the PDUs obtained for a period of 4 years. If you carryover PDUs and are audited you will be required to show satisfactory information for the carryover, thus the 4 year log.

Effective with the December 31, 2009 renewal, licensees will also be required to have obtained **in the previous 4 years**, 4 PDUs in minimum standards. Minimum standards being defined as 20 CSR 2030 chapters 16, 17, and 19 which are Missouri Minimum Standards for property boundary surveys, United States Public Land Survey Corners and Standards for Surveyors Real Property Reports respectively. While this rule went into effect January 1, 2006, because the requirement could not be retroactive, the licensing Board agreed that it would not require the four PDUs in Minimum Standards as a condition for renewal until December 31, 2009, which is a full four years from the effective date of January 1, 2006.

Be careful selecting correspondence and internet courses. The Survey Division reviews all requests made for preapproval, but does not always approve the course or approve the amount requested. The PDU activity must be relevant to the practice of land surveying and may include technical, ethical or business related content. To view a list of preapproved courses go to the board web site click on continuing education then land surveyors to find the list.

There are some exceptions and variations to this rule including Military Service and use of college credit hours for PDUs, but short was the request. Should any of you have any questions or this has raised new questions, see you at the annual minimum standards work shop in July. 

ANNOUNCEMENT

30th Annual Land Surveyor's Review Course

Cosponsors:

**Missouri Society of Professional Surveyors
Missouri University of Science and Technology**

August 19 through 22, 2008

**Campus of Missouri University of Science and Technology
Rolla, Missouri**

Topics: Preparation for the NCEES exam, Legal Principles, Resurveys on the U.S. Public Land Survey System, Error Analysis, Route Surveys, Celestial Observations, GPS Surveys, Instrumentation, Control Surveys, Photogrammetry, State Plane Coordinate Systems. Course includes evening problem session and practice NCEES-like exam and exam review.

Credit: Missouri Board preapproved for 3.6 CEU's or 36 PDU's.

Instructors: Dr. Richard L. Elgin; Dr. Joseph Paiva; Norman Brown.

Fee: \$795.00. Does not include room or board. Includes extensive notes.

Contacts: Administrative: Sue Turner, Engineering Continuing Education, Missouri University of Science and Technology, Rolla, Missouri 65409. 573-341-4132. Technical: Dr. Dick Elgin, 310 East 6th Street, Rolla, Missouri 65401. 573-364-6362.

MO Colleges/Universities Where Land Surveying Coursework is Available

The following list will be updated quarterly as new information becomes available.

Longview Community College - Lee's Summit, Missouri

Contact: Ken Eichman
Longview Community College
Science and Technology Bldg.
500 Longview Road
Lee's Summit, Missouri 64081
816-672-2283

Florissant Community College - St. Louis, Missouri

Contact: Ashok Agrawal
Florissant Community College
3400 Pershall Road
St. Louis, Missouri 63135
314-595-4535

Missouri State University - Springfield, Missouri

Contact: Thomas G. Plymate
Southwest Missouri State University
901 So. National
Springfield, Missouri 65804-0089
417-836-5800

Mineral Area College - Flat River, Missouri

Contact: Jim Hrouda
Mineral Area College
P.O. Box 1000
Park Hills, Missouri 63601
573-431-4593, ext. 309

Missouri Western State University - St. Joseph, Missouri

Contact: Department of Engineering Technology
Missouri Western State University
Wilson Hall 193
4525 Downs Drive
St. Joseph, MO 64507
816-271-5820
www.missouriwestern.edu/EngTech/

St. Louis Community College at Florissant Valley

Contact: Norman R. Brown
St. Louis Community College at Florissant Valley
3400 Pershall Road
St. Louis, Missouri 63135-1499
314-595-4306

Three Rivers Community College - Poplar Bluff, Missouri

Contact: Larry Kimbrow, Associate Dean
Ron Rains, Faculty
Three Rivers Community College
2080 Three Rivers Blvd.
Poplar Bluff, Missouri 63901
573-840-9689 or -9683
877-TRY-TRCC (toll free)

University of Missouri-Rolla - Rolla, Missouri

Contact: Distance & Continuing Education
University of Missouri-Rolla
conted@umr.edu
103 ME Annex
Rolla, Missouri 65409-1560
573-341-4132

University of Missouri-Rolla - Rolla, Missouri

Contact: Surveying Courses in Civil Engineering
Dr. Bill Schonberg, Chairman
University of Missouri-Rolla
Dept. of Civil Eng.
civil@umr.edu
1870 Miner Circle
Rolla, Missouri 65409-0030
573-341-4461

University of Missouri-Columbia, Missouri

Contact: Lois Tolson
University of Missouri-Columbia
W1025 Engineering Bldg. East
Columbia, Missouri 65211
573-882-4377

Missouri Southern State College - Joplin, Missouri

Contact: Dr. Tia Strait
School of Technology
3950 E. Newman Rd.
Joplin, MO 64801-1595
1-800-606-MSSC or 1-417-782-MSSC

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Preparing a Survey Report – The Focus

by Knud E. Hermansen¹

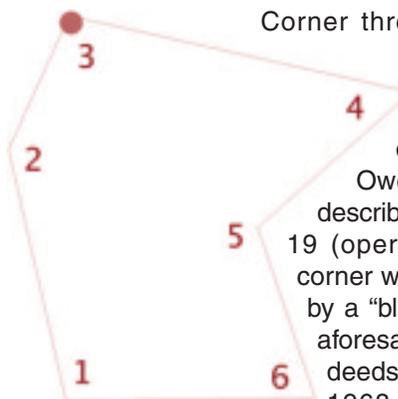
Editor's Note: Several years ago, I became a believer in the use of survey reports. I was working on some complicated raparian surveys. In several cases, a drawing and a description did not explain the thought process from which I drew my conclusions. The following article, "Preparing a Survey Report — The Focus" by Knud E. Hermansen utilizes five examples which explains an important aspect of our surveys that we may not be using to its fullest. Enjoy the words of one of my favorite surveyors.

Some states require survey reports. All surveyors should consider preparing survey reports at the culmination of a retracement survey. Unfortunately, the preparation of a survey report is not covered in most academic programs and is seldom adequately explained in the apprenticeship period prior to professional licensure. Accordingly, many surveyors seek guidance when preparing a survey report.

There is no mandatory format for survey reports. Contents often vary depending on the whim of the surveyor. Most surveyors agree that the survey report should provide an explanation or rationale for the surveyor's opinion. (The surveyor's opinion is summarized on the plat and narrated in the description.) Accordingly the survey report should, at the very least, provide a clear, complete, and concise basis for the surveyor's opinion on the location of the corners and boundaries that are shown on the plat.

The following example format incorporates five parts. First, it summarizes historical boundary information from the client's and adjoiner's chain of records. Second, it provides a summary of information discovered in the field. Third, it provides both rational and reasonable arguments leading to a logical basis for an opinion. Fourth, it states the rules of construction that control. Finally, it states the present monumentation of the corner.

Consider the following example where monumentation that appears to be the original monumentation was found:



Corner three is the northwesterly corner of the client's parcel. The corner was created during a division of property by Owen King in 1903 and first described in deed book 343, page 19 (operative conveyance). The corner was marked and described by a "blazed sugar maple" in the aforesaid deed and subsequent deeds in the chain of records. In 1968, the description of the corner monument was changed to be a "maple stump" described in deed book 1832, page 129. Later deeds also

call for a "maple stump," including the present conveyance.

Adjoining records starting in 1912, as first cited in deed book 384, page 321, call for a "sugar" to mark the corner.

A diligent search in the area revealed a badly decomposed 38 inch diameter Sugar Maple stump. A 12 inch hemlock tree with three 45 year old blazes face the sugar maple stump. (The age of the blazes was determined by a boring into the tree.) The hemlock is 9.8 feet from the stump.

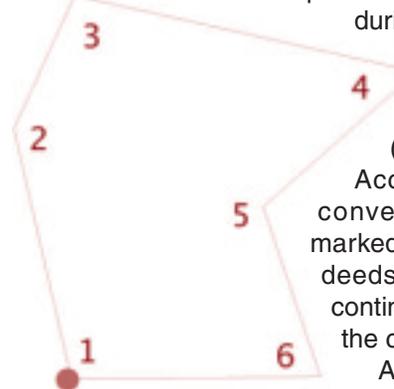
The maple stump marks the corner location. The maple stump is the original maple based on the appearance, size, species, and the apparent age of the stump. The presence of blazes, age of blazes, and orientation of the blazes on the hemlock tree strongly suggest the hemlock is a witness to the maple's location. Finally, there is reasonable correlation between record and retracement measurements from other corners measured to the stump. A reasonable and rational analysis of the information lead to the logical conclusion that the stump is more likely than not the remains of the "blazed sugar maple" cited in the operative deed.

The rules of construction fix the location of the corner at the position of the original monument cited in the operative conveyance (i.e., the maple stump).

A 5/8 inch diameter rod, 3.5 feet long was placed in the middle of the stump. The rod is topped with a yellow, plastic cap containing the surveyor's name and license number.

The following is an example narrative in the survey report where monumentation is found that is not the original monumentation but accepted as marking the corner:

Corner 1: Corner one is the southwesterly corner of the client's parcel. The corner was created



during a division of property by Owen King in 1903 as first described in deed book 343, page 19 (operative conveyance).

According to the operative conveyance, the corner was marked by a "post." Subsequent deeds in the chain of records continue to cite a "post" to mark the corner.

Adjoining records starting in 1912, as found in deed book 384, page 321, call for a "cedar post" to mark the corner.

A diligent search in the area using a metal detector revealed a 1-inch iron pipe buried 0.2 feet under the ground surface. The pipe is surrounded by stones ranging in size from 5 to 10 inches. Rusted remains of a barbed wire fence were

(continued on page 11)

Preparing a Survey Report – The Focus (continued)

discovered on or near the pipe extending toward corner 2 and corner 6. Remains of the fence found in living trees indicate the fence was erected more than 70 years previously.

The westerly neighbor, Julia Smith, who has lived on the neighboring property for 52 years, states the stones were known to mark the common corner all the time she owned the property. She states that her father, who owned the property previous to her ownership, believed the stones marked the corner.

Long standing and uncontested acceptance that an object marks a corner suggests that the object does in fact mark the original location of the corner. Furthermore, given the close proximity of the dates when the post was placed and when the fence was erected, it is a logical and reasonable assumption that the builder(s) of the fence saw the post and built the fence to conform to the location of the post. Therefore the fence serves as evidence of where the post formerly stood. There is reasonable correlation between the record measurements and retracement measurements from other corners to the stones.

