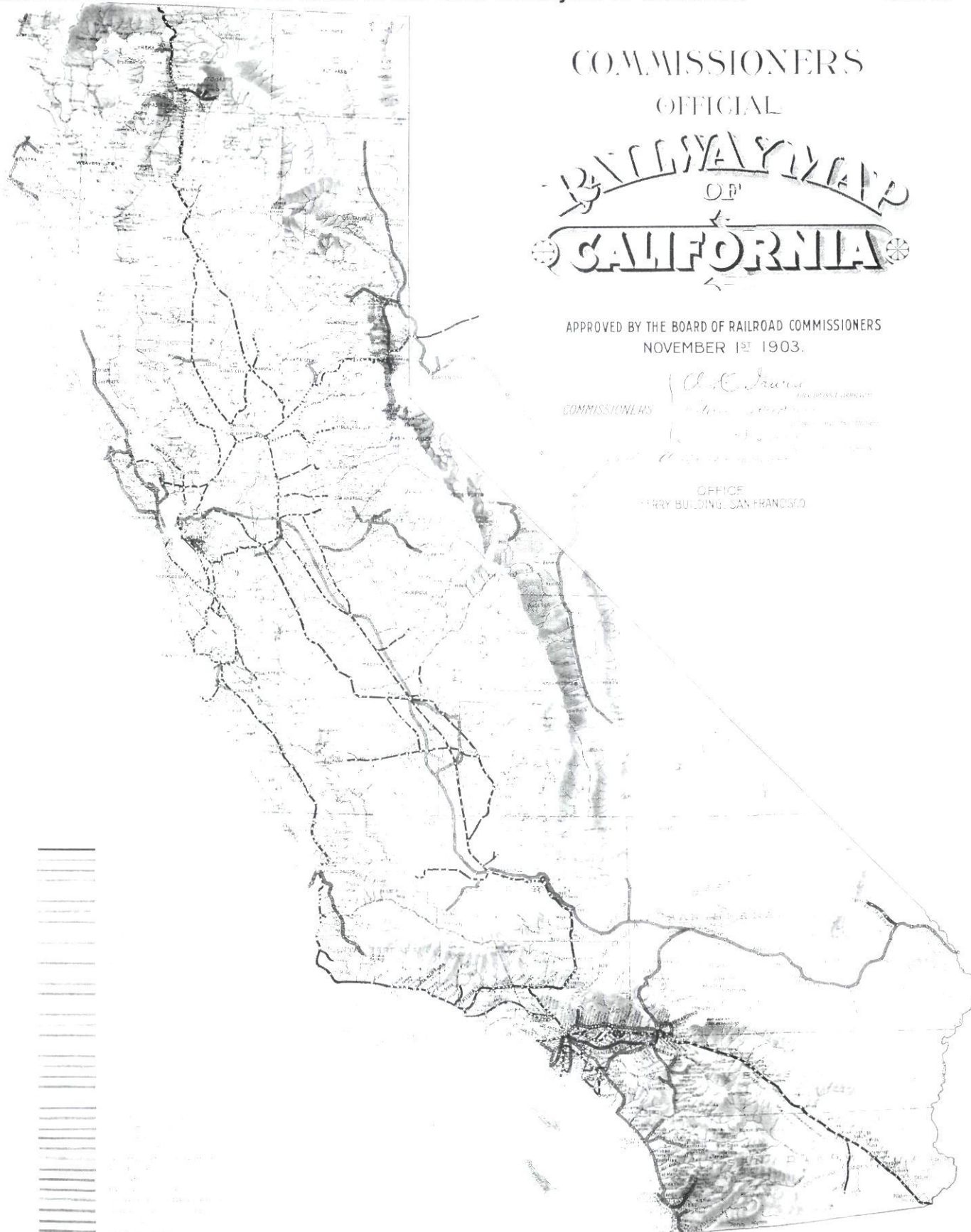


The California Surveyor

SUMMER 1997

The Voice of the Land Surveyors of California

NO.116



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"Recognizing that the true merit of a profession is determined by the value of its services to society, the 'California Land Surveyors Association' does hereby dedicate itself to the promotion and protection of the profession of land surveying as a social and economic influence vital to the welfare of society, community, and state."

"The purpose of this organization is to promote the common good and welfare of its members in their activities in the profession of land surveying, to promote and maintain the highest possible standards of professional ethics and practices, to promote professional uniformity, to promote public faith and dependence in the Land Surveyors and their work."

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EDITORIAL MATERIAL

All articles, reports, letters, and contributions are accepted and will be considered for publication regardless of the author's affiliation with the California Land Surveyors Association, Inc. Contributions submitted on floppy diskette medium is encouraged. For compatibility, disks should be 5.25 or 3.5 inches, MSDOS (IBM compatible) format. We can accept ASCII text files or word processor files from the following programs: WordPerfect, Microsoft Word.

