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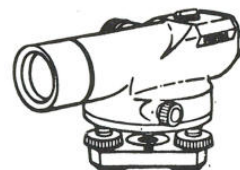
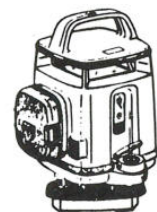
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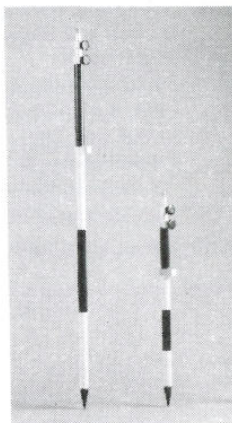
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JANUARY 1992



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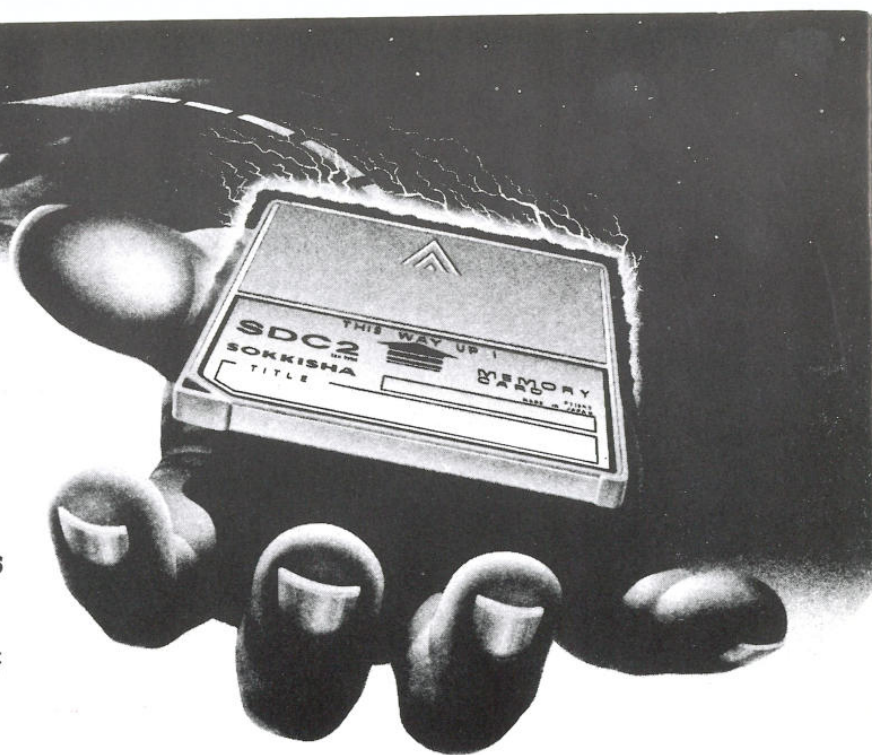
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NOTE: All portions of the state have chapters with the exception of Fremont, Teton, Sublette and north Lincoln Counties which are designated as Area 3. Chapter dues or assessments may vary in amount. Applications are considered by the Board of Directors at quarterly meetings. Send completed application to PLSW, c/o R.L. Hudson, Sec./Treas., P.O. Box 784, Thermopolis, Wyoming 82443.

## BLM Update

This letter is to inform you of official cadastral surveys in Wyoming that have been accepted from October 1, 1991, through December 31, 1991, and are now available in the Survey Records Office, Wyoming State Office, Bureau of Land Management, 2515 Warren Avenue, Cheyenne, Wyoming 82001.

The accepted surveys are listed below by township, range, type of survey, meridian, and acceptance date.  
Sixth Principal Meridian, Wyoming

| Township and Range  | Type of Survey           | Meridian | Accepted   |
|---------------------|--------------------------|----------|------------|
| T. 54 N., R. 91 W.  | Dep. Res. & Subd. Sec. 9 | 6 P.M.   | 10/09/1991 |
| T. 42 N., R. 117 W. | Dep. Res. & M & B Survey | 6 P.M.   | 10/09/1991 |
| T. 51 N., R. 71 W.  | Dependent Resurvey       | 6 P.M.   | 12/11/1991 |
| T. 51 N., R. 96 W.  | Dependent Resurvey       | 6 P.M.   | 12/11/1991 |
| T. 57 N., R. 95 W.  | Supplemental Plat        | 6 P.M.   | 12/11/1991 |
| T. 56 N., R. 94 W.  | Supplemental Plat        | 6 P.M.   | 08/14/1991 |
| T. 37 N., R. 80 W.  | Supplemental Plat        | 6 P.M.   | 08/14/1991 |
| T. 57 N., R. 95 W.  | Dependent Resurvey       | 6 P.M.   | 08/14/1991 |
| T. 49 N., R. 105 W. | Dep. Res. & Subd.        | 6 P.M.   | 08/14/1991 |
| T. 48 N., R. 106 W. | Dep. Res. & Subd.        | 6 P.M.   | 08/14/1991 |
| T. 49 N., R. 106 W. | Dep. Res. & Subd.        | 6 P.M.   | 08/14/1991 |
| T. 31 N., R. 118 W. | Corr. Dep. Resurvey      | 6 P.M.   | 08/14/1991 |

(Continued from page 13)

that separated the Yellowstone River from the mountains to the west. We didn't have a military escort or wagons. With pack mules, we went through Bridger Pass to Yellowstone in an area that is now Gardiner, Montana. I did astronomical work and made maps. We saw a good many of the things that we saw on our first trip, including geysers, hot springs, the falls and Yellowstone Lake. In addition to this we explored a pond on the divide called by the Indians, Two Ocean Waters.

In 1876 there was a good deal of trouble with the Indians. The government outfitted three small armies with Custer in charge of one. He was to start from Lincoln, where I happened to be at the time with Colonel Ludlow who was in charge of government explorations. We planned to go with them, but there was a shortage of horses. They didn't even have enough horses for the cavalry. I came back to St. Paul and upon my arrival, I heard that Custer and his army had been massacred.