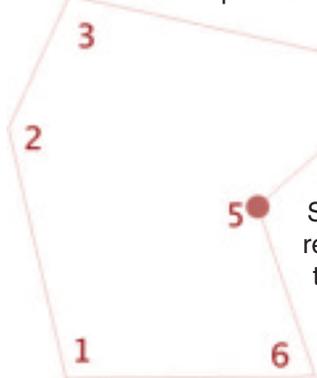
Based on the long standing acceptance of the stones as the corner, close conformity to long standing possession lines, and reasonable correlation between record and retracement measurements from other corners make it more likely than not that the pipe and stones are in the former position of the “post” or “cedar post.”

The rules of construction fix the location of the corner to be the position of the original monument (“post”) cited in the operative conveyance.

A 5/8 inch diameter rod, 3.5 feet long was placed in the middle of the pipe and stones. The rod is topped with a cap containing the surveyor’s name and license number.

Finally, consider the following example where no reliable monumentation is found and the corner location is fixed by other methods:

Corner 5: Corner five is along the easterly side of the client’s parcel. It was created during a division of property by Ebenezer Liam in 1878 as described in deed book 103, page 78 (operative conveyance).



The description calls for a “post” in the aforesaid deed. Subsequent deeds in the chain of records continue to call for a post to mark the corner.

Adjoining records starting in 1881, as found in deed book 103, page 102, also call for a

“post” to mark the corner.

A diligent search in the area failed to reveal the remains of

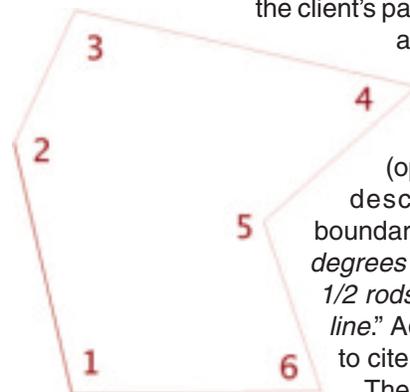
a post or any indicia of possession that would reasonably conform to the record boundary. A 7/8 inch diameter reinforcing rod protruding 1.4 feet above ground level was found in the area. The reinforcing rod appears to be recently set. The person who set the rod is unknown.

The location of the post was reestablished using record measurements measured from undisputed corners after correction for magnetic change. The former position of the post is established S17° 20’ 30”E 12.32 feet from the rod found.

A 5/8 inch diameter rod, 3.5 feet long was used to mark the corner. The rod is topped with a yellow, plastic cap containing the surveyor’s name and license number.

Boundaries can be similarly dealt with in the survey report. Consider the example where a blazed line is the best evidence of the record boundary as the following example shows:

Boundary 3-4: Boundary 3-4 is along the northerly side of the client’s parcel. It was created during



a division of property by William Long in 1912 as first described in deed book 408, page 523 (operative conveyance). The description calls for the boundary to be “South 77 & 1/2 degrees East a distance of 16 and 1/2 rods along a wall and blazed line.” Adjoining records continue to cite the aforesaid course.

The client’s records starting in 1915, as found in deed book 410, page 92 cite the boundary to be “North 76° West, 16 rods...”

A diligent search in the area revealed the remains of a stone wall beginning and extending 120 feet from corner 3 toward corner 4. Two maple trees (30 inch diameter and 25 inch diameter) with blazes were found between corner 3 and corner 4.

As a result of the call for “along a wall and blazed line,” the boundary follows the wall and those trees with blazes. The adjoining boundary calls for a straight line and causes minor gaps and overlaps where the wall and blazes depart from a straight line.

The departure of the wall and blazes from a straight line between corners 3 and 4 are less than two feet.

The straight-line retracement measurement for boundary 3-4 is S65° 12’ 32”E, 266.57 feet. The retracement direction is based on true north. The record directions are based on magnetic north. The declination is approximately 11°E.

Given the lack of skill and formal training in many early

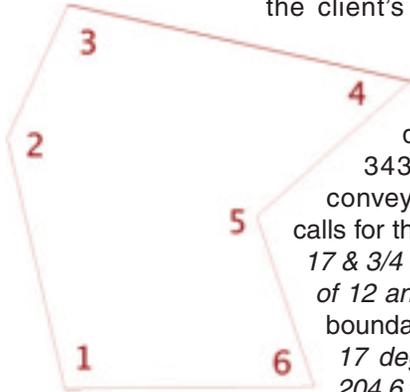
(continued on page 12)

Preparing a Survey Report – The Focus (continued)

surveyors, unsophisticated equipment employed by the surveyor, lack of precision, and change in magnetic north over time, there is reasonable correlation between record and retracement measurements.

The next example explains a boundary that is not governed by other calls or lines of occupation:

Boundary 1-2: Boundary 1-2 is along the westerly side of the client's parcel. It was created during a division of property by Owen King in 1903 as first described in deed book 343, page 19 (operative conveyance). The description calls for the boundary to be "North 17 & 3/4 degrees West a distance of 12 and 1/2 rods." In 1968, the boundary was cited to be "North 17 degrees 15 minutes West, 204.6 feet" as described in deed book 1832, page 129. Subsequent deeds cite the last mentioned course.



Adjoining records starting in 1912, as first cited in deed book 384, page 321, call for "North 18° West, 12 rods."

The boundary was fixed to be a straight line between the corner monuments.

The remains of a fence begin at each corner and meander on or near the record boundary. The fence departs from the boundary by as much as 2.6 feet as measured perpendicular

from a straight line between corners 1 and 2. (See discussion on occupation lines in this report.)

The retracement measurement between corner 1 and corner 2 is North 6° 56' 33" West, 204.83 feet. The retracement direction is based on true north. The record directions are based on magnetic north. The declination is approximately 11°E.

Given the lack of skill and formal training in many early surveyors, unsophisticated equipment employed during the original survey, lack of precision in the measurements, local magnetic attractions, and change in magnetic north over time, there is reasonable correlation between record and retracement measurements.

As the previous examples are meant to illustrate, the report attempts to combine relevant background information, along with field and record information, coupled with reasonable assumptions that can be used to form a logical and rational opinion based on the rules of construction.

Starting with the above examples, a practitioner can modify the language to fit their own style of writing and conform to the facts and information found in the records and at the site. 

(Footnotes)

¹ Knud Hermansen is a professional land surveyor, professional engineer, and attorney at law. He is a professor in the Surveying Engineering Technology program and the Construction Management Technology program at the University of Maine. Knud.Hermansen@umit.maine.edu

Conservation Surveyors are "Certified"

by Donald Martin, PLS

The Missouri Department of Conservation is accustomed to relying on its corp of surveying technicians to be experts in construction site preparation, topographic mapping and boundary surveying. Well now these uniquely skilled team members of the Design & Development Division are not only experts, they are "certified".

In March 2008, eight conservation surveyors culminated a year of training, study and hard work by taking the National Society of Professional Surveyors examination to be Certified Surveying Technicians (CST). When the examination results were in it was revealed that all eight conservation surveyors had successfully passed with flying colors. "This is a much higher pass fail ratio than we had previously. It looks like we were doing something right. I believe the training classes

that [they] held really paid off," said Bob Myers, CST program facilitator and former State Land Surveyor for Missouri.

Bernie Boillot, Steve Branch, Paul Schulte, Tim Stockman, Randy Thomas and Gary Voss of Jefferson City, and Mike Summers and Rick Welch of Salem are the conservation survey technicians that join the ranks of approximately 2,000 CST's nationwide. A rare achievement in our local surveying community, Missouri only has 28 CST's including the conservation surveyors. CST attainment indicates recognition by US Department of Labor and the surveying profession that a person has demonstrated that he or she is qualified to perform surveying tasks at a highly-rated technical level.

(continued on page 26)

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An Interesting Photograph and a Little History and Some Perspective

by Dr. Richard L. Elgin, PLS, PE, Elgin Surveying & Engineering, Inc., Rolla, Missouri

On May 9, 1816, contract GLO surveyor Joseph C. Brown aided by his "chainers or markers" Theo. Denton, Theo. McPheeters, William Daniel, Mitchell Hatton and John Ewing were surveying the Correction Line between T39N and T40N in what was then Missouri Territory and set the Standard Township Corner between Range 6 West and Range 7 West. He set a post and marked a 12" Post Oak at N30°W, 7 links. Subsequently other surveyors visited and used the corner, but in late 1974 Phelps County Surveyor Bob Elgin recovered a stone marking the corner, to include its standing GLO post oak, then 31" and N30°W, 4.4 feet "to center." Through the State Land Survey Authority Bob was paid \$75.00 to place a concrete monument with a brass cap to identify the corner. On Saturday, November 9, 1974, aided by the author, the concrete monument was set, new references taken and the stone it replaced was "buried on west side of monument." The photo shows the late Bob Elgin confirming the bearing of the standing GLO post oak using his compass (mounted on a Jacob Staff) made by George Graves, the talented Winchester, Virginia maker (and successor to Goldsmith Chandlee). The compass would have been made between 1821 and 1850 (after the Correction Line was surveyed). Bob had purchased the compass from an antique dealer in Dent County, Missouri in the late 1960's. Except for a compass by Goldsmith Chandlee, it was his favorite. A visit to the corner in April, 2008 shows that nothing has changed, except that the post oak is now 34". A perpetuation of the 1816 GLO corner position exists, the GLO post oak lives on (in perfect health, it appears), the Graves compass is in the Elgin Collection, Bob Elgin died in 2007...continuing to follow in the footsteps...Dick Elgin. 🇺🇸



The Late Bob Elgin at the Standard Township Corner Between Ranges 6 and 7 West, on the Correction Line between T39N and T40N (1974)

Nominating Committee is seeking nominations for the Board of Directors positions. Board members have a 3-year term and are then nominated for Secretary-treasurer positions if willing and able. For more information contact Shane Terhune at the MSPS office 573-635-9446.

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Advancing technology is at the heart of my business plan. It allows me to compete directly on projects in ways that weren't possible 8 or 10 years ago. It takes a lot of effort to stay on the leading edge and it takes support as well. Hands down, Hayes has the best technical support that I have ever used. They know their equipment and they know their software.

When I need an answer, I need it now. I'm not real interested in excuses, and I don't appreciate the line: 'Johnny is busy right now and maybe he can call you back tomorrow.' If I tell my clients that maybe I can meet their schedule, I'm reasonably certain they will tell me that maybe they can get someone else. Hayes understands that and they

have always given me strait answers to every question I've asked. Sometimes the answer is yes and sometimes the answer is no, but my clients get the truth from me and that's what I get from Hayes.

There will always be logistical issues in surveying. The one thing I haven't learned to do is to be in two places at once, but I am working very hard on learning how to do that. Hayes in Tennessee and me in Florida has never been an issue. The truth of the matter is that with overnight deliveries, the internet, email, FTP access and the telephone we can all do business with just about anyone we want.

I'm a Consulting Surveyor and I wouldn't have it any other way. Things change and my business will change right along with them. The keys are motivation, support and always remembering that the harder we work, the more luck we have."