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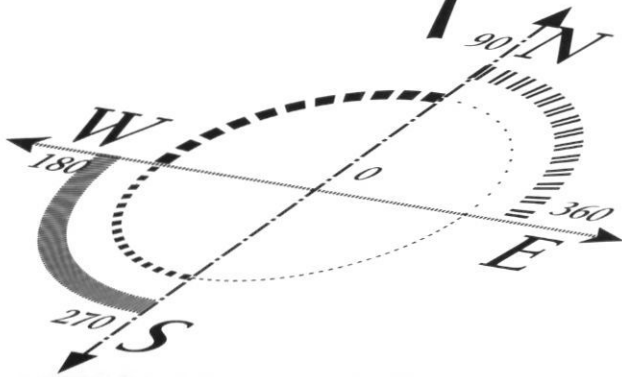
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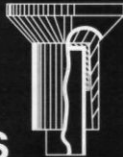
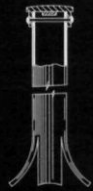
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From the Editor

What a Long Strange Trip It's Been

By Tom Mastin, PLS

Caution – Of all the thirty-six alternatives, running away is best.

– Chinese Proverb.

What was I thinking? I actually was writing the following, before I finally stopped and read it :

As I write this, I see yet another issue that tears at the thread of the fabric of the Association. That issue, as anyone who reads the "C.L.S.A. News" knows is the PECG initiative. This is certainly not the first divisive issue that has polarized members of the association. It will certainly not be the last. If this Association is going to go down it will not be because of a single issue but will be because of the lack of leadership and participation. There are issues on all sides of us that we need to address, we need to attack, we need to support, we need to analyze and we need to act on. If we can't, we will surely disappear as an Association and as a profession. C.L.S.A. was established because a few concerned Land Surveyors saw our profession eroding away in the mid '60s. They were intelligent enough to know that a few surveyors could not change the direction of the profession. So they started an Association that would push the causes of the entire profession. I'm sure they did not envision that the struggles of the Association would come mostly from within.

We need to be able to deal with issues that come up and not threaten to quit each time it doesn't go your way. We know it's your ball, but you've got to be bigger than that. You have all been told to become involved. There are many different levels of involvement, but all of them require that you have an interest in the profession, except for self involvement. Some of you, like Groucho Marx, wouldn't be a member of any Association that

would have you as a member. I understand that; in fact for some of you I even support that. Your jobs may vary from member to member, but you are all in one profession. So how do we deal with the discord of conviction within the profession? It's beyond me... but as Hubert H. Humphrey said, "Freedom is hammered out on the anvil of discussion, dissent, and debate." I'm sure this must pertain blah, blah, blah, blah, blah.

Please, tell me you didn't try to muddle through that mess. What a joke, here as I write this one month behind schedule, thinking that I, as editor, have some divine providence to browbeat the masses. Talk about casting the first stone; it must be later then I thought. Not only that, but it makes a doctoral thesis look entertaining. I am truly sorry, for even thinking that way.

I guess what I meant to say is... if you enjoy your work and you consider it a profession, you should do something to return the favor. The profession will benefit from your involvement and you will benefit from your involvement. You needn't be active in C.L.S.A. or any other professional association to aid the profession. There are many other ways to return something to the profession. However if you would like to volunteer within C.L.S.A. I have a few suggestions. Start small and start locally. If you are reluctant to speak up and volunteer (which is almost a prerequisite of becoming a Land Surveyor) then just attend your chapter C.L.S.A. meetings and ask a question. Do this for about four meetings in a row and you will be volunteered. If it's next to impossible for you to get to chapter meetings, then call your local president and let them know you are interested. If you don't know who your chapter president is, then call Central Office, they will let you know who to talk to. I guess what I am saying is, if you can help, everyone benefits.

Less Important Things

With this, yet another deadline missed, yet another promise not kept, I struggle to justify my belief that others benefit from my message.

—Anonymous

As we near the end of a Millennium (which apparently occurs a year before the next millennium begins) I think about the disastrous effects of the computers not being able to handle the turn of the century and I wonder "Now how are they going to blame that on the surveyors?". When I start thinking like that, I know that I have been thinking too much and my thoughts are too little. This is a sign to move on and move on soon. I have come to the opinion that there are too many things going on in this world to be worried about what deadlines I've missed this week. I came to that opinion by missing way more deadlines than I should have, and spending way too much time thinking about good excuses for missing them.