### Subject: ACSM-ALTA Land Surveying Standards - Table 2.

At the 1991 Annual Meeting of the American Congress on Surveying and Mapping, this writer agreed to rewrite Table 2 of the ACSM-ALTA land surveying requirements. The previous table and the supporting documentation were reviewed. Due to numerous negative comments concerning the table, it was determined to delete the original and rearrange the information into a more meaningful format.

Based upon previous work - developing/designing survey projects, executing surveys, computing and analyzing the survey results, and preparing technical specifications for survey instruments and survey projects, it was decided that a totally different presentation of the information in Table 2 would provide clearer guidance to land surveyors and understanding to attorneys and land title personnel.

Good surveys are the result of good instrumentation, proper field procedures, and good survey personnel. Deficiencies in any one of these elements will result in inadequate survey results. In order to establish viable survey criteria, the premise was stated that the survey personnel were at least journeyman level experience survey technicians. If these criteria were applied to geodetic surveyors, it would mean that the surveyors would be competent to perform Second-Order surveys. Employing this assumption, establishes the survey observation statistics and the ability to set instruments and targets over (center) the survey station.

The first part of Table 2 identifies the minimum characteristics of the theodolites and distancers deemed acceptable to insure the specific precisions and accuracies for each class of survey. The criteria for theodolite observations permit use of electronic theodolites, optical

for various classes of survey. These are the instruments used every day by consulting land surveyors. Likewise, the distancers are commonly used by land surveyors.

Probably the most criticized aspect of Table 2 will be the requirement for calibration/certifications. The most controversial aspect concerning any boundary survey focuses on the analysis of the accuracy and the goodness of the survey. The approach is to state a series of procedures that provide the land surveyor with irrefutable technical knowledge to support and substantiate the stated survey results. The knowledge of the observer's capabilities, the condition (calibration/certification) of the instrumentation, and resulting statistics provide documentary evidence of the goodness of the quantitative data.

The office computations and adjustment of the field surveys can be performed in a variety of procedures. The land surveyor must employ a survey adjustment which does *not* contain unreasonable (in numerical value) corrections to one or more measurements. It is imperative that the surveyor perform a comparison between the corrected observations (for field/systematic effects) and the final adjusted values.

The last, and probably the most significant, change in Table 2 is inclusion of surveying criteria employing GPS technology. There has been considerable discussion of using GPS technology. However, its use to perform boundary surveys has been ignored; After studying reports describing GPS surveys for geodetic, mapping, engineering, and navigation projects, it was decided that with suitable procedures, Class C and D boundary surveys were possible. Because the bearings and distances between boundary points are not always measured directly (are measured indirectly utilizing control surveys), the requirements have been stated to insure geometrical integrity. The use of GPS is quite new, and land surveyors must be cautious in designing the survey and executing the checks.

Two types of survey instrumentation have been omitted. These are inertial positioning and photogrammetry. The usage of these two techniques can be acceptable when employed correctly. However, their use as a primary survey procedure is discouraged. If a land surveyor decides to utilize these technologies, a stringent set of technical instructions coupled with appropriate independent checks can be used to execute boundary surveys. However, the entire burden of proof of goodness and accuracy of such a survey is solely the responsibility of the land surveyor.

The land surveyor's responsibility is to prepare, execute, and publish a boundary survey. Table 2 provides guidance that minimizes opportunity to have quantitative blunders that would be considered a professional liability (errors and omissions). Table 2 does *not* eliminate the land surveyor's liability for failure to reasonably interpret the written and physical evidence, and incorporate both into an exhibit (map and legal description).

Herbert W. Stoughton, Ph.D., P.E., L.S.  
Geodetic Engineer

## Editorial Potpourri\*

- Chapter Minutes – Send us a summary of your organizations activities by 15 MAR 1992. Summaries need not be typed.

- Join PLSW Now – If you are not a member of PLSW, you will not receive *Lines and Points*. Only PLSW members, advertisers and other state newsletters will receive this newsletter. Join NOW. An application is included in this issue. If you are a member, recruit a new member. Part of PLSW membership dues makes this publication possible.

- DUES NOTICE – Dues notices have been sent to all members. **1992 DUES ARE DUE BY FEBRUARY 1, 1992.** If your dues are not received by March 1, 1992, the Board of Directors may suspend your membership. Pay your dues now.

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- 1992 ASPRS/ACSM Annual Convention – February 29 through March 5 in Albuquerque Convention Center. Contact Registration Coordinator, ASPRS/ACSM, 5410 Grosvenor Lane, Suite 100, Bethesda, MD 20814-2122

- Workshop Scheduled – On May 11 & 12 the SE Chapter will host a two day Public Lands Survey System workshop presented by Cadastral Consultants, Inc. featuring Dennis Moulard. Cost is \$170. Call 1-800-666-1320 for more information.

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PLSW (Professional Land Surveyors of Wyoming) is a state-wide organization of Registered Land Surveyors licensed to practice in the Equality State of Wyoming. PLSW is dedicated to improving the technical, legal, and business aspects of surveying in the State of Wyoming. PLSW is affiliated with the American Congress on Surveying and Mapping and the Western Federation of Professional Land Surveyors.

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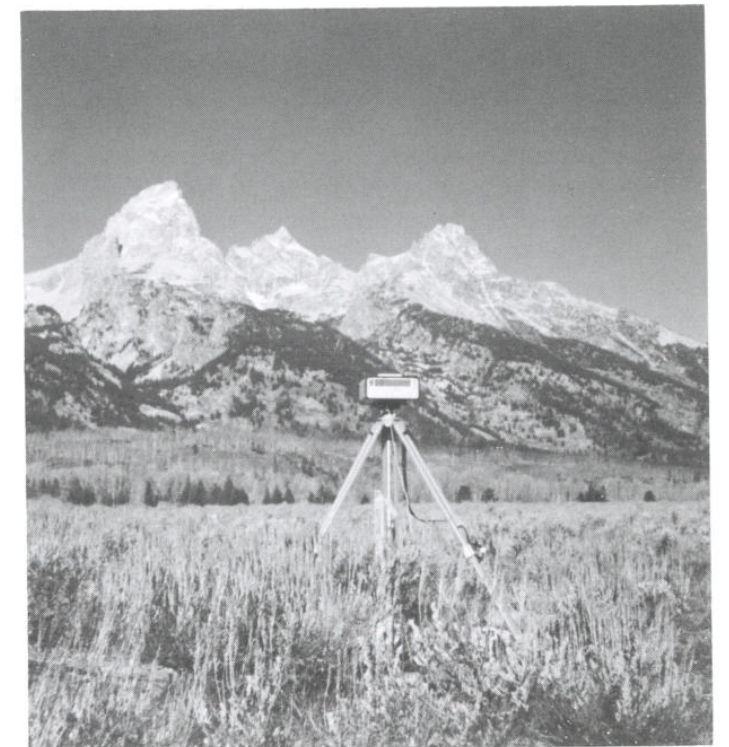
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**Deadline for winter issue – March 15, 1992**