DANIEL GALBRAITH, PSM, PLS
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The Assistant Roadman

by Brian Dietz, Professional Land Surveyor No. 21080, January 25, 2008

As surveyors we often find ourselves following in the footsteps of the original surveyors. One way to know how the original surveyors conducted themselves and their work is to study from the same books that they studied. For this reason, I decided to collect old surveying books. I have put together a small (by no means complete) collection of books ranging in date from the mid 1800's to the present day. As the times have changed and the methods of measuring have evolved, so too have the textbooks which describe our profession. I have noted that some of the books discuss the composition of the survey party, outlining the positions and duties of the various members. I found one such description so interesting that I wrote this article to share it with my fellow surveyors.

According to *Field Engineering, Theory and Practice of Railway Surveying, Location and Construction*, by William Searls, 4th edition, 1882, the field crew is referred to as a "Corps of Engineers". The field crew is organized as follows: The engineer, assistant engineer, head chainman, rear chainman, axeman or axemen, stakeman, topographer, leveler, roadman, assistant roadman and, "if the survey is to be made with a transit, it is necessary to add a back flagman". (Although the book recommends running the lines with a compass, it does note that the transit is more accurate.) There are 11 people in this particular party dedicated to performing survey work, and in order to carry out their duties they required the support of a teamster and a cook! Tents must be provided for the crew members, but each man is responsible for his own bedding.

Some of these positions no longer exist, having gone the way of the typewriter repairman and the wagon wheel maker.

The job of the stakeman was to prepare, mark and drive the stakes at points indicted by the head chainman. In this sense, "prepare" means: to cut a piece of wood; to fashion it into a shape two inches wide by one inch thick by two feet long, to make it pointed on one end and flat on the other, with two opposite sides faced, suitable to write on with chalk. We take this for granted today. Imagine if you had to make your own stakes on each job!

The job of the axeman was to cut line, clear brush and help the stakeman cut stakes.

I found it both unusual and humorous that the lowest man of the field crew, the roadman, was so busy and important that he needed an assistant. I am sure some of us wish that when we were rodmen we had an assistant.

My first job position (22 years ago) was "rodman/chainman". How many companies even still have people in this position? My duties consisted of all of those of the rear chainman, axeman, stakeman, rodman, assistant rodman and back flagman listed above. I suspected that I was underpaid then, but I now have

the proof. I was doing the work of six people, but only collecting one person's paycheck.

Today, with the advent of robotic total stations and RTK GPS, we can field a survey crew consisting of only one person. We have evolved (or perhaps devolved) with the times and through technology from the 11 person field crew with a two person support team in 1882 to the one person field crew of today. With this evolution, the old positions, titles and job duties have drastically changed or vanished. I will not pronounce whether this is good or bad, but one thing is certain: I don't see the field crew size getting any smaller. ■

We have evolved (or perhaps devolved) with the times and through technology from the 11 person field crew with a two person support team in 1882 to the one person field crew of today. With this evolution, the old positions, titles and job duties have drastically changed or vanished.

Call for Nominations

Nominations are being sought for the Surveyor of the Year award and the Robert Myers Service award.

The Surveyor of the year has been given since 1987. This award is given to a MSPS member who has given freely of his time and efforts to the organization and toward the better of the surveying profession.

The Robert Myers service award has been given since 1990. This award is given to a MSPS members who, over an extended period of time (ten years minimum) has given exemplary service and dedication to the surveying profession and in particular to the Association.

Send nominations to:

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submitted by Roger McDonald, RPLS

Director: Land Surveying & Mapping Technology Program, Lone Star College-Montgomery, Bldg. F-359

Over the years, I have heard a number of responses to the question, "What do you want to be when you grow up?" However, I have never heard anyone respond, "I want to be a land surveyor." Perhaps it is time for those of us who are involved in the profession of land surveying to look back on our rich heritage and to tell others what a great opportunity awaits those who pursue a career in land surveying.

In 1749, at the age of seventeen, George Washington (1732-1799) was appointed County Surveyor of Culpepper, Virginia. During his professional career as a land surveyor, Washington is attributed with performing 199 professional surveys along with maps of the area that later became Alexandria, Virginia, and Bellhaven, Virginia. In Washington's day, land surveyors were guaranteed a certain amount of social prominence, since almost all parties interested in acquiring title to land had to use the services of a land surveyor. Although George Washington went on to become the leader of the Continental Army during the American Revolution and the first president of the United States, he never lost his love of land surveying and map making.

According to the Poplar Forest Newsletter, Fall 2003, Thomas Jefferson (1743-1826), the third president of the United States, had a life-long passion for surveying. Jefferson, the son of a surveyor, "inherited his father's maps and surveying instruments and even served a short term as surveyor of Albemarle County." At the age of 72, six years after he left the presidency, Jefferson was involved in the survey of the Peaks of Otter. Recently, a survey map delineating the boundaries of a tract of land in Virginia that was drawn and signed by Jefferson was sold at auction for \$38,331.

Abraham Lincoln (1809-1865), the 16th president of the



(Graphic courtesy of www.landsurveyor.us website)

... Thomas Jefferson (1743-1826), the third president of the United States, had a lifelong passion for surveying. Jefferson, the son of a surveyor, "inherited his father's maps and surveying instruments and even served a short term as surveyor of Albemarle County."

United States also had roots as a land surveyor in his early career. In 1836, at the age of 27, Lincoln completed a survey of a project near Rocky Ford, just a few miles west of Postville, Illinois. A portion of this survey was platted by Lincoln into a proposed town to be named Albany. Mr. Lincoln went on to become a respected lawyer, a U.S. Congressman and, of course, president of the United States.

As in the days of George Washington, Thomas Jefferson and Abraham Lincoln, very few land transactions take place today that do not involve the services of a land surveyor. It has been estimated that a large percentage of the world's economy is based on land transactions. With less than 2,600 Registered Professional Land Surveyors in the State of Texas and more than 70% of them over the age of 50, it will be hard to find a more promising career opportunity. Take the first steps in beginning a career in Land Surveying by contacting Roger McDonald, RPLS at Lone Star College-Montgomery, 936-271-6179. 🇺🇸

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How Do WE Train New Land Surveyors?

by Gary John Bockman, PE, PLS

Recently, I noticed one of the many hundreds of television advertisements that actually caught my attention. Two men are on a golf course, the younger of the two preparing to tee off. The older says “When I was a young man, I drove over that tree and hit the green. The scene changes to a large oak tree, then back to the younger golfer. The younger golfer swings hard, the ball goes through the top of the tree, hits a limb and falls short. The older golfer then says to the younger one, “When I was a young man, the tree was much shorter.” Next appeared a large message “**Trust your own judgment**”.

As an instructor of land surveying subjects and a practitioner in the profession, I found that commercial to be an applicable illustration component of my task in helping those aspiring to become surveyors to accomplish their goal. The educational process of obtaining training in certain courses prior to examination for registration provides the tools for development of judgment, but there is much more required to ensure that a prospective land surveyor has obtained the ability to exercise proper judgment.

As a recently licensed private pilot and commercial pilot student, I commented to my instructor that I believed talking with other pilots at the local airport was a good source of information. His response was “Yes, but you can also obtain bad information.”

Registration as a Professional Land Surveyor in Missouri is a confirmation that the surveyor has achieved the required education, passed a preliminary examination, obtained the required progressively responsible experience then passed a second examination that is indicative that the surveyor can exercise proper professional judgment. Judgment is based upon evaluation of past experiences and the consequences of reaction to those experiences, hopefully a reaction that results in protection of the interests of the general public.

Missouri’s Minimum Standards for Property Boundary Surveys 10 CSR 2.010-2.110 and 20 CSR 2030-16.010-16.110 contain a caveat that they are not intended to overrule professional judgment, but permit surveyors to occasionally deviate from the standards with adequate justification of their reason for doing so.

A few years ago, I attended a seminar in which Dr. Richard Elgin, adjunct professor at the University of Missouri-Rolla presented a session regarding riparian boundaries and, as I recall, ended his presentation with the comment that attendees should not believe their instructors, including him, but should evaluate their various sources of advice then make their own decisions as to the validity of each of the informational sources reviewed.

In the last issues of Dimensions and Missouri Surveyor, Dr. Elgin has detailed his findings regarding the Missouri

specific portion of the Principles and Practices examination for those desiring to become Professional Land Surveyors. In that article, he indicates that either the instructors of courses leading to the examination, or the surveyor in responsible charge during the experience period have not accomplished their respective tasks in the training of our future surveyors. In his pre-publication discussion of this article at a Missouri Societies of Professional Land Surveyors board of directors meeting, he also acknowledged that practitioners with a good researcher or coordinate geometry technician might find it difficult to send those individuals to perform field work.

A well rounded training program would include the opportunity for the surveying student to be instructed by different persons, then complete their experience phase under various surveyors to obtain exposure to differing situations and concepts, then formulate their own concepts, giving proper weight to the validity of the training received. Without being given the tools to evaluate the opinions of various practitioners then making their own decisions as to the correct procedure in a given survey project, our future surveyors will not be ready to apply professional judgment, but will be forced to work in a robotic or “cookbook” manner.

I doubt there are any of us Professional Land Surveyors in the position of responsible charge have not been perplexed by the decision of whether to allow the economics of a surveying business to interfere with the transfer of our knowledge and experience to younger surveyors? It is a difficult decision to send an employee very competent in coordinate geometry calculations, and perhaps records research, into the field to make measurements of angles and distances or to drive stakes and rebar into the ground.

I believe that acceptance of the authority to practice land surveying under Missouri statutes and regulations carries with it the requirement that one must also be an active participant in the training of those working under the authority of one’s license. Although this training responsibility is not specifically stated in regulations, the requirement for licensure applicants to submit confirmation of their experience by the land surveyors who supervised their work implies that the supervisor has an obligation to participate in the necessary training.

A good source of guidance regarding the decision of which work tasks to assign to individuals is 20 CSR 2030-2.010 Paragraph (6) which states that the welfare of the public comes before the profitability of the practitioner and his client. In regards to the training of young surveyor, it seems that this requirement would dictate that prospective registrants be given the proper experience by the land surveyor that is to certify their experience as being proper to allow their sitting

(continued on page 21)

NSPS Certified Survey Technician Program (continued)

for the principles and practice examination

As a member of a search committee tasked with hiring a civil engineering professor at Missouri State University, I discovered that one of the items to consider within an applicant's resume was the number of schools attended for various degrees. All of an applicant's references that we contacted, even at the universities from which they received their degrees, were asked - "would you hire the applicant", to which several answered, yes, but our university has a policy of not hiring former students. This leads me to believe that diversity of training is considered by many to be an appropriate process.