I am reminded of my younger days when I was a laborer for a company that built cement water tanks. It was hard work, and as I get older I make it sound even harder, but that is for another time. The job I worked on was run by a foreman who knew what to do and how to get it done. About once a month, the superintendent would stop by. He would usually make major decisions, such as have us move the trash pile from one area to another, in fact that is the only decision I actually ever saw him make. He did however come up with the idea of prefabrication of the frame supports to save installation time. It worked so well that we ended up tearing all that down and rebuilding them on site. Which then caused the superintendent to tell the foreman we were behind schedule and we would have to work overtime to catch up. When he left, the foreman explained it to us... He said, "The sup didn't have twenty years of experience, he had one year of experience twenty times." I know its an old saying, but sometimes it just seems to fit the situation.

This is my 435th edition of *The California Surveyor* and in many ways it feels like I've had one edition of experience 435 times. Sitting on this side of the fence, its not all that bad for me but now I have that feeling that it is time for a change. Albert Einstein was quoted as saying "If A is a success in life, then $A = x + y + z$. Where: $x =$ work; $y =$ play; and $z =$ keeping your mouth shut." I know, I don't get it either, but I've always tried

to live my life by it. What I am trying to say is that if you start using Quotes to impress people, it is time to move on.

So, with any luck and not much fanfare, this should be the last issue of the California Surveyor I will be editor on. Much effort by many people have gone into finding a new editor for this magazine. As it is not quite official yet, I will let you wait until next issue to see who is running the show. It is safe to say that under the new leadership, there actually will be some leadership. I know that the content and production of the magazine will be strengthened. I know the members of the Association will take pride in the California Surveyor and it will gain prominence on a national level. Again the new editor is doing this solely on a volunteer basis and will need support from members and non-members alike.

Speaking of support, I would like to take a minute to mention just a few of the many people that made this job enjoyable for me over the years. First and foremost would be the CLSA Central Office, meaning mostly Dorothy Calegari and Cheryl Belli. They have throughout the years dug up articles for the magazine, handled all the production and advertising for the magazine, corrected my mistakes and actually sound pleasant, as they listen to my latest excuse for not being on time. I've also had the good fortune to have tremendous assistant editors in Michael McGee and Linda Richardson. Linda has also had the duty of being editor for the CLSA News. For the last year I had the good fortune of Dave Ryan come onboard to replace Michael, who could no longer devote the time needed. Dave actually volunteered, and kept reminding me that he was willing to help. It is not easy being an assistant editor. One of their main tasks is to correct my spelling and grammar and to convey what was meant to be said instead of what was said. I also want to thank all those individuals who wrote articles and letters to the magazine. It would be safe to say that we have covered the surveying spectrum of issues. We have had many original articles that have been used by other magazines and publications. It was truly a joy to be involved with the people I have worked for. But now, it's gone from courting to red hots.

When you are courting a nice girl, an hour seems like a second. When you sit on a red-hot cinder, a second seems like an hour. That's relativity.

—Albert Einstein ⊕

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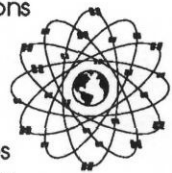
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Letters to the Editor

■ James E. Adams Memorial Scholarship

I want to thank the California Land Surveyors Association for the James E. Adams Memorial Scholarship I received this past January 1997, at the 36th Annual Fresno State University Surveying Engineering Conference. This scholarship has helped me and my family tremendously. My family includes myself, my husband, and my three year old son. Our financial status is in much better standings thanks to your contribution.

This scholarship has also allowed me to attend the 1997 Las Vegas Conference, which has given me the opportunity to meet professionals in the surveying arena.

My career goals other than receiving my B.S. in Surveying Engineering by May 1999, is to receive my Land Surveying License no more than three years after graduation and I eventually (after a few years of hard work and experience) expect to move into a management position with an established firm.

Once again I'd like to thank the California Land Surveyors Association for this generous contribution.

Jennifer L. Yrigollen, CSUF student ⊕



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Luxury at the Luxor

Las Vegas Luxor Hotel played host to the 1997 CLSA/NALS/WFPS Conference. The pyramid shaped hotel impressed all the attendees with comforts and gaming unheard of during the ages of the pharaohs. Luckily for those attending the conference the venerable David Goodman presented a first class multimedia show on Egyptology explaining not only the history of the life on the Nile but also an idea of what living and working on the Nile today is like.

This year so many attended the conference, there were packed houses at all the talks even with concurrent programs. Boundary issues were covered in depth by Don Wilson, Jerry Broadus and transplanted Californian James

Dorsey. The areas covered ranged from boundary retracement and the need for thorough research, title issues, legal aspects of surveying, and even a mock trial. The advanced technologies were discussed by surveyors such as Mark Bardakjian, Brett Jefferson, and the ever effervescent David Paul Johnson, along with non-surveyors, such as Ms. Marti Ikehara, Dr. Richard Snay, Mary Tsui, and Fred Wong. The Business end of surveying and of running a business was also covered by Ed Joyce, Dr John Kohl, and Dr. Daniel McAllister.