Receiver on South Teton Base Line

Front Cover Artwork  
By Ray Blaha – Casper

## GPS on the Grand Teton

by Rich Greenwood

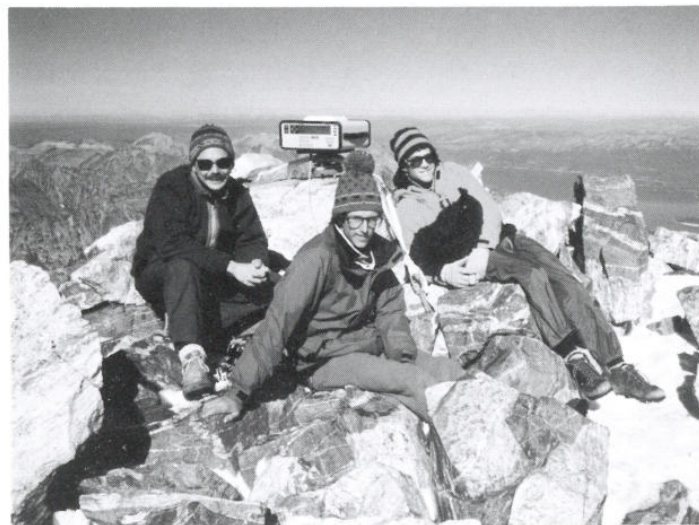
The elevation of Wyoming's second highest peak, the Grand Teton, was established in 1968 by the U.S.G.S. The mountain's 13,770 foot elevation was calculated as part of a third order mapping survey of the Jackson Hole area. I did not doubt the accuracy of the 1968 measurements, but I had always wanted to remeasure my favorite mountain.

My opportunity came in October of 1991. A five-man GPS survey crew from David Evans and Associates, Inc. of Portland, Ore. was in Jackson Hole working on a photo control survey for the Army Corp of Engineers. My employer, Scott Pierson, of Pierson Land Surveys, P. C. broached the subject of a re-measurement with Dan Hoekstra, the GPS project coordinator. Dan was immediately intrigued.

The GPS crew was working six days a week, so we would have to make a one-day ascent of the Grand. With the first winter snows already on the mountain, I had trouble interesting climbers in the adventure. Finally, Ray Warburton, a Pierson Land Surveys party chief, and Matt Hutchinson, a local climber, agreed to accompany me and a Trimble 4000ST to the top. Dan and another Pierson Land Surveys employee, Ed Lavino, would run GPS receivers on the valley floor.

Although we had bad weather all week, we had perfect weather on our climbing day. The easiest route to the summit is via the Owen-Spalding route, but the gullies and upper slopes of the route were already filled with snow and ice. Instead, we chose the slightly harder, but south-facing Exum Ridge route. We climbed quickly, using ropes for protection on only the two hardest pitches of the route, and reached the summit at 1:20 PM.

I fitted the receiver over the aluminum U.S.G.S. cap with a pillar plate borrowed from John Dolinar, of



Left to right on the summit of the Grand Teton: Rich Greenwood (author), Ray Warburton and Matt Hutchinson.



*The Summit*

William H. Smith and Associates in Green River. Placing a tripod over the cap would have been awkward at best and carrying a tripod up the long, technical climb would have been miserable. Dolinar's Wild pillar plate fit over the summit marker as if it had been machined especially for our project. We logged observations on four satellites for one hour, and then began the long descent which begins with two spectacular rappels, followed by hours of endless trudging.

After 14 hours of climbing, we were exhausted and elated on reaching the valley floor shortly after dark. Skipping dinner, I took the receiver directly to Dan's motel room where he downloaded the data. His least squares program took over half an hour to adjust his 200+ point network, which included 15 N.G.S. benchmarks and six horizontal control stations, and our new observations from the summit of the Grand Teton.

Our measurements put the Grand Teton at 13771.4 feet, 1.4 feet higher and approximately 1.5 feet northwest of the 1968 U.S.G.S. position, with a double standard deviation (95% confidence) of 0.29 feet.

### *Personal info:*

Dutch born Dan Hoekstra lives in Portland Oregon where he is a registered Professional Land Surveyor.

I have lived in Jackson for 9 years. I'm registered in Wyoming, and vice president of the PLSW Central Chapter. I have climbed the Grand Teton 14 times.

A more detailed account of the remeasurement of the Grand will appear in a forthcoming issue of POB magazine.

(Continued from page 12)

hit the camp within one hundred yards.

In the first part of January it got so cold we decided to go back to St. Paul. On the last day of our march back we had twenty miles to go and the temperature was twenty below zero. Some of the men tried to start a fire, but it was so cold their fingers froze. We carried our food, consisting of pork and bread, in the front of our shirts, but it froze solid. The last part of our journey back to St. Paul was by way of the stage.

In 1869 after answering an advertisement for an astronomical surveyor, I went to work for the U.S. Corps of Engineers under the direction of Major Twining. We went to Fort Abercrombie on the Red River not far from Big Stone Lake. There we were outfitted with army horses, a wagon and an ambulance to ride in. We made our way by astronomical locations passing through Fort Totten, now Devils Lake, North Dakota. We located Turtle Mountain which is 20 to 30 miles long and about 300 feet above the prairie. Covered by a dense forest, it's a peculiar sight rising from the prairie.