One of my former students, now a registered land surveyor in a position of resolving land boundary questions, offered the suggestion that proper training should include working for more than one land surveyor in responsible charge during the experience period. As a prospective referee in USA

Swimming, my training included the requirement that I work as a trainee at more than one swimming meet under the supervision of more than one experienced referee. Swimming is a sport, land ownership is a privilege that may be an individual's greatest investment – should land surveying not have similar requirements for certification to practice the profession?

Being on both the educational and practicing sides of land surveying, it has become very obvious to me that I cannot fully train future surveyors from either of these sides alone, but that appropriate training can only be accomplished through the cooperative efforts of both the educator and the practitioner.

Prospective land surveyors, ask your employer for a well-rounded experience period. Employers, look beyond the schedules and budgets and help develop the best land surveyors you can. 🇺🇸

Information on an Early Survey Crew in Illinois

by Wayne C. Temple, Chief Deputy Director, Illinois State Archives, Springfield, IL 62756

So very little information is available for those early Federal Deputy Surveyors who heroically platted out the Public Domain Lands in Illinois and elsewhere. These hardy Deputies were paid by the mile — not the day — so they labored their men from early in the morning until late in the evening. Even on holidays, such as Christmas, their field notes show that they were out in the wild surveying! In Illinois, we have not found any letters or diaries if any were even written. They probably had little or not time to compose personal communications and most certainly no place to post letters.

In my many years of handling the original Federal Field Notes for Illinois, I found little or no information describing their actual operating details. But recently, I discovered some valuable historical information in Volume 410 of the Field Notes recorded by D.A. Spaulding, Sr. He was marking off sections in Township 28 North, Range 11 East of the 4th Principal Meridian near the Wisconsin border. He began this survey on January 28, 1840, in what was already Winnebago County which has been established on January 16, 1836. First, he listed his crew members; that was the usual practice and not uncommon. However, what he set down in addition proved to be most enlightening. His complete entry follows:

William Foss hind chainman
Duncan Ferguson flagman
D.A. Spaulding, Jr. axeman
Jackson Farwell axeman

Mr. David Deeds not proving to be a very good hand I

have discharged him and employed Mr. Ferguson for flagman and Jackson Farwell as an additional hand to assist in making the corners and to drive the team, each at a compensation of Twenty Dollars per month.

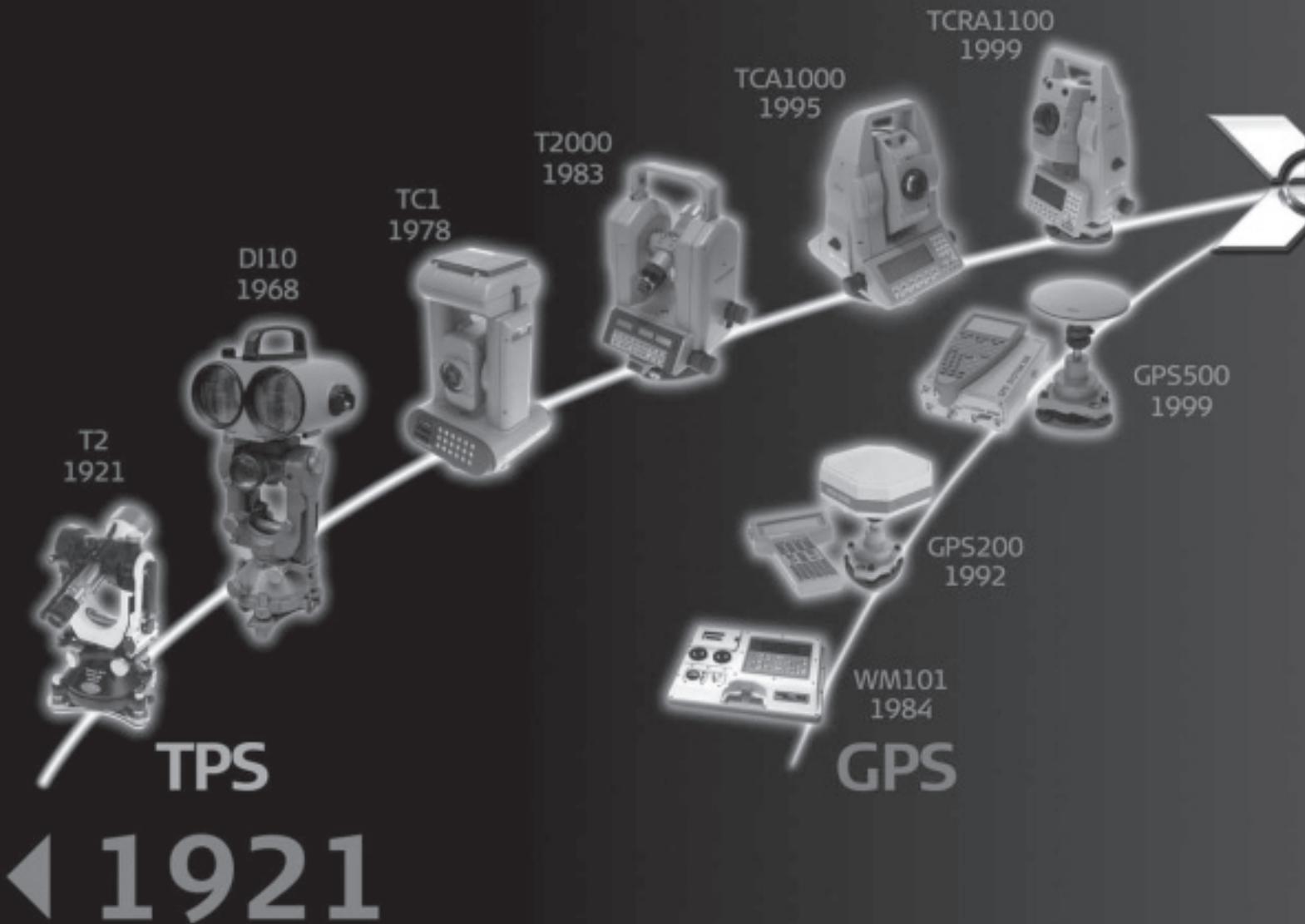
Then Spaulding, Sr., swore in the two new members of his crew (Duncan Ferguson and Jackson Farwell) who signed their names following their oaths. Both penned their names in full. Neither used and "X" as one might expect on the frontier. Evidently, the other members had already been sworn and working for Spaulding in other townships.

This valuable document proves what I had always suspected: the crew had a team and wagon to carry their equipment, food, stakes or stone perhaps, and whatever was needed in the way of a temporary shelter, such as a tent. And his crew members drew \$20 a month as wages. Of course, other Deputy Surveyors may have paid a different salary to their crew members, but one would guess that \$20 was a standard fee.

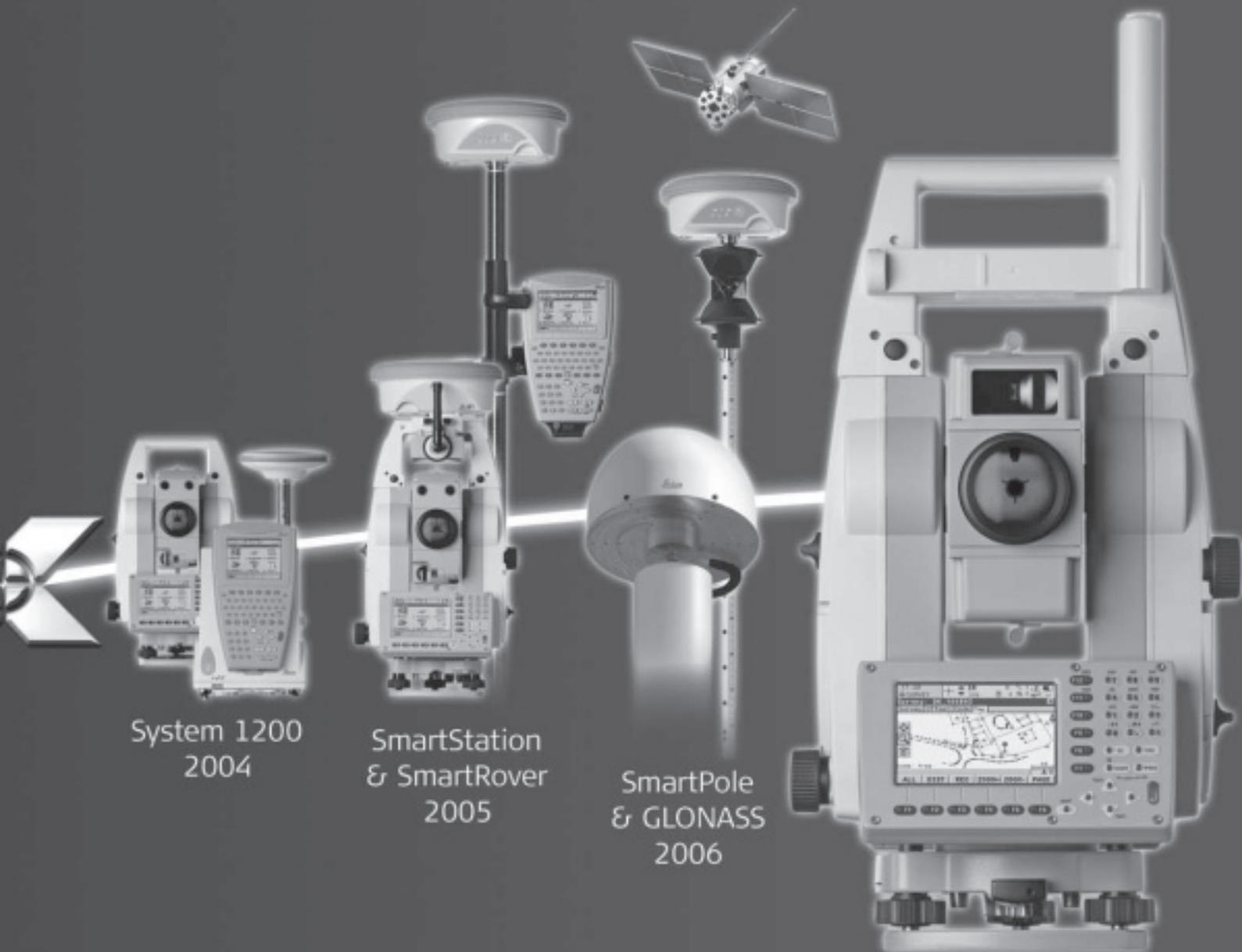
Another question has always remained in my mind. Where did a Deputy Surveyor find his crew? With the aid of the United States Census for 1840, I found the answer to all the crew members but one: Jackson Farwell, perhaps a wanderer. David Deeds was from Jo Daviess County; the rest were all from Winnebago County, including Spaulding and his son. So, it would appear that at this period of time, men could be hired in the area being surveyed to aid in the difficult task of marking out the corners. Most probably, some of Spaulding's hands were merely squatters since the land was not yet measured or sold by the Federal Government. 🇺🇸

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General Theodore Harvey Barrett

Deputy U.S. Surveyor

by Russell E. Kastle, RLS

During the NDSPLS fall workshop, in particular the session conducted by James Claflin from the BLM, the subject of the Three Mile Method of subdividing a section was brought up. The first surveyor to utilize that method was a Deputy U.S. Surveyor by the name of Barrett. I am well familiar with some of his work as I have followed many of his surveys in western Minnesota and in particular, the old Sisseton/Wahpeton Indian reservation that straddles the Minnesota, North Dakota, South Dakota corner. Through the years, I have done considerable research on Mr. Barrett, not only his surveying, but also his military and personal life. When I returned home from the workshop, I pulled from my files some historic data on him that I thought many of the attendees of the workshop, and other surveyors as well, would be interested in knowing. I have no proof, but I suspect that General Barrett had a lot to do with the development of this method of subdividing a section. As far as I know, he was the first to utilize this method which was only used on Indian reservation lands.