As always, the Exhibitor's Cocktail Party and the Education Foundations Auction were the social event of the conference. The food and spirits were plenty and

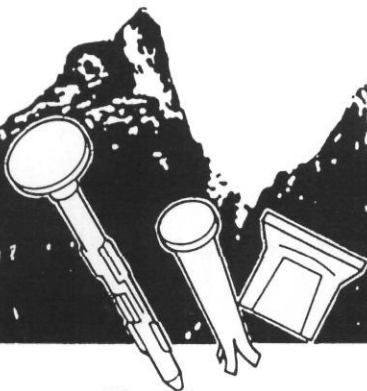
the bidding went from the sublime to the bizarre. Over \$11,000 was donated through the auction, thanks to the generosity of the attendees and the skills of Auctioneer, Larry Tardie. The Exhibitors hall was full with a wide variety of Exhibitors. As always, the latest in surveying and imaging was presented along with all the other surveying supplies and even antique surveying equipment.

The Main conference ended with the Medieval Times Dinner and Jousting Event. The Jousting for the most part was not a participatory event. Still it was enjoyed by all who attended.

Wednesday and Thursday were for the BLM Workshop, and advanced seminar on Public Land Surveys and determination of evidence and ownership lines. The workshop was packed and the speakers made the workshop worthwhile. ⊕

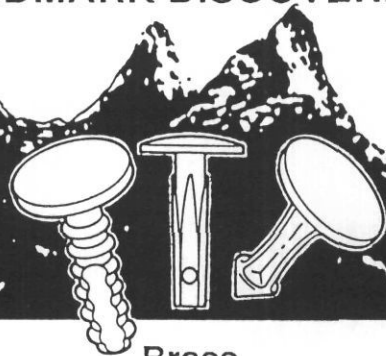
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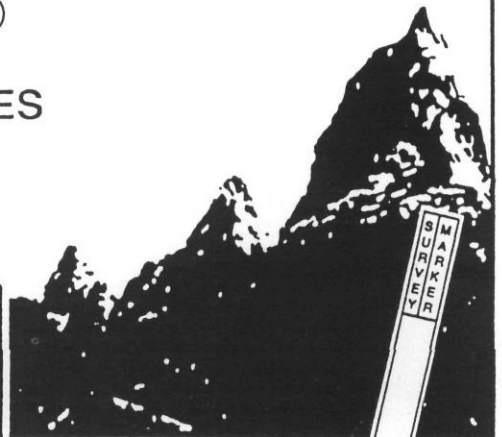


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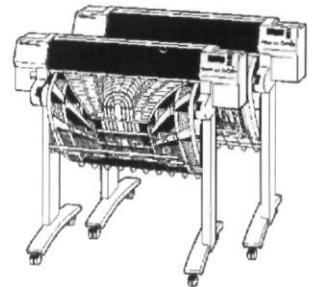
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The Ethical Dimension

By Wilhelm A. Schmidt, P.L.S.

The key to being good is knowing right from wrong. This is equally true of being morally good and of being technically good. Good deeds require conscience. Good work requires know-how. Both are evident in the doing.

The key to being ethical, on the other hand, is to stop and think. It is evident not in the doing but in the conscious intent with which something is done. That intent is the result of thought.

What happens when I stop and think? I am by myself. More properly, I am with myself. I may be physically inactive, but I am mentally alert and alive. I may be all by myself, but I am not alone. The Roman writer Cato is noted for saying that I am never more active than when I do nothing and I am never less alone than when I am by myself.

The reason why I am not alone is that the activity of thinking is an interior dialogue. Thinking is speaking with myself, as if I were both interlocutors, and is therefore without need of sound. It consists of speaking to myself in any of the ways of speaking to someone else. It also consists of responding in any of the ways someone would speak back to me.

A simple and pertinent example is a give-and-take such as: "Why did I do that?" "Well, I know why I did it, but it was a stupid thing to do." "What am I going to do now to get out of this mess?" "Face up to it." "Do I have to?" "I can't very well not do anything." "But how can I straighten it out without looking bad?" "Not much." "Maybe it'll go away." "No, it won't. Better take the bull by the horns!" "Yeah, as soon as..."

But the process need not be the result of an apparent misdeed. It can occur just as well prior to any deed, and can take the form of attempting to determine a proper course of action or the proper conduct of life as a whole. The granddad of ethicist, Socrates, is supposed to have said that the unexamined life is not worth living, and proceeded to examine not just his life but that of his fellow Athenians by publicly asking them unsettling questions.