The next year Major Twining was relieved by Captain Heath. We started out for the upper Missouri, when I was accidentally shot. I was riding and looking for prairie chickens when in going over a buffalo trail the ambulance lurched, throwing the gun out of my hand. A charge went through my thigh and arm. I was sent back to Fort Abercrombie where I was in the hospital for six weeks.

In 1871 I went with Captain Health and Major Barlow to the area of Yellowstone Park to do astronomical work. We traveled by train from St. Paul to Chicago and from there to Salt Lake City by way of Omaha. From there, we traveled by stage to Helena. We rode five days and four nights without stopping except for change of horses. We then traveled southeast to Fort Ellis with pack horses. We saw all the wonders of Yellowstone. I made many of the principal locations astronomically. We went in and came out the same way and then returned to St. Paul for the winter.

In 1874 I went to the Black Hills with Custer. We had the War Department map of exploration to update. On an earlier expedition, a Captain Harney of the Corps of Engineers had marked the Black Hills on his maps, but did not go into them. We outfitted at Fort Lincoln with enough supply wagons for a two month trip. The expedition included Colonel Fred Grant, son of President Grant, Colonel Ludlow, George Grinnell, a ornithologist, Professor Dana, a geologist and about twelve hundred soldiers.

Our route lay southwest across the prairie, as we were continually looking for signs of the earlier expedition. One day we found two unbroken lines of flowers stringing across the prairie as far as we could see. The wagons of the earlier expedition had apparently broken the sod allowing the flower seeds a place to sprout. It was a very interesting and unusual sight.

We went into the Black Hills and traversed from

north to south on no definite route, for nothing was known of the country. It was slow travel with lots of trouble. Sometimes we didn't make more than four or five miles a day, because we had to stop and pick a way for the wagons to get through. Once or twice they went all night long. There was no let up with Custer, he went ahead and picked out the camping places. One day he picked out a camping place and said, "I guess they can come this far." They didn't get there until 4 o'clock in the morning. Then they fed the horses and went right on.

Captain Harney on the earlier expedition had estimated the location and height of Harney's peak. It's a granite peak standing up above the rest of the mountains. One day Custer, Ludlow, and myself decided to climb this peak. We took our horses as high as we could, then tethered them and went the rest of the way on foot. Custer took his horse a great deal higher than we did. We got a wonderful view of the surrounding country and I took several observations of prominent places. I remember that Custer's horse had a hard time getting down the steep mountain side. It was cruel, the horse's knees were bleeding badly.

In addition to my astronomical observations, I kept a log with compass and odometer readings. I then made a map showing our trip and all the hills and streams. This is now in the War Department files.

We came out of the Black Hills not far from Harney's Peak at the south end of the Hills, then went east on the prairie. The trip took about six weeks from Fort Lincoln and back again. The purpose of this trip was to explore this region. There were rumors that the hills had gold in them. Custer had several gold miners with him and they found some gold.

In 1875 I made my second trip to the Yellowstone area with Ludlow, Grinnell and Dana. On this trip we went to Bismarck and then up the Missouri river by steamboat to the mouth of the Judith River, which is something unique in that country. There is a range of low hills, 500 to 600 feet high that circle around and come almost to the river at the north. This is the Judith Basin. It is not like the rest of the prairie country, there are a good many little streams that flow out from these hills and make the Judith River. Camp Lewis, a military post was there at that time, mainly for protection against Indians.

We traveled on horseback from here across the Missouri Valley and then down through southern Montana to Yellowstone. We went in on the south side of the basin, where there is a pass in the mountains. From one of the mountains heights, we could see a good deal of timber in one direction and in the other direction was beautiful meadow country. It was here we saw great quantities of buffalo. The buffalo were down in the Musselshell Valley and there seemed to be millions of them. I never saw anything like it before nor since.

The object of the trip was to explore and survey the Yellowstone. We outfitted at Fort Ellis, which is near Bridger Pass, a famous old pass across the mountains

Continued on page 14



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## The Meter's Origins: A Clockwork Conspiracy?

Why, in SI units, is  $g \approx \pi^2$ ? Coincidences are only occasionally accidental. I wish to suggest that this one is evidence for a conspiracy to obscure the origins of the metric unit of length.

The lore is that the meter was originally defined in 1791 as one ten millionth of the distance from the North Pole to the equator<sup>1</sup>. It is taken as a remarkable coincidence that the period of a 1-meter simple pendulum is almost exactly 2 seconds. (For  $g = 9.81 \text{ m/sec}^2$ , the period is 2.006 sec.) If the period were 2 seconds, then from  $2 \text{ sec} = 2\pi\sqrt{l/g}$  we would get  $g = \pi^2 \text{ m/sec}^2$ .

I believe that this coincidence arises because there existed an older standard of length, defined by the group of skilled instrument makers who manufactured pendulum clocks. It was the length of a pendulum for a clock with a 1-second tick. (That is a 2-second period.) The escapement had been invented long before 1791, so that this standard length was well established. It could be reproduced with high accuracy by any skilled instrument maker anywhere on Earth.

It appears as if the new French Republic chose a rational standard of length and then confounded rationality by linking it to one-quarter the circumference of the Earth. The recipe for the meter became truly grand, and difficult to implement. To reproduce the French standard, one had either to remeasure the circumference of the Earth or to make a pilgrimage to the location of the standard meter. The conspiracy? There can be little doubt that the French Board of Tourism was behind the 1791 standard length.

I have enjoyed using this speculation to engage the attention of my students. I am writing to ask if there is any real evidence for the use of clock pendulums as length standards.

### Reference

1. F. W. Sears, M. W. Zemansky, N.D. Young, *University Physics*, 7th ed., Addison-Wesley, Reading, Mass. (1987), p. 5.

John W. Dooley  
Millersville University  
Millersville, Pennsylvania

## Reminiscences of a Pioneer Surveyor William H. Wood

*Adapted from his autobiography by John E. Freemyer*

I was born in Canada just opposite Detroit in 1844. Ten years later we moved into Detroit where my father was employed in Surveyor General's office which had just been established for surveying the government lands of Michigan. In 1857 we moved to St. Paul where my father opened and ran the office for the Surveyor General.