General Theodore Harvey Bassett was born in Orangeville, Wyoming County, New York, on August 27, 1834, one of four children of Theodore Sedgwick Barrett and Caroline Damon, both of which were from Madison County, New York. He attended the Alexandria Academy and also Genesee and Wyoming Seminary, at Alexandria, New York. He contracted Malaria when he was three years old, and suffered from it the rest of his life. The family moved to Sterling, Whiteside County, Illinois. After leaving college at age 18, he taught school in his home district. He kept a store for his ailing brother-in-law, Daniel Richards of Sterling, in Orangeville, Wyoming County, N.Y. for a short period of time. He joined the Corps of Engineers in Illinois and constructed the Central Ohio Railroad. In Ohio he worked as a civil engineer on the construction of the Baltimore & Ohio Railroad. He also surveyed coal mines on the banks of the Ohio River and platted the town of Bel Aire, Illinois. At age 19 he went to Wheeling, Virginia and conducted surveys there.

Mr. Barrett came to Minnesota in 1856 where he surveyed until 1862. He took up residence in St. Cloud, Minnesota and

platted the town sites of Sauk Centre, Osakis, Alexandria, Evansville, Pomme de Terre, Breckenridge, Fergus Falls, and Georgetown. He also laid out a town site at Grahams Point near Ft. Abercrombie. Some of the town sites that he laid out were never filed or developed and were resurveyed and platted by other surveyors after the Civil War.

In 1858 he surveyed a state road from St. Cloud to Breckenridge which was commonly known as the Burbank Stage road. At the outbreak of the Civil War and in April, 1862, he enlisted in the Union Army and was commissioned a Second Lieutenant on the 15th of August, 1862 with the Ninth Minnesota Volunteers. On the 29th of August, 1862 he was promoted to the rank of captain of Company G, Ninth Minnesota Volunteer Infantry. His first big battle was at Fort Abercrombie which was under siege by the Sioux Indians from about September 3rd to the 26, 1862. From Fort Abercrombie, and in October 1863, he was transferred to Missouri, and on the 29 of December, raised to the rank of Colonel, and assigned to the 62nd U.S. Colored Infantry. He went on to Mississippi and Louisiana, where he commanded

his brigade at Pork Hudson, Morganzia and vicinity. While there his malaria flared up and on the 31st of August 1864 he became incapacitated. He was relieved of his command and sent to Cincinnati, Ohio, where he served as president of the general court-martial. After regaining his health he was assigned to duty in Texas. He commanded the U.S. forces at Brazos Santiago, on the Island of Brazos, Texas, in the Gulf of Mexico and near the mouth of the Rio Grande, from April 27 to May 21, 1865. He commanded the Union forces at the battle of Palmetto Ranch thirty-four days after the surrender of General Lee on the 9th day of

April 1865. This was the last battle of the Civil War, which actually took place a month after the Confederate surrender because of the lack of communication. He stayed on in Texas at the Rio Grande to secure the border. On the reoccupation of Brownsville, Texas, May 30, 1865, he was assigned to the command post, a position which he retained until July 13th,

... by the "Three Mile Method" a method whereby the east west 16th lines within a section are run. The north-south 16th lines were not surveyed. This Three Mile Method of subdividing sections was used by the GLO only on Indian Reservations. Barrett's survey being the first to utilize this method.

(continued on page 25)

General Theodore Harvey Barrett (continued)

when he was relieved by Gen. Giles A. Smith. On the 25th of July he was assigned to the command of the Third Brigade, First Division, Twenty-fifth Army Corps, and upon the reorganization of the corps, in the following October, he was transferred to the command of the Second Brigade, Second Division, then posted along the Rio Grande, with headquarters at Ringgold Barracks.

Under command of General Barrett Fort McIntosh was re-occupied October 23, 1865, and his forces constituted the extreme right of General Sheridan's army of observation. General Barrett commanded the Second Division of the Twenty-fifth Corps from November 4, 1865, until he was mustered out of service on the 19th of January, 1866 at the age of thirty-one years. He left the Union Army as a Brigadier General.

After returning from military service, General Barrett went back to surveying, obtaining a commission from the General Land Office to survey lands in Nebraska, Minnesota and Dakota Territory. He also surveyed some in Canada. Much of the work was for the St. Paul Pacific Railroad who owed him \$66,211 for which he took 10,979 acres of land in Grand and Stevens counties near Herman, Minnesota. The railroad received every other section of land for 10 miles on each side of the tracks from the government as encouragement and to finance construction. The railroad then sold that land for cash to build the track lines and facilities. General Barrett took land for pay for this work for the railroad. This land was in Donnelly and Eldorado Townships, Stevens County and also in Macsville and Logan Township, Grant County, Minnesota. Because his land was railroad land, it was not concentrated in a single location, but was spread out over four townships.

On August 22, 1868, Barrett received a commission from the Department of the Interior, General Land Office to survey the Sissiton and Warpeton (Sisseton and Wahpeton) and Cuthead bands of Yanktonais of Dakota or Sioux Indian Reservations situated in Dakota Territory as describe in the fourth articles of the treaty with those Indians dated February 19, 1867. Barrett surveyed the exterior boundaries of the reservation first, then subdivided it into regular townships and

sections under the Fifth Principal Meridian. He then subdivided the sections into 40 acre allotments under special instructions by the "Three Mile Method", a method whereby the east west 16th lines within a section are run. The north-south 16th lines were not surveyed. This Three Mile Method of subdividing sections was used by the GLO only on Indian reservations. Barrett's survey being the first to utilize this method. The August 22, 1868, contract also included the surveying of another Indian Reservation near Devils Lake, Dakota Territory which was apparently not done by Barrett, but was done later by other GLO Surveyors.

On July 25, 1870, Barrett and an associate Ehud N. Darling, obtained a contract to survey the Chickasaw lands in the Indian Territory (now Oklahoma) according to the Indian Treaty of April 28, 1866. Barrett surveyed the baseline west to 89 degrees west longitude, then subdivided the western part of the Chickasaw lands. Barrett found gross errors in the 1858 survey of the 98 Meridian, which had been surveyed as the west boundary of the Chickasaw lands. He reran that work so as to close his surveys properly. In December 1870, Barrett and his associate received contracts to survey the Indian Lands between the 96th and 98th Meridians from the Canadian River north to the Kansas boundary.

On June 5th, 1879, Barrett married Georgia McKee (Georgianna Brubaker, daughter of George Brubaker, of Leavenworth, Kansas), a society belle from Washington, D.C. She was the first white child born at Fort Smith, Arkansas. She was half his age at 22. He had met her at Cape May, New Jersey. Those who knew them didn't expect her to stay when they came to Minnesota. However, she surprised everyone and stayed. It has been suggested that she liked horseback riding and maybe that is one reasons she stayed.

To this union three children were born, Theodore Sedgewick, Richard Damon (Richardson), and daughter Georgianna B. Theodore Sedgewick, also known as Bob, had a physical handicap in the neck area, making it difficult for him to turn his head. After the General's death, Theodore

The Minneapolis Journal reported: "In the death of General Theodore H. Barrett, Minnesota has lost one of her most valuable and distinguished citizens. In 1879 he fixed his residence near Herman, Minnesota. Having married and made valuable improvements, including fine groves of trees, and there he has lived these 22 years with several thousand acres of land under cultivation, always hospitable, kind hearted, and an exemplary citizen."

(continued on page 26)

General Theodore Harvey Barrett (continued)

stayed on the farm in Grant County, Minnesota. He later moved to Montana and became a successful farmer and contractor in Billings. Son Richardson became a lawyer. He became city attorney of Northfield, Minnesota in 1907. He practiced law there until 1914 when he moved to Minneapolis to practice. Daughter Georgianna was said to be impetuous, sociable, and a community pet who shocked her mother's refined tastes by smoking tobacco. She married Howard D. Wheeler, managing editor of Harper's Weekly, in New York City.

In July, 1900, General Barrett was thrown from his horse and paralyzed. He died from those injuries on the 20th of July, 1900. He was dressed in military uniform for the private funeral services, and his remains were sent back to Sterling, Illinois for interment. He is buried in Section 6 of Riverside Cemetery, Sterling, Illinois. His grave site is marked with a large black marble stone. The Minneapolis Journal reported: "In the death of General Theodore H. Barrett, Minnesota has lost one of her most valuable and distinguished citizens. In 1879 he fixed his residence near Herman, Minnesota. Having married and made valuable improvements, including fine groves of trees, and there he has lived these 22 years with several thousand acres of land under cultivation, always hos-

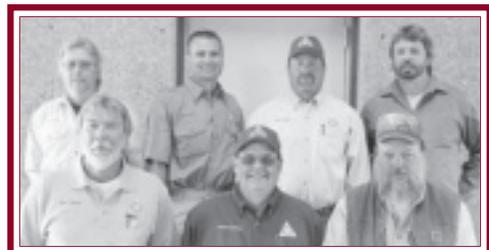
pitable, kind hearted, and an exemplary citizen." The Herman Enterprise paid tribute by writing: "By the death of General Barrett this village sustained a greater loss than can easily be expressed. He was a man of great individuality, strong convictions, a deep thinker. These qualities combined with his frankness, conjure and sincerity, made him influential and esteemed. He lived his life for a good and noble purpose, and his death is particularly regretted in the village. His numerous friends would have expressed their great admiration and respect for him at this funeral if they would have had opportunity to do so."

The town of Barrett, Minnesota was named in honor of General Barrett. The General had a cook who cooked for his surveying crew, which had up to 40 men. They were fed in a cook car. This cook thought so highly of his employer that he suggested that the railroad siding, near where the cook had taken up a homestead, be called Barrett. 🇺🇸

Conservation Surveyors are "Certified" (continued)

The difficult journey to achieving the CST rating began with multiple years of surveying experience, then undertaking an individual course of study, and finally passing a thorough examination of technical and mathematic questions within a time limit. Adopted by the Surveys Unit of the Conservation Department as an action to improve skills and enhance qualifications of their technicians, participation in the CST program became an in-house training program. Professional Land Surveyors in the Department compiled study materials and held training sessions covering the core topics of the CST program. Study materials were reviewed in partnership between members of the professionally licensed staff and those seeking certification. The result was eight individual successes achieved through a concerted team effort that will benefit the whole organization.