Socrates' fate was to be tried and executed, supposedly for being impious and for corrupting the young men of Athens. His questions seemed to undercut their beliefs in the gods and in the institutions of the city of Athens. The obvious lesson is that making others think is perceived to be subversive and is not readily tolerated.

But the intent of Socrates was not to corrupt his fellow citizens. It was to make them more responsible citizens in the only way he knew how (in the only way there really is!) by making them think about what they were doing, day in and day out. The sad fact is that most people prefer not to think for themselves; they prefer to assume a ready-made way of thinking and get on with their lives. They stop and think only when they get into trouble.

Socrates' experience is the basis for the only ethical principle ever to be enunciated: that it is better to suffer harm than to do harm. To understand this principle, it is necessary to recall that thinking makes us more aware of ourselves. Things we can ignore about ourselves as long as we are with others, even if they are a laughing matter, are inescapable when we are by ourselves. It is said that bad people can't stand being by themselves, and tend to do violence to themselves when left to their own company. Good people can always pity themselves when they have been harmed, accept the harm and go on living.

Thinking, in the sense of taking things philosophically, can reconcile each of us to life's trials. But, more importantly, it can reveal life's possibilities, and help us choose among them in a responsible manner. Without thinking none of us can lead a self-assured and accountable life – personal or professional.

Reprinted from "The Pennsylvania Surveyor," April/May 1997, Vol. 11, No. 2. ⊕

What Went Wrong?

Female Surveyor Loses Faith in Forest Service

*Reprinted from "Progress & Perspective"
from January/February 1997*

On October 31, 1996, Linda Lee Miller, PLS, wrote to her congressional and state representatives with a plea for help in receiving payment for a United States Department of Agriculture Forest Service surveying and mapping contract. Miller is the owner and operator of the Miller Land Surveying Company in Bend, Oregon.

She explained to her representatives that on October 25, 1993, she was awarded the \$28,400 contract to survey and monument a tract of government lands in a remote and treacherous portion of the Wallowa Mountains about 25 miles east of Union, Oregon.

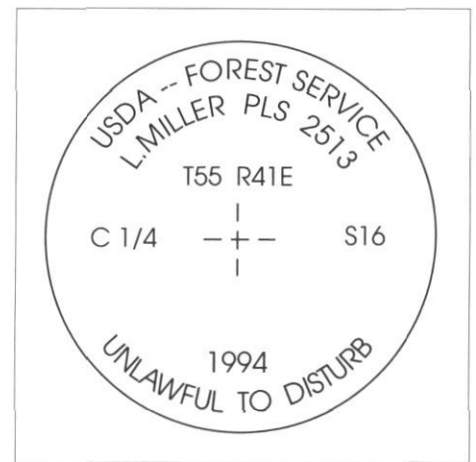
Miller was ecstatic to receive the opportunity to apply her GPS expertise and to be in mountainous forest performing the type of work she had done for many years with her father.

During the project, Miller began to wonder if the Forest Service was as happy about hiring her as she had been to take the job. On January 25, 1995, the Forest Service



erroneously notified her that she had missed the deadline for project completion. It had been Miller's understanding that suspensions had been granted due to weather conditions.

She retained legal counsel to convince the Forest Service that she had not missed a deadline, and she consequently received a letter of apology from the Forest Service in mid-March of that year. The letter of apology, however, also stated that Miller was in default of a new deadline and that she should have asked for written suspensions.



After project completion, Miller was paid only 85 percent of the contracted fee.

She had utilized GPS technology to establish and monument a dozen key positions within the tract, working to a specification greater than required by the Forest Service. As mandated by Oregon law, she filed her drawing with the state. Monument position and Miller's control work have never been in question by the Forest Service, and the agency has accepted her points.

The problem, Miller explained, is that the Forest Service, relying upon late inspections and upon the paced and eyeballed work of a summer employee or part-time staff member, has now found fault with minor details of her project, such as loose witness posts or tree markers nailed too close to the tree.

Citing a large number of such infractions, the Forest Service has forced Miller to return to the site again and again, often at her own expense. Each time her blueprint or witness posts or marked trees have failed to pass the paced and eyeballed re-inspection, and on some occasions, the Forest Service has used the re-inspection to find even more minor points on which to criticize Miller's work.

A forest Service staff member told Progress and Perspectives, "for example, Miller's tree scribing was below the industry standard." Miller responded to this newsletter by providing a copy of her paid invoice for a \$37.35 tree scribe she had purchased on May 16, 1994, and for a \$65 Crawford tree scribe she had purchased on August 2, 1994, both of which came from Nessco Supply, are the type of scribe used regularly by Miller, and would be considered industry standard.