In St. Paul, I attended private school on the mission grounds of the Episcopal Church. When I was 16 years old I began working for the railroads doing survey work on the first railroad out of St. Paul. For several years I worked on various railroad surveys and railroad construction, but in the winters I continued my schooling, studying mathematics and astronomical surveying.

In 1862, I went out from St. Paul on a government survey as a chainman for a deputy surveyor named Cook. We went out in June to the big woods west and south of a trading post called Fortuna. It was a trading post to deal with the passing traffic on the stage road and the Indians. Fortuna is now the townsite of Hickley, Minnesota.

We stored our supplies consisting of flour and pork at the trading post. About once a week we had two Indians to bring us a portion of the supplies. In December it got very cold and for some reason the Indians didn't bring us our supplies. We had stored some extra supplies in an abandoned cabin in the woods, so Cook had me go for those supplies. I started out early in the morning with an Indian companion. We had to go six miles south and six miles west on another township line to the cabin. It was about noon when we got there and got our supplies. I couldn't speak a word of Chippewa and the Indian couldn't speak English, but I got down on the ground and drew a map showing the route we had come. Then I drew a line diagonally, showing the line back to our camp. After asking him if he could do it, he nodded and grunted. I trusted him, because I didn't know the trail and didn't even have a compass. It was pretty tough going, with fallen timber and marshes everywhere. As it was beginning to get dark, I heard an ax chopping. We had

Continued on page 13

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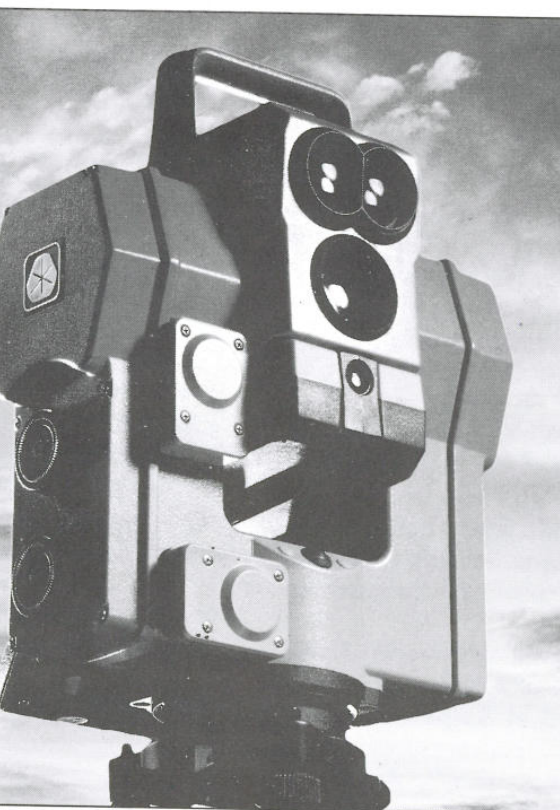
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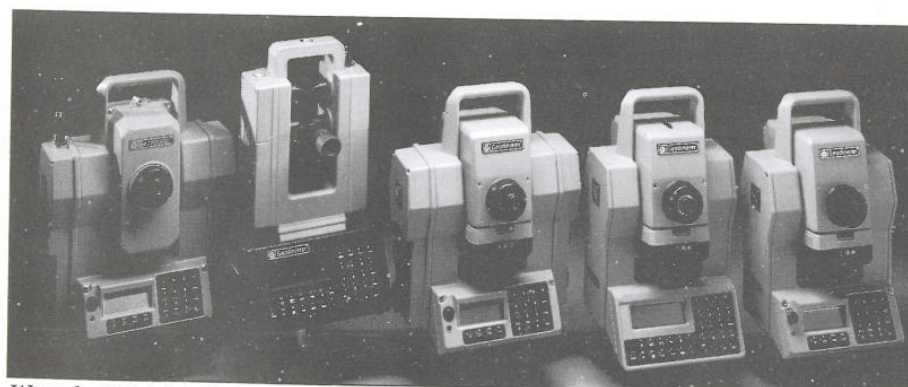
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## President's Message

That great time of year is fast approaching! Not Christmas or your birthday, but the PLSW annual meeting! The PLSW annual meeting will be held in conjunction with the Wyoming Engineering Society convention in Sheridan. Our meeting is currently scheduled for 3 p.m. on Thursday, February 6, 1992. This has tentatively been moved up to 1 p.m. to allow us an adequate amount of time for issues and discussion. The notice of the meeting time will be mailed to members as part of the annual meeting announcement.

Already, our vice-president has mailed ballots for the election of 1992 officers and for a proposed by-laws change. The change in by-laws would allow full voting membership by federal government surveyors of grade GS 1373 or higher. This is in conformance with the membership criteria for National Society of Professional Surveyors. This proposed by-laws change is being made to allow these surveyors, who are of equivalent experience and training, to participate as full members. We have many active members who work as surveyors for the Bureau of Land Management. This by-law change would allow them to move into full membership. One of the advantages of PLSW can be to allow dialogue and meeting among surveyors of varying backgrounds and employment. Just ignoring this question on the ballot has the effect of a "NO" vote. I would like to urge each member to vote on this by-law change.

Among the recent issues for Professional Land Surveyors has been the question of continuing education requirements by the Board of Registration for Professional Engineers and Professional Land Surveyors. I represented PLSW at the September 9 meeting concerning the proposed requirement and expressed PLSW's opinion that the Board of Registration should study the requirements of other states and hold off on implementation of the requirements in Wyoming. I also expressed my personal opinion that credit should be allowed for active practice of the profession. Also at this meeting were a very large number of Professional Engineers who expressed many reservations about the new requirements. The requirements are currently on hold, and the Board of Registration is planning a session concerning continuing education at Sheridan during the February 6-8 convention.