The Missouri Department of Conservation now stands as a public agency where all members of their surveying staff are either licensed or certified practitioners. These eight conservation surveyors will continue to apply their talents, and now their certifications, towards helping to formulate engineering and surveying solutions for those meeting the challenges of protecting and managing the fish, forest and wildlife resources of our state. 🇺🇸



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Spring Workshop 2008

by Daniel L. Govero, Education Chairman



John B. Stahl, Cornerstone Professional Land Surveys, Salt Lake City, Utah.

Once again we had a very successful Spring Workshop with 200 attendees. The Panel Discussion on The Future of Surveying was very lively and open.

A special thanks to Ashley Rose Nalin, who brought new ideas and new perspective from the standpoint of being a young graduate with a four year degree and experience from another state. A big thanks to Charlie Kutz who brought NSPS information, plus some old school thoughts; and to Jim Mathis, past Chairman of Survey Division of Registration Board for his contribution.

The outcome from my perspective is we will head for a future four year degree, but it will have to start with recognition of the survey profession in grade school to orient the students toward that degree. Most of the current surveyors and LSIT's find out about surveying after they enter the work force and cannot afford to go back and get a full degree.

Also, continuing education should be required for LSIT's since it is so long between LSIT test and the LS test. A mentoring program should be set up and sponsored by the Scholarship Committee. An educational program should be established by MSPS and given to colleges and Junior colleges to give direction for classes taught. It should include algebra, trigonometry, and analytical geometry. Experience and mentoring is a must for land

surveyors. All cannot be taught in school.

Our speaker, John Simmons did an excellent job on machine control. It was an eye opener for many to see what is out there and being used. He explained how we can be a big part of it and the future. His company is very involved and has developed a new market. We need to pay attention for new business.

John Teale and Kirk Larsen were very instrumental in showing how we should be involved with GIS and why standards should be developed and adopted for GIS and also where the future can take us as part of GIS. More to come at the fall meeting to show how to be involved and techniques.

Lanny Schnipper was very well versed on working with City's for equipment used in a city wide utility type GIS. What we need and where to use it and the accuracy expected with the equipment.

On Saturday, John B. Stahl filled us in on Conflict Resolution. He is a very dynamic speaker with a very different approach to resolution of boundary conflicts. It is refreshing to have someone teach solutions rather than problems.

He was very well received and there were many good comments from participants. If you have never heard his presentation, you need to because it will change your thinking on boundary resolutions.

Again, these are your seminars not mine, and if you have topics or ideas for future seminars, please submit them to me. Thanks for your participation. 🇲🇴



Spring Workshop participants.

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Do Surveyors Define Themselves Too Narrowly?

by Karen Zollman, L.S.I.T.

It occurred to me after the last survey convention that surveyors have a hard time defining themselves. If I was asked once, I was asked a dozen times, “Are you a surveyor?” I amused myself by inventing a variety of responses, “Why, do I seem too — smart, tall, sophisticated, good looking?”

Conversations with my sister surveyors confirmed that these queries were widespread among the nearly 1,000 attendees, resulting in mildly irritated to, well, really irritated women surveyors. I tried to distract myself with the wide variety of topics and training at the conference — and of course, was thrilled with the short lines for the restroom; always a plus. However, the experience did give me pause to ponder. Had I ever felt a part of this profession? And, was it only because of my gender? Admittedly, I have specialized in developing Land Information Systems (LIS) using Geographic Information Systems (GIS) technologies. Not exactly a niche that surveyors are willing to claim.

In the last twenty years I have written articles and conducted seminars teaching GIS analysts why they need surveyors and teaching surveyors why they need GIS. The analysts have been interested, the surveyors have been angry. LSAW members have threatened to quit their chapter, a chapter in another state threatened to secede from the state organization. I have been name-called, cussed out, and threatened that what I was doing was illegal because I wasn't a surveyor. I do not understand why a profession can be so angry at someone doing a job none of them want. And yet, when surveyors finally work on one of my projects they are surprised. What I do is absolutely surveying!

You see, on a typical LIS project, we retrace cadastral surveys and file records of survey. We pour through mountains of deeds, dig through private, Federal, State, County, City, and utility company property records. We track down elusive right of way plans. We reconcile the Auditor and Assessor records! We have produced property and right of way maps for Indian reservations, Cities, Counties, and major utilities. LIS projects last a few months to several years, and while we can't resolve every survey problem, we are able to identify most all of them. We work with lawyers, geologists, hydrologists, archaeologists, and environmentalists. And, we include surveyors specializing in mineral surveys, geodesy, bathymetry, LiDAR, SARS, Indian lands, farm units, water rights, and ri-

parian boundaries.

An LIS approach to creating the property cadastre is expensive, and considered unnecessary by traditional GIS consultants whose maps I have made a living redoing and replacing. It's not solely that these maps are more accurate, though they are. Rather, LIS maps purport to meet a **known accuracy** — except were specifically noted. Parcels are linked to the **instruments of conveyance** that they represent, making them **defensible**. These maps allow another surveyor using the same cadastral control, and the same documents of record to create the same geometric solution with a high **degree of certainty** — that's **repeatability**.

Some years ago, my team was creating a parcel map for a county in eastern Washington. A surveyor in another office of the same company called me and explained that he had a project in that same county. He'd been told that I might have some data that would be helpful to his project. I asked him for the section, township, range, and objectives for his project. As he explained, I emailed him orthophotos, LiDAR, detailed parcel maps with deed and survey monument attributes. He was astounded. “Where did you get all this?” he asked. “It's what we do,” I told him.

In most urban areas we now expect this kind of quick access to a wide variety of data. We're irritated when we can't surf it up easily, quickly, and completely. But we are not done by a long shot. Recently, a subconsultant called me regarding another large LIS I had developed. He said, “We are looking at this property data you sent. I've looked all over the county's website and can't see where you got it.”

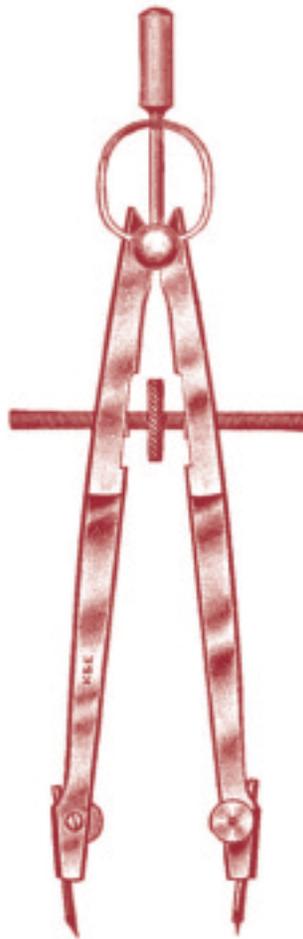
“That's because that county doesn't have any digital mapping. We created all the data in the maps from field surveys and property records.”

“But that would take years,” he said incredulously.

“Two and a half years and over 3,000 surveys and record documents,” I told him.

“Well no wonder it's so good,” he said. “I wish all the county maps were this good.”

They will be eventually, I thought, That is, if surveyors realize that along with all the many activities we perform — WE



(continued on page 32)

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Do Surveyors Define Themselves Too Narrowly? (continued)

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I wonder why, on one hand, surveyors are so willing to narrowly define themselves — while on the other hand desperately trying to *redefine* themselves so as to prevent encroachment by other professions. As I look around the City of Seattle, I see engineers, real property agents, environmental specialists, and yes, GIS analysts, doing the work of surveyors. While we are quick to object — and rightly so — I don't see our profession being interested in (spelled m-a-r-k-e-t-i-n-g) the work these people are doing. Truthfully, we have our hands full keeping up with the maintenance and construction of the City's right-of-ways, park properties, and utility facilities. One could argue that there is enough work for all. Except that those other professions don't know what surveyors know, and don't do what surveyors do nearly as well as it needs to be done.

Some years ago I was asked by the survey manager to audit a project that was fumbling technically and bleeding money. I assembled the project team in a conference room and we “mapped” the project.

We started by listing the deliverable specifications. Next, we listed the record documents and field data sources; detailed the methodology needed to reduce, resolve and conflate the data, and document any variations or blunders. The team was astounded. The audit had created a “process” that highlighted the gaps and bottlenecks that were tripping and frustrating their efforts. The project manager was less impressed. “You've presented some interesting tools here, but I don't think you understand what we are doing as surveyors.”

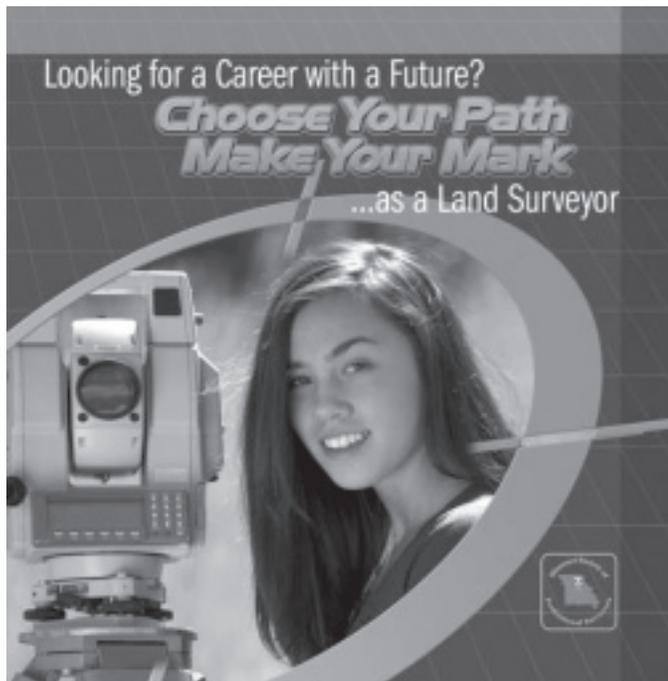
That's where you're wrong, I countered. You make maps. And that's what I do VERY well. I make maps — detailed, defensible, repeatable maps of a known accuracy — based on field surveys and the public record; accessible, integrated, digital maps that link the past to the present; maps of the future.

I am a woman, I make maps, and that's what this surveyor does. Are you defining yourself too narrowly?

See you at the next conference — I'm the smart, tall, sophisticated, good lookin' surveyor! 🇺🇸

Karen Zollman, L.S.I.T. works for Seattle Public Utilities Survey Section.

She serves as the LIS/GIS chair for LSAW.