Miller also produced photographs of her scribed trees and stated, "They [the Forest Service staff members] are trying to pretend that I have never done this kind of work. In reality, it is a type of work for which I have had a great deal of experience.

Attempts at Mediation

In mid-1996, Miller turned to the Forest Service's Regional Land Surveyor (FSRLS) for help. She knew the FSRLS through professional conferences, and as she had hoped, he was able to intervene on her behalf.

As a result of negotiations between her Contracting Officer (CO) and the FSRLS, Miller was given a short list of minor tasks. Upon their completion Miller was to have been paid.

When the negotiated tasks were completed, however, the Contracting Officer's Representative (COR) changed the agreement and came up with a new

list of tasks for Miller. She was told (1) that the Forest Service had an unlimited right to request new task items, (2) that she had a new deadline for the completion of each new task, and (3) that she would be held liable for Forest Service expense in completing tasks upon which she had defaulted.

Giving Up

Miller began to suspect sexual discrimination. Although the CO and one Forest Service inspector are female, their data and instructions come from the COR, a male surveyor.

Progress and Perspectives asked the CO if field information and inspection data could come from any other source. The answer was no.

Yet, in filing the charge of sexual harassment and by writing to her congressional representatives, Miller sacrificed her affiliation with her acquaintance, the FSRLS, also a male surveyor. The FSRLS explained to Miller and to Progress and Perspectives that since Miller chose to air her complaints outside the Forest Service, he would no longer be able to take her side.

Likewise, the CO told Progress and Perspectives that Miller could and should have filed appeals with the Forest Service itself. Those appeals, however, must be filed with the office of the CO, an office in which Miller no longer has faith. ⊕

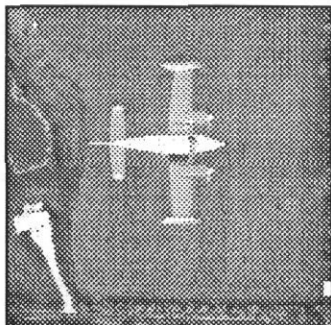
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Don't Buy a Lawsuit, Nor Will One to Your Heirs

Reprinted from the "American Agriculturist" for September 1864

"R.M.H" of Rensselaer Co., New York, writes thus sensibly to the American Agriculturist. "Recent Surveys sometimes overrun those made fifty years ago, and this induces farmers to take deeds depending upon old surveys when buying land, thus causing almost endless litigation and disputes about boundaries between neighbors. If the buyer believes a new survey will compel him to pay for more land, an agreement should be made to adopt the area of the old survey, but with new courses and distances, in conformity with the undisputed corners and lines. The variation of the needle in the Surveyor's compass is so great, and the

carelessness of farmers in keeping their corners marked' so remarkable, that the surveyor has had a very difficult and delicate duty to discharge when deciding boundaries according to old deeds and surveys. Buyers of land should not buy old disputes with it. Therefore have it surveyed, go over the lines with the surveyor and the seller, and when bought set substantial hewn stone monuments at all the corners. Purchasers of real estate will thereby avoid for themselves and those that come after them the unpleasant difficulties with neighbors' unfortunately so common among farmers in the older states."

Not a bad idea in any age. — Love the way he uses our language.

Reprinted from "The Pennsylvania Surveyor," Vol. 11. No. 1. ⊕

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"The Nova Scotian Surveyor," Fall 1996. ⊕

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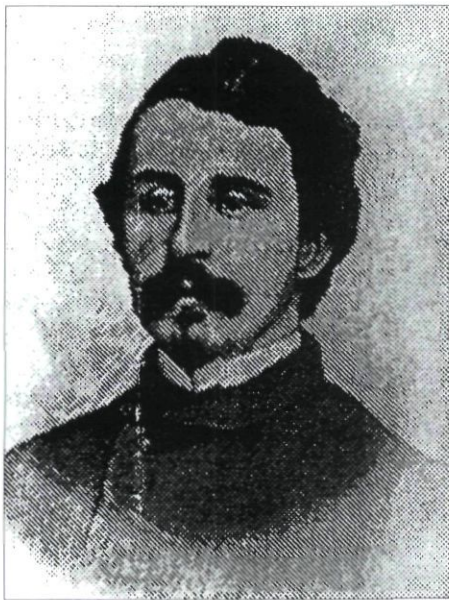
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Yankee Miners Tunnel Under Rebel Fort

By Peter Huber

Henry Pleasants was a civil engineer who supervised the digging of railroad tunnels and coal mines in the Allegheny Mountains of Pennsylvania. During the Civil War, he became Lieutenant Colonel Henry Pleasants, Commander of the 48th Pennsylvania Volunteers, a regiment composed mainly of coal miners.



Lieutenant Colonel Henry Pleasants.