I am looking forward to attending the WES convention and the annual PLSW meeting and seeing as many of the PLSW members as possible. Let's hope the weather and roads are kind to us this year!

Becky Braman, President

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## Board of Directors' Meeting Summary

The late fall meeting of the Board of Directors was held in Gillette, at the Holiday Inn, on Saturday, December 14, 1991. The meeting was hosted by the Northeast Chapter under the leadership of president Jim Claflin and which chapter was represented by five members.

The meeting followed a luncheon at noon with twelve members present and was called to order at 1:24 P.M. by president Braman. Directors from the Northwest and Southwest Chapters were absent.

Minutes from the September board meeting in Rock Springs were distributed and approved subject to a more thorough review by the board members.

The treasurer's report was accepted and consisted of the current checking and savings account balances as well as the budgeted spending to date.

Continued on page 7

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easements, ditch rights, and the like, and the water again becomes subject to appropriation. Water must have been available but not used for abandonment to take place. Wyoming law proves standing so that abandonment action can be brought by a pre-March 1, 1945, water right holder, even though senior in priority, against another pre-March 1, 1945, water right holder to protect the right to surplus water.

### Wyoming Water Law

#### Basic precept

1. Beneficial use is the basis, measure, and limit to the right to use water at all times.
2. To bring about a more economical use of the available water supply, two or more water users may rotate the use of their combined water rights after obtaining permission of the water division superintendent or water commissioner.
3. You are responsible for maintenance of your ditches so that the water therefrom does not flood or damage the property of others.
4. You are responsible for your waste water at all times.
5. In administering water to the various appropriations on a stream, the state is obligated to deliver the full amount of any appropriation in priority at its head gate out of the stream. Any ditch loss between the headgate and the appropriator's land is the responsibility of the appropriator.
6. Temporary uses of water, such as for oil well drilling highway construction, etc., may be granted by the state engineer upon proper application.
7. In any case where a ditch was in place before any houses or other property, the property owners are compelled to protect themselves from any damage created by seepage from the ditch. If, because of seepage, a newly built ditch creates damage to property that was present before the ditch was built, the ditch owners shall be liable for any damage.

#### Summary

In Wyoming a valid right to the use of water may be acquired only by following the procedures established by state law for both surface and ground water.

Water users should be sure of the status of their water rights. Check the records in the county clerk's office, or through the state engineer's office. The records indicate the appropriation amount, priority of the right, and how and where the water is to be used. If there are any questions, check the state engineer's office and request complete information on the status of the water right in question.

**Address Change?**

**Please let us know.**

## Wyo, ID, Utah Border Point

Mr. John P. Lee, Chief  
Branch of Cadastral Survey  
Bureau of Land Management  
Box 1828  
Cheyenne, Wyoming 82003

Re: Corner monument common to Utah, Idaho, and Wyoming

Dear John,

The Professional Surveyors of the 6th Principal Meridian was formed for the purpose of recovering and remonumenting the initial point of the Meridian on the Nebraska-Kansas state line. This was accomplished in 1987 and a very creditable monument and informative park area resulted with the cooperation of many including the Bureau.

Reviewing its success with this effort, the group decided to continue and monument the termini of the two lines and state corner monuments needing rehabilitation.

To date the following has been accomplished:

- a. Rehabilitation of eastern terminus of 6th P.M.
- b. Monumenting the southern terminus.
- c. Remonumenting the Nebraska-South Dakota-Wyoming state corner.
- d. Rehabilitating the southeast corner of Colorado.
- e. Remonumenting the Nebraska-Kansas-Colorado state corner.

Attention is now being directed to the corner monument common to the states of Idaho, Utah, and Wyoming. Previous work has determined this to be a "lost" corner with the 1915 monument extant but unset.

To reestablish the state monument, the survey of the 42° parallel will be needed. Most interesting is to find that the Initial Point for the parallel is located some fifty-seven chains into Wyoming. Obviously the initial point monument also ought to be rehabilitated so that we now have a two-point project to contemplate.

Request then is made for assistance from your office in conducting the surveys needed to recover the initial point and to reestablish the position of the state monument. It appears that the lands involved in Idaho and Wyoming are all administered by the Bureau while the lands in Utah are patented.

Further, if a rededication ceremony evolves, your support and participation in that would be most appreciated and helpful.

Very sincerely yours,

PROFESSIONAL SURVEYORS of the 6th P.M.

Paul N. Scherbel

Chairman pro tem

## Wyoming State Engineer's Office

*A continuing reprint of portions of the "Wyoming Water Law: A Summary"*

### Preferred Uses

Wyoming water law defines the preferred uses of both surface and ground water and lists them in the following order:

1. Drinking water for humans and livestock
2. Water for municipal purposes
3. Water for steam engines and general railway use; water for cooking, laundering, bathing, and refrigerating (including the manufacturing of ice); water for steam and hot-water heating plants, steam power plants.
4. Water for industrial purposes

### Non-preferred Uses

All uses of water other than those listed as preferred uses are considered non-preferred.

When the water supply is insufficient to meet water rights, rights with a preferred use do not take precedence over a non-preferred use. The priority date of a water right, preferred or non-preferred, determines who is entitled to water. The only way you can obtain a preferred right for a non-preferred prior right is by purchase or by condemnation through court action. The right of condemnation cannot be used by industrial concerns to obtain water rights. However, ground-water wells yielding 25 gpm or less and used solely for domestic and stock purposes do have preferred rights over wells for all other uses regardless of date of priority.

**Example:** An irrigation water right (non-preferred use) with an early priority is entitled to use water even when it may involve denying water to a municipality (preferred use) with a later right. The municipality may acquire, through condemnation if necessary, the earlier irrigation right and change it to municipal use, provided just compensation is paid.

### Keeping Water Rights Valid

To keep a water right valid when changes are made in the point of diversion, in the location of a well, in the location of an irrigation ditch, or similar circumstances, you must secure permission. Do this by petitioning the board of control if the water is adjudicated. If it is not adjudicated, send your petition to the state engineer.