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**2008 Proposed Agenda
Kansas - Missouri - Oklahoma**

Winning with Technology and Education – Tri State Conference
University Plaza Hotel, Springfield, Missouri

Thursday, October 16, 2008

8:00 - 12 noon **The Greatest (Surveying) Generation**
Presenter: Steven Brosemer, LS
 12:30 p.m. Golf Tournament (Shot Gun), Deer Lake Golf Course
 1:00 - 5:00 p.m. **Kansas, Missouri and Oklahoma Boundary Law – In the Eyes of the Courts**
Presenter: Gary Kent
 5:30 - 7:30 p.m. Reception and Exhibitor Set up

Friday, October 17, 2008

7:00 a.m. Registration, Continental Breakfast and Exhibits open
 8:00 a.m. State Business Meetings, Committee Meetings, etc.
 Missouri: 8-10 annual business meeting
 10:00 a.m. Break with Exhibitors
 Missouri: 10:30 to 12 Mandatory Recording debate featuring Don Bormann, Don Clinkenbeard,
 Chris Ferguson, Erwin Gard, Chris Wickern, and Jerry Anderson – Bob Shotts, Moderator/Referee
 1:00 - 5:00 p.m. CONCURRENT SESSIONS

<i>Session 1</i>	<i>Session 2</i>	<i>Session 3</i>
Kansas, Missouri and Oklahoma Boundary Law – In the Eyes of the Courts (continued) <i>Presenter: Gary Kent</i>	GIS and CADASTRAL MAPPING John Teale and Kirk Larson	Oklahoma Minimum Standards by Burk Cornelius

5:30-6:30 p.m. Cocktails with Exhibitors
 7:00 p.m. Banquet/Dinner/Awards/Keynote Address – Wild Bill Hinshaw – The Theory of the Slight Edge -
 The Key to Success

Saturday, October 18, 2008

7:00 a.m. Registration and Exhibits open
 8:00 - 12 noon CONCURRENT SESSIONS

<i>Session 1</i>	<i>Session 2</i>	<i>Session 3</i>
New Business Opportunities in Geomatics – how can surveyors define their businesses to address new opportunities? <i>Presenter: Joseph V.R. Paiva</i>	High Performance Workplace Culture – Lessons from the Masters and Communications for Surveyors <i>Presenter: Gail Hinshaw</i>	Missouri Minimum Standards by the state land surveyor

1:00 - 5:00 p.m. CONCURRENT SESSIONS

<i>Session 1</i>	<i>Session 2</i>	<i>Session 3</i>
Winning with Technology <i>Presenters: Tom Seiler and Tom Bryant, Seiler Instruments</i>	Panel discussion “Topography Surveys and Beyond”	Kansas Minimum Standards, by Art Griffiths



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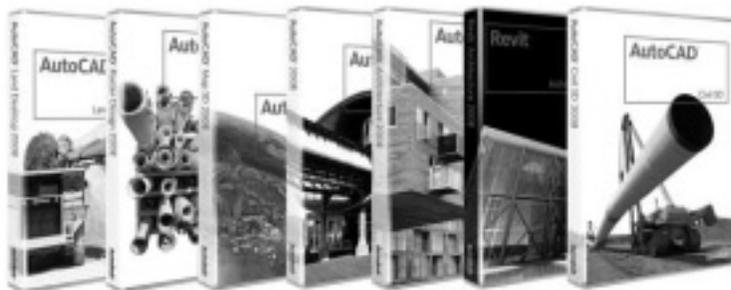
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Measuring America, by Andro Linklater

review by Wilhelm A. Schmidt, PLS

The subtitle of this book (paperback edition) is “How the United States was shaped by the Greatest Land Sale in History”. The subtitle implies that the measuring referred to in the title is the surveying of the land prior to its sale. Actually, the subject of the book is all weights and measures employed at one time or another in “America”. Part of the story is their relationship to each other, the selection of some over others, and their standardization. This part of the story is, of course, interwoven with the opening of the territories beyond the thirteen original states. The measuring that went into them does form the central part of the book.

Literally, this measuring consisted of the laying out of the “immaculate grid” (Ch.12) upon the land, square mile by square mile. But the title of the book also refers to the definition and solidification of the power of the “central” government over the country. Not many of the original states had a clear western boundary. Some claimed that they extended as far west as the Mississippi, and some even further. To settle conflicting and questionable claims, the federal government assumed jurisdiction over the territories, with the eventual consent of the affected states. Then by treaties with the native inhabitants and wars against them, it laid claim to the land, had it surveyed and dispersed it to individuals. The sale of the land yielded revenue, with which the government could finance its other functions.

Philosophically, the taking of the land was justified by its cultivation — by the individual mixing his labor with the land (Ch. 3). The occupation of the land was, however, justified only by ownership. Settlers had entered the territories before the federal government took charge of them. But the settlers did not automatically own the land they occupied. They merely replaced the Indians that were there before them, who had no sense of owning land, or air, or water. The Spanish and the French colonizers of North America adhered to the feudal system, in which the king had ultimate control of the land. The settlers in areas controlled by them had rights of tenancy, but no right to the land itself. The idea of “landed property” originated in England in the 16th C (Ch. 1). By enclosing the land, which the gentry had gotten from the king, and — this is the important point — by having it measured and mapped, their irrevocable ownership of the land came to be accepted. In the United States, for perhaps the first time in the history of mankind, land be-

came a commodity, available to homesteaders and to speculators alike. The acquisition of land by deed made instant Americans of fairly recent immigrants and speculation in land became the source of instant wealth. The only dispossessed were the Indians (Ch. 15).

Private ownership of land is the first theme of this book. Its second is the measuring of the land — more specifically, the precise measuring of the land. The author places great stress on the fact that Gunter’s chain was the instrument of choice. Its length was fixed at 66 feet and its use was simple. Jefferson had proposed a decimal system of measurements similar to the metric system. But his proposal did not prevail, and the English system was adopted instead. This system has an appeal all its own. Now only is it rooted in human activity, it is mathematically easy to grasp. It is essentially a four-and-

ten-based system. A chain is four rods in length. A mile, the length of a section of the grid, is eighty chains in length. A strip of land one chain by ten chains (a furlong) is an acre. Ten by ten chains is ten acres. Twenty by twenty chains is forty acres, or a quarter of a quarter-section, enough land to support a family.

The surveying of the public lands engaged an immense number of individuals, some of whom that acquitted themselves well and others that didn’t. The point of beginning for the survey of the public lands was set by “two of the finest surveyors in the United States: Andrew Ellicott . . . and David

Rittenhouse” (Ch. 6). The job of running the grid tended to overwhelm those who were conscientious, beginning with the First Surveyor-General, Thomas Hutchins. It favored those who found practical ways of dealing with difficult situations, like his successor, Rufus Putnam. But whatever their character and their style, they doggedly advanced the grid until they had surveyed about three million square miles of land, almost a century later.

Not all chapters in this book are equally compelling. Those concerned with the decimal system are unavoidable, but they are tales of misadventures: Jefferson’s attempt to tweak then standard measures of length (and weight) into a “democratic” system, which Congress dismissed (Ch. 8), the protracted “birth of the metric system” (Ch. 9) and its introduction to the

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Measuring America, by Andro Linklater (continued)

United States by a hapless Frenchman (Ch. 10), its on-again off-again application by Ferdinand Hassler to the survey of the East coast (Ch. 14), and its compulsory adoption the U.S. late last century ending in its quiet abandonment again (Ch. 18). Without these tales, the story of the measuring of America would be incomplete. They just don't capture a surveyor's imagination in the way the survey of the public land does.

But the book is uniformly well written. The author has a

facility with words, more typical of historians than surveyors, and a knack for employing literary devices. The entire book is in effect a flashback. It begins with an account of a trip to the point of beginning for the surveying of the public lands near East Liverpool, Ohio. It ends dramatically with the recovery of a witness tree "six thousand feet up in the Sierras" by a contemporary public land surveyor, to correct a false survey made more than a century ago. In between, there is a whole lot of good reading. ■



Proclamation Signing for Surveyor's Week in Missouri

Pictured left to right: State Land Surveyor J. Michael Flowers, Joseph Clayton, MSPS President Don Martin, Governor Matt Blunt, MSPS Executive Director Sandra Boeckman, Richard Howard, Andrew Koenigfeld and Rick Hurst

Report to the Survey General of the United States of America

by James A. Coan Sr., P.L.S.

Several years ago I was in a used book store in Seattle and came across a copy of the Manual of Surveying Instructions 1947. As soon as I saw it, I grabbed it and quickly bought it.

When I got home, I started looking through it and discovered a handwritten report in the envelope attached to the back cover. It was a copy of a report to the Survey General of the United States on the layout and progress of the Willamette Meridian. I read it over, put it back in the book, put the book on a bookshelf and forgot all about it.

Recently, I was cleaning that same bookshelf and re-discovered the report. This time, I thought it would be good to share it with all of my fellow surveyors. To that end, attached is a copy of the report, hand written just as I found it, for you to enjoy some of the history of surveying in our State.

(“Editor’s Note: The following paragraphs have been transcribed for ease of reading and are unchanged from the 1965 copy of the actual 1851 letter”)

Sir:

In conformity with law and your instructions of the 6th March I have the honor to submit the enclosed report of operations connected with this office up to the present time.

Survey of the Willamette Meridian and Base Line

Upon my arrival in Oregon, but little was known of the topography of the country between the Pacific Coast and the summit of the Cascade Mountains, except in the vicinity of settlements which were confined to the water courses, and principally in the Willamette Valley.

After making a visit to the cascades and exploring the country north of the Columbia River, I determined to commence the survey of the Willamette Meridian at the “Upper Mouth” of the Willamette River, and the Base Line 7 3/4 miles south in order to avoid the Columbia River in extending the base line east to the summit of the Cascade Mountains. The intersection of the Willamette Meridian and Base line is 3 1/2 miles west of the Willamette River.

The contract for the survey of the Base Line and Willamette Meridian north of the Base Line as given to William Ives Esq.

The contract for the Willamette Meridian south of the Base Line to the Umpqua Valley was given to James E. Freeman Esq. Both contracts have been completed as far as is practicable and the field notes accepted.

Three-fourths of the Willamette Meridian line north of the Base Line to Puget Sound passes through a country that is generally rough, broken, and heavily timbered, with the exception of the settlements on the Willamette, Columbia, and Cowlitz Rivers, and a small settlement at Puget Sound, is unclaimed.

The Base Line east of the Meridian to the summit of the Cascade Mountains passes over a heavy timbered country, the east 20 miles is quite rough and unsettled. West of the Willamette Meridian along the Base Line the land is mostly occupied for twenty miles, which includes the Tuality Plaines, one of the oldest settlements in the Territory. West of the Tuality Plaines the country is exceedingly rough and heavily timbered- Wm Ives extended the Line 37 miles west of the Meridian, when he was compelled to abandon the line, it being impracticable to extend the line farther towards the Pacific. The country along the Base Line west of the Tuality Plaines is represented as unfit for settlement or cultivation.