In June of 1864, Colonel Pleasants and his men were part of the Union army besieging General Robert E. Lee's Confederate army at Petersburg, Virginia. Lee's soldiers were

entrenched in a strong defensive position.

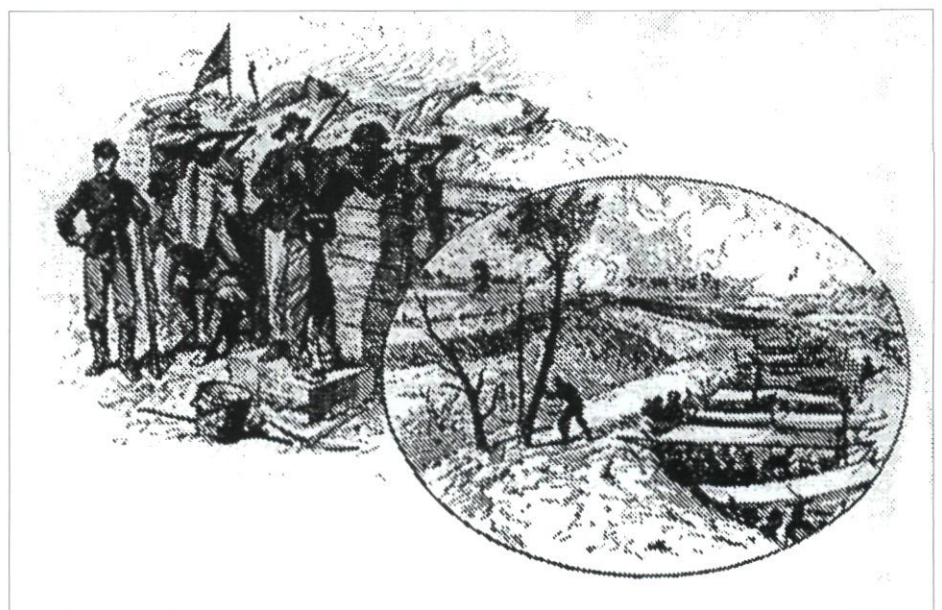
When General Ulysses S. Grant ordered his Union army to attempt a general assault on the Confederate fortifications at Petersburg, Colonel Pleasants' men advanced further than any other Yankee regiment. The 48th Pennsylvania Volunteers were finally halted less than two hundred yards from the Rebel trenches. There the Pennsylvania coal miners quickly dug their own system of trenches.

Their trenches became a permanent position for Colonel Pleasants and his men. General Grant ordered his army to prepare for a long siege. Because of the short distance separating the 48th Pennsylvania Volunteers from their enemies, the men had to move cautiously. Any Union soldier who poked his head above his trench was likely to be killed by Confederate sharpshooters.

One day in late June 1864, Colonel Pleasants was making his way through the trenches when he passed a soldier who was peering at the Rebels through one of the firing slits in the wall. The soldier said to a companion, "We could blow that damned fort out of existence, if we could run a mine shaft under it."

When Pleasants returned to the bomb-proof shelter, where he lived with some other officers, he said, "That fort is the only thing between us and Petersburg, and I have an idea we can blow it up."

Pleasants realized how momentous the results of this idea could be. If he could blast one big hole in the



Sharpshooters in the trenches.

Rebel lines, the Union army could pour through that hole, get behind Lee's entire army, and capture the Confederate capital of Richmond.

Pleasants presented his idea to the Commander of his division, General Robert Potter. Pleasants said that his Pennsylvania Volunteers, who were expert coal miners, could easily dig a tunnel

was proposing to undermine the Southern lines. The staff officer took a look over the trench and was immediately shot in the face by a Confederate sniper.

Unsure of what to do next, Potter took Pleasants to see the Corps Commander, General Ambrose E. Burnside, who listened attentively as Pleasants described

General Meade, Commander of the Army of the Potomac. Meanwhile, Burnside told Pleasants to start digging. Pleasants put some men to work as soon as he returned to his regiment on June 25, 1864.