In most instance, obtaining permission for changes does not change the priority date of the water right but keeps the water right up to date and legal. Public hearings on the changes may be held to ensure that no injury occurs to the other water right holders because of the change. Keep the water right in proper standing so no legal questions are raised concerning its validity.

### Change in Use

If you own a water right and wish to change it from its current use to another use, or from the place of use under the existing right to a new place of use, you must file a petition requesting permission for a change. The petition sets forth all pertinent facts about the existing use and the proposed change in use. When you request

a change in place of use, all pertinent information about the existing use and the proposed place of use shall be specified in the petition. The board may require that an advertised public hearing be held at your expense. The petitioner shall provide a transcript of the public hearing to the board. The change in use, or change in place of use, may be allowed.

If such an allowance is granted, the quantity of water transferred by the granting of the petition shall not exceed the amount of water historically diverted under the existing use. Furthermore, the historic rate of diversion and the amount consumed cannot exceed that under the existing use. Finally, such a petition, if allowed, shall not decrease the historic amount of return flow, or in any manner injure other existing lawful appropriators. The board of control considers all facts it believes pertinent to the transfer. These may include the following:

1. The economic loss to the community and the state if the use from which the right is transferred is discontinued.
2. The extent to which such economic loss will be offset by the new use
3. Whether other sources of water are available for the new use

In all cases where the matter of compensation is in dispute, the question of compensation shall be submitted to the proper district court for determination.

### Subdivisions with Attached Water Rights

Wyoming law now provides that any time you subdivide a parcel of land with water rights attached, you (the developer) must dispose of the water rights in one of three ways:

1. Voluntarily abandon the water rights, removing them from the land forever
2. Transfer the water rights to other owned lands that have no other water right from the same source
3. Develop a subdivision irrigation plan showing which lands have the water right, amount of the water right, supply and waste ditches, and other information necessary for the protection of individual lot owners in retaining the water right on the land.

Each of these actions requires review by the state engineer's office or the state board of control before the subdivision can be approved by the respective county.

### Water Right Abandonment

A water right for surface or ground water not used for five successive years when water is available to satisfy the right is considered abandoned, but a statutory procedure must be followed to bring about legal abandonment. The law provides a procedure for abandonment, but it must be brought by an affected water user who has a priority equal or junior to the right being abandoned, or by the state engineer. If a right is declared abandoned, the user forfeits all water rights,

## Board of Directors Meeting . . . Continued

A written and oral report, of the October NSPS Board of Governors' meeting in Atlanta, was presented by Becky J. Braman. She will again represent us at the upcoming meeting at Albuquerque in February.

Reports were presented from members of the Membership, Scholarship and "Handbook" Committees. The Membership Committee reported that 27 members and 5 affiliates had paid 1992 dues. The Scholarship Committee indicated that new ideas and candidates for our scholarship program are requested from individual chapters, and Scott Pierson delivered the "handbook" tabs and reported that the binders are being printed at this time, along with a request for volunteers to prepare material for various "tabbed" chapters within our handbook.

Vice President Bob St. Claire presented the 1992 ballot for officers and asked for additional names. The ballot will be finalized by adding biographical data and will be sent out to all voting members shortly after the first of the year by the Secretary.

The 1992 Budget Worksheet was distributed with the agreement that all board members are to solicit input from committees and chapters and return their requests, to the Secretary Treasurer, not later than January 15th.

A letter from Allen Mace, member from Saratoga, was presented wherein he donated \$100 to PLSW. The board decided to use his gift to purchase an item to be raffled at the Wyoming Engineering Society convention in February with the proceeds to go into our scholarship fund. Thank you Allen.

President Braman read a proposed By-Laws amendment resolution that would allow full membership rights to applicants with a GS1373 classification. This will appear on the 1992 ballot.

Applications for three new affiliate members were approved and the possibility of smaller chapter areas was discussed, the latter based on a request from a member within the Southwest Chapter. Other business consisted of a discussion of the upcoming annual meeting to be held in conjunction with the Wyoming Engineering Society convention in Sheridan. Our annual meeting is tentatively set for Thursday, February 6, from 3:00 to 5:00 P.M., at the Holiday Inn/Holidome.

As a part of the WES convention, members of the Southeast and Northeast Chapters have been involved in the "surveyors" program and tentative subjects include sessions on practical observation of Polaris, ALTA standards and liability, and land law.

Your board selected the following sites for 1992 meetings:

- a) May BOD meeting, Southeast Chapter, in Cheyenne;
- b) September BOD meeting, Central Chapter, in Jackson;
- c) December BOD meeting, Northwest Chapter, in Thermopolis. The next board meeting will be held in Sheridan, prior to the 1992 annual state meeting.

The meeting was adjourned at 3:49 P.M.  
Dated this 28th day of December, 1991.

R.L. Hudson  
Secretary/Treasurer

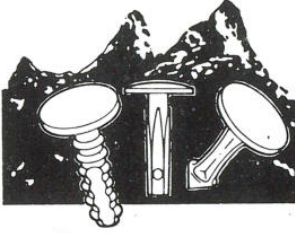
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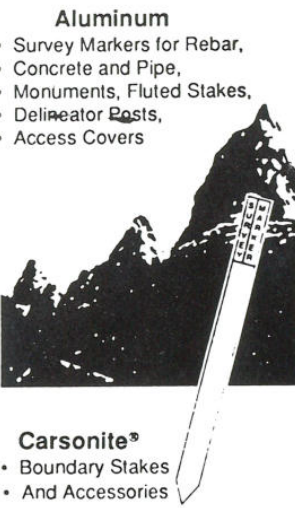
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## Northeast Chapter News

Northeast Chapter activities this fall have centered around two items. The first being the implementation of a surveying degree program at the Gillette campus of the Northern Wyoming Community College. The second was a rifle raffle held by the chapter.

The Chapter started on the first endeavor last January when an education committee was formed to assist the Career Development Center at the Gillette campus of the NWCC in developing a surveying program. Our goal is to get a program instituted at the college that will assist in training entry level survey technicians and also meeting the educational requirements for Land Surveyor-in-Training registration.