The Willamette Meridian south of the Base Line runs through a fine country principally Timbered and generally settled to the 2nd Standard Parallel (60 miles). For the next 20 miles the surface is very rough, passing over spurs of the Cascade Mountains, to the Calapooya Creek. South of the Calapooya Creek the mountains were found to be impassible and impracticable to extent the line over them. An offset of 18 miles west was made to avoid them. From the offset the line was extended 54 miles south, where it was found necessary to make another offset of 6 miles west to find a pass though the Callapooya Mountains, which extend from the Cascade Mountains to the Coast Range at the head of the Willamette Valley.

The line was extended from this point 46 1/2 miles south to the Umpqua Mountains which form the southern boundary of the Umpqua Valley. Most of the country south of the Calapooya and east of the line that was run, is too rough and broken for settlement, being a part of the Cascade Mountains that bear west towards the Coast, the settled portions of the Willamette and Umpqua Vallies are mostly west of the line that was extended.

System of Survey

Owing to the roughness of the country, the thick and heavy timber along the Base and Meridian Lines, the Deputy Surveyors were not able to make the Geodetic Notes as full as was anticipated, Before they commenced operations on Line. Still they have been able to locate many points with accuracy, and it is believed sufficient to give a pretty correct profile of the country over which they have passed.

Special instructions have been given to all the Deputy Surveyors who have contracts, to take all possible care in triangulating to all remarkable and distant objects, that are seen from line, also to note particularly the difference of level along the lines, in fact to make such observations as will furnish this office with information sufficient to locate all remarkable points and their elevation above tide water.

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Some Thoughts on the Writing of *Dark Storm Moving West*

by Barbara Belyea

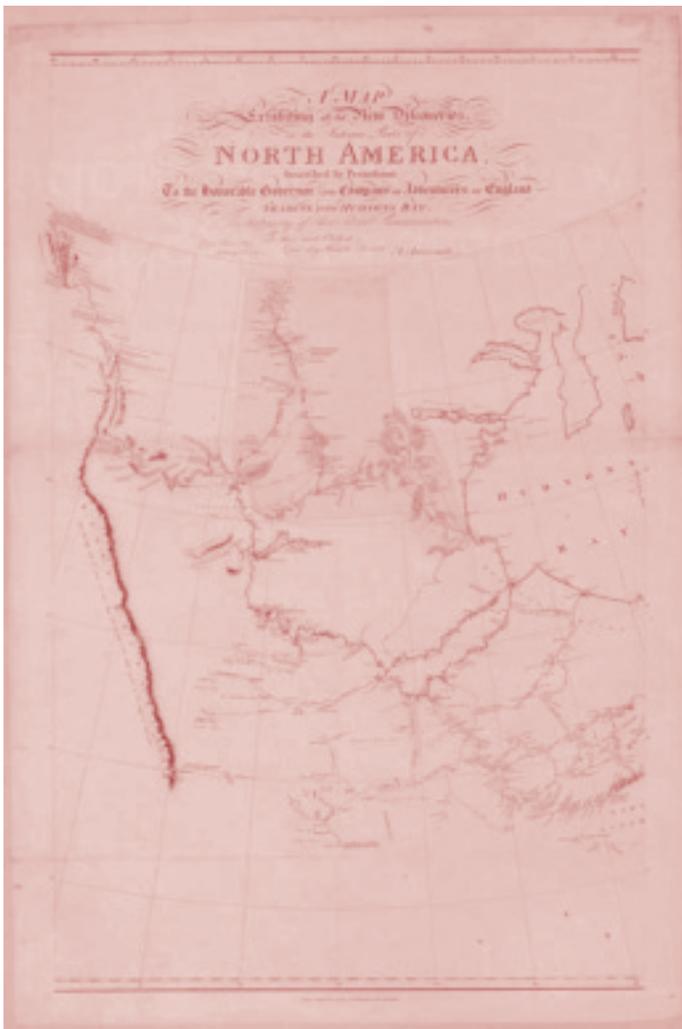
I wrote the essays of *Dark Storm Moving West* as I learned about fur-trade exploration beyond Lake Winnipeg and the “Corps of Discovery” expedition across the continent. In the 1750s fur traders from Montreal and Hudson Bay met as they ventured up the Saskatchewan River; by the 1790s they had moved into the Athabaska watershed, followed the Coppermine and McKenzie Rivers to the Arctic Ocean, and were ready to cross the mountains to the Pacific Coast. The traders’ experience of years spent living near, often with, Native bands influenced company surveyors’ scientific observations and mapping. In turn Lewis and Clark consulted Native leaders about the road ahead and tried to reconcile the chiefs’ directions with the maps they had brought with

them. On the plains and west of the divide multiple world views coexisted during a contact period of several decades. Inevitably, however, outside economic demands, moral values and intellectual laws asserted a hegemonic control that continues to this day. The *Dark Storm* essays explore a brief period of dialogue before the lines were scripted by one side only.

The cultural interface of the late eighteenth-century West was dependent on a balance of knowledge and ignorance as well as of supply and induced demand. As long as the continent stretched beyond European and American discovery of it, as long as the newcomers needed Native guidance and survival skills, a bargain could be struck that satisfied both sides. At the same time, each culture read its own values into the landscape, so that they saw the region as composed of different features and themselves in very different relationship to it. The fur traders and those who came after them had the blueprint of another world fixed in their minds. When the “new” land was annexed politically as well as economically to distant imperial governments, settlers built according to the blueprint. The land was staked, divided and possessed; old-world plants and animals were introduced; people who had once welcomed the traders were hustled onto reserves, their usefulness over, their knowledge irrelevant.

In *Dark Storm Moving West*, this takeover is a cloud on the horizon; the essays focus on the earlier period of balanced power and mutual curiosity. In contrast with the wholesale transformation that settlement imposed, the fur trade might appear benign. But I think this impression is erroneous: the fur trade was an early stage of the same “storm” of dispossession that marks the West today. It was a multinational, capitalist enterprise; its profits went not to those in the front line but to merchants in Montreal and shareholders in London. At the points of exchange, the fur trade was far from heroic. It was an ugly business run on rum, dedicated to the slaughter of well over a million animals each year, and working with insidious effect in Native cultures. For every narrative of exploration and scientific observation, there are many records of disruptive scenes at the posts and backbreaking, risky travel between depots and the frontier. The fur trade was an essential link in reshaping the West even if its impact was less visible than later settlement. Look down from a plane window at the section divisions of township and range. Imagine the open prairie, immense if occasional bison herds, a rare diversity of plants and other animals, a light human print on the land. Together with the fur trade, indigenous cultures should not be romanticized. In most respects Natives of this region were no nobler than members of any other human society; nevertheless, perhaps because there were fewer

(continued on page 41)



Aaron Arrowsmith

Maps Exhibiting all the New Discoveries in the Interior Parts of North America ... Additions to 1796. Library and Archives Canada NMC 97818.

Some Thoughts (continued)

individuals, Native groups maintained a sustainable relationship with the ecosystems they lived in.

Transformation of this huge region since the mid-eighteenth century prompts two reactions in our own time, both of them ecological.

One response is clearly stated in a recent book by Candace Savage called *Prairie: a natural history*. “The wild ecosystem is gone,” Savage writes. “And this tragedy is compounded by the realization that we don’t even know exactly what it is that we have lost. Comparative species counts cannot be constructed from the anecdotal evidence of “fragmentary” period documents. Hence there can be no scientific proof of loss, just an uncomfortable suspicion that present trends were set in motion during the contact period. Savage’s advice is “to move quickly from sorrow to hope, from past to present.”¹

Instead of turning away from the past, another reaction is to dwell on it — to look closely at documentation from the contact period. There is much more evidence of this kind than Savage has considered. As well as published exploration narratives, a huge informational resource in the form of manuscript maps and post records is available at the Hudson’s Bay Company Archives. From animal counts (fur returns) to notation of temperature and weather to description of landforms and seasonal water levels, these documents provide daily observations of the Saskatchewan/Nelson and

Athabaska/Churchill watersheds. A less systematic picture of the same region, the far north and the Columbia watershed can be gained from North West Company papers.

In the *Dark Storm* essays I look at some of these documents and try to outline the “lost” world they represent. There are gaps in the record, certainly. More important and difficult to trace are profound differences of conception and shifts in attitude concerning the “same” places. We see what we are trained to see; most of the time we unthinkingly accept the values of our own culture. An appropriate and hopeful response to ecological crisis might be to limber up our minds by considering the unfamiliar perspectives that documents of the contact period suggest. ■

¹ Candace Savage, *Prairie: a natural history* (Vancouver: Douglas and McIntyre, 2004), 18-28. This book is endorsed by David Suzuki Foundation.

Barbara Belyea is a faculty professor in the English department at the University of Calgary. Her multidisciplinary interests include literary theory, the history of publishing, fur-trade exploration and the history of cartography. She is the author of *Dark Storm Moving West* published by the University of Calgary Press. It is featured in the Book Review section of page 38.



Unknown Cheyenne artist. “Bear Foot rescued by Last Bull.” 1871-76.
United States Military Academy Library. Bourke collection.

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Report to the Survey General (continued)

There is considerable local attraction found to exist throughout the whole county, so much that the magnetic needle cannot be depended upon in making the surveys. "Burts improved solar Compass" has been used on all the lines that have been run and are being surveyed, and found to be an admirable instrument, in fact the only one that can be used to advantage in the surveys on this coast.

Owing to the exceeding roughness of the country between the Willamette Valley and Pacific Coast the large extent of country occupied by the Coast Mountains which now appear to be unfit for settlement, it seems desirable to extend the standard parallels to the Coast, and from them extend Meridian lines north and south on the west side of the Coast Mountains, so that the townships that border on the coast can be surveyed, thereby avoiding the running of township lines over the mountains that are unfit for cultivation. It is believed that this system will enable all the country that is desirable for settlement on the coast to be surveyed soon, which would otherwise have to be deferred a long time, as it will require a large expenditure of money and time to extend the exterior lines of townships from the Meridian over the Coast Mountains to reach the isolated settlements on the Pacific.

Lands Recommended for Survey (3 paragraphs)

Oregon City Loto 2 paragraphs on survey of "Oregon City Claim")

List of Accompanying Papers

- A. Diagram of Portion of Oregon Territory showing the location of lands proposed to be surveyed the present fiscal year, also for the fiscal year ending 30th June 1853*
- B. Tabular statement of Contracts for surveying in Oregon Territory up to 20th October 1851*
- C. Statement of salary account*
- D. Receipts & disbursements*
- E. Copy of estimates for service & surveys for year ending 30th June 1853*
- F. Copy of letter accompanying (E).*

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