The education committee, chaired by Don Oakley, worked closely with Gerald Brock, director of the Career Development Center, and Max Carpenter, surveying instructor at the Sheridan campus, to formulate a surveying degree curriculum. The curriculum they developed was presented to the Chapter at our November meeting. The Chapter reviewed the program and agreed that it should be sent to the Wyoming Board of Registration for their approval.

Continued on page 8

Jim Claflin, Northeast Chapter president, submitted the curriculum to the Board on November 21. We have recently received word that the Board has reviewed the program and granted conditional approval.

The next step will be to present the program to the NWCC College Commission. With Commission approval we're hoping to have the program in place for the fall 1992 semester.

The second item that the Chapter devoted a lot of time to was the raffle held for a Ruger Model 77R rifle. This project was undertaken to get funds to be used to support the surveying degree program with a scholarship. We had tickets printed and distributed to chapter members in September and the drawing was held following our December meeting.

This turned out to be a very successful fundraiser, thanks to the many chapter members that participated in selling the tickets. We will consider making this an annual event at a future meeting.

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## Summary of December 17, 1991 Quarterly Meeting of the South Central Chapter P.L.S.W.

The Chapter meeting was held at the office of Joe Popp in Glenrock, and was called to order at 7:26 p.m. by President, Jim Jones. Members present as follows:

Jim Jones, Bill Fehringer, Steve Strang, John Hibsman, Joe Popp, and Don Davis.

July meeting minutes were read and approved. The Treasurers report was read and approved with no discussion.

Director John Hibsman, gave his report from the December 14 Board of Directors Meeting in Gillette. Budgetary items were addressed and discussed, as was the Manual of Practice. John will proceed to the Board with our budget items.

The Chapter Newsletter was discussed and motion made, seconded and voted for to direct John to petition the Board to put the newsletter operations into committee status of the State Board, PLSW.

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The Wesfed Resolution was tabled. This Resolution would have the chapters forward \$30.00 per member to a holding account. On the chance ACSM folds, there will be capital to address a new organization. Discussion centered on what might happen with the money if ACSM doesn't fold and that ACSM will probably last the storm.

Under new business, Don Davis entertained a motion to dissolve the South Central Chapter, PLSW. The motion was seconded by Steve Strang and discussed. The lack of attendance, apathy, and physical boundary being the reasons for dissolution. In opposition to the motion, topics for continuing the chapter included contact with each other and the fact that good or bad we need a chapter, for representation now and in the future. The motion was unanimously voted down.

John Hibsman nominated Jim Jones as Director; Bill Fehringer, President; Joe Popp, Vice President; and Don Davis as Secretary. Joe Popp moved the nominations be closed and that a unanimous ballot be cast for the nominees, seconded by Steve Strang, all ayes.

The meeting was adjourned at 9:30 p.m.

Don A. Davis  
Secretary

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## Seventy-Second Annual WES Convention

February 6, 7, 8, 1992  
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Convention Program

Thursday - February 6, 1992

- |               |                          |
|---------------|--------------------------|
| 1:00 - 5:00   | Registration             |
| 9:00 - 3:00   | WACERS Meeting           |
| 10:00 - 12:00 | PLSW BOD Meeting         |
| 1:00 - 5:00   | PLSW Meeting             |
| 9:00 - 1:30   | WACES Board Meeting      |
| 1:30 - 3:00   | WACES Membership Meeting |
| 3:00 - 4:00   | ASCE Meeting             |
| 4:00 - 5:00   | WSPE Meeting             |

Friday - February 7, 1992

- |       |                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------|
| 8:00  | Convention Registration - all day                                                                         |
| 8:30  | Convention Convenes - President Frosty Kepler Presiding                                                   |
| 9:00  | Joint Session #1: Peer Review - WACES, Panel Discussion                                                   |
| 10:00 | Concurrent Session #2A: Booster Pump Station Systems by Moltec, Inc., Harry Neef                          |
| 10:00 | Concurrent Session #2B: Polaris Observations, Herb Stroughton                                             |
| 11:00 | Concurrent Session #3A: Computer Aided Design and Drafting - Casper College, Paul Hartman and Bob Edwards |
| 11:00 | Concurrent Session #2B: Wyoming Transportation Department - Survey Program                                |
| 12:00 | Members' Luncheon: Sheridan Area Water Project, Dave Engels                                               |
| 1:30  | Concurrent Session #4A: Wyoming Construction Law, Ray Hunkins                                             |
| 1:30  | Concurrent Session #4B: Construction and Negligence Liability of Surveyors, Jim Schermatzler              |

- |      |                                                                                                                     |
|------|---------------------------------------------------------------------------------------------------------------------|
| 2:15 | Concurrent Session #5A: Key to Perfect Asphalt - Western Research Institute, Mike Harmsburger                       |
| 2:15 | Concurrent Session #5B: American Land Title Association (ALTA) Survey Requirements, Becky Braman and Herb Stoughton |
| 3:30 | Joint Session #6: Intelligent Vehicle Highway Systems (IVHS), C. P. Damon                                           |
| 4:15 | Exhibitors' Beer Break - through 5:30                                                                               |

Saturday - February 8, 1992

- |       |                                                                                                                                                                         |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:00  | Convention Registration - Until noon                                                                                                                                    |
| 9:00  | Concurrent Session #7A: Groundwater Modeling - University of Wyoming, Vic Hasfurther and Jack Meena; and Pumping Stock Water with Photovoltaic Solar Panels, Sadrul Ula |
| 9:00  | Concurrent Session #7B: Engineering Aerial Surveying, Larry Diebert and Dave Brady                                                                                      |
| 10:00 | Joint Session #8: Engineering Contracts with State and Local Agencies, Panel Discussion                                                                                 |
| 11:00 | Joint Session #9: Continuing Education, Panel Discussion                                                                                                                |
| 12:00 | Joint Luncheon (Men and Women): Winter Survival, Martin Pedersen                                                                                                        |
| 2:00  | Joint Session (Men and Women): Fort Phil Kearney, Carl Oslund and Charley Luxmoore                                                                                      |
| 3:30  | WES Business Meeting                                                                                                                                                    |



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