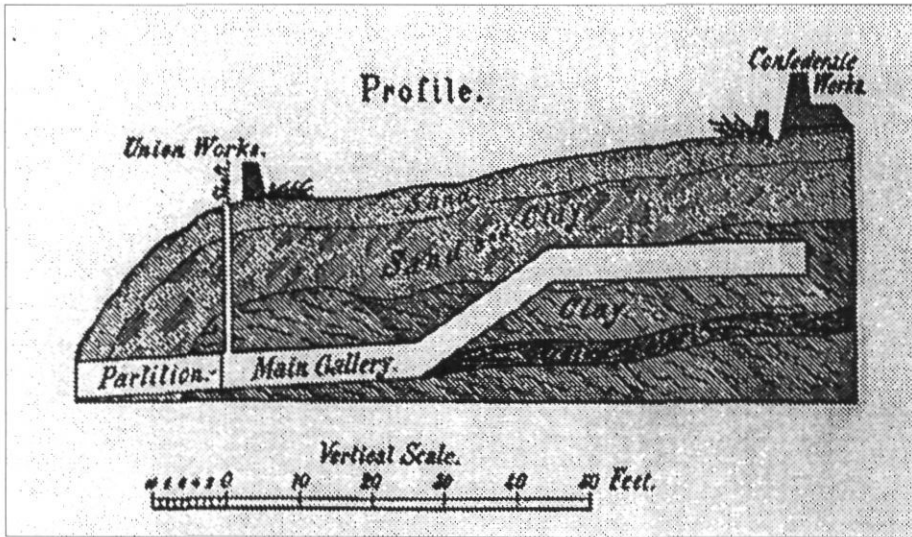
When General Meade heard about Colonel Pleasants' tunnel, he consulted with military engineers, who said that the proposed tunnel was too long to be practical. Standard military texts warned against excessively long tunnels, which often failed due to drainage and ventilation problems. The textbooks also warned that large-scale military tunneling projects could seldom be concealed from an enemy.

Pleasants said the digging could begin on a slope where it would be hidden from the Confederates' view. The tunnel would run uphill, thereby draining itself. And although it would have to be five hundred feet long, Pleasants was confident he could ventilate it.

General Meade decided that Colonel Pleasants' project might as well go forward. It would keep his men busy, and it would do no harm.

Meade mentioned the project to General Grant, saying that it probably would not work. Grant said that they might as well let the project continue on the small chance that it just might provide a miracle: the destruction of General Robert E. Lee's Army of Northern Virginia.

With official permission to complete his project, Colonel Pleasants kept his men hard at work digging the tunnel. He organized the project in the same way he would have directed the digging of a new mine shaft back in Pennsylvania. The miners assigned to the project were organized into "shifts," so that work continued



Plan of the tunnel.

from their present position to the nearby Confederate trenches.

Potter sent a staff officer to examine the site where Pleasants

his plan to blow a hole in the Confederate lines.

Burnside liked Pleasants' idea and said he would discuss it with

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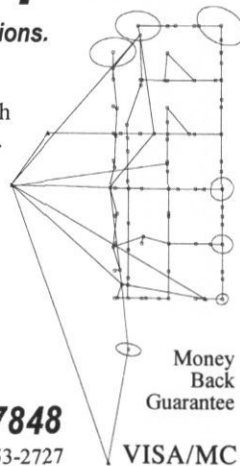
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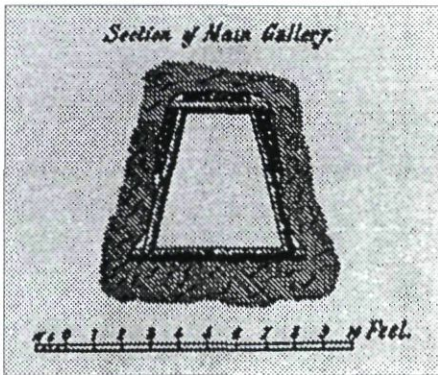


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around the clock. Sergeant Harry Reese was appointed "mine boss." Each miner was rewarded with a dram of whiskey at the end of his shift.

The men were supplied with United States Army picks and shovels. When the miners complained that the picks were no good, Pleasants arranged for army blacksmiths to pound them into acceptable shapes.

The tunnel was shored up with mine timbers to keep it from caving in. Pleasants obtained the necessary beams from a railroad bridge which the Union army had already destroyed.



The mine shaft was five feet high.

Lacking wheelbarrows to carry dirt from the tunnel, Pleasants

made do with cracker boxes, reinforced with iron hoops from pork barrels and equipped with wooden handles.

To insure that the tunnel would terminate precisely under the Confederate lines, Pleasants did some surveying. It was necessary for him to stand in view of the Rebel sharpshooters while measuring the Confederate fortifications, so he camouflaged himself and his theodolite with burlap. His men tried to distract the sharpshooters by holding their caps aloft on sticks. The caps were promptly riddled with bullets, but Pleasants obtained his needed measurements.

After three weeks of digging, the tunnel extended to a position directly under the Confederate line. Although they were twenty feet underground, the miners could sometimes hear the tramping boots of Confederate soldiers marching overhead.

At a right angle to their original tunnel, the miners dug a new shaft directly beneath the Confederate army's front line. Eight wooden boxes, filled with gunpowder, were placed beneath the Confederates. These magazines were connected to

each other by shallow troughs that were half-filled with gunpowder. A fuse led to the central magazine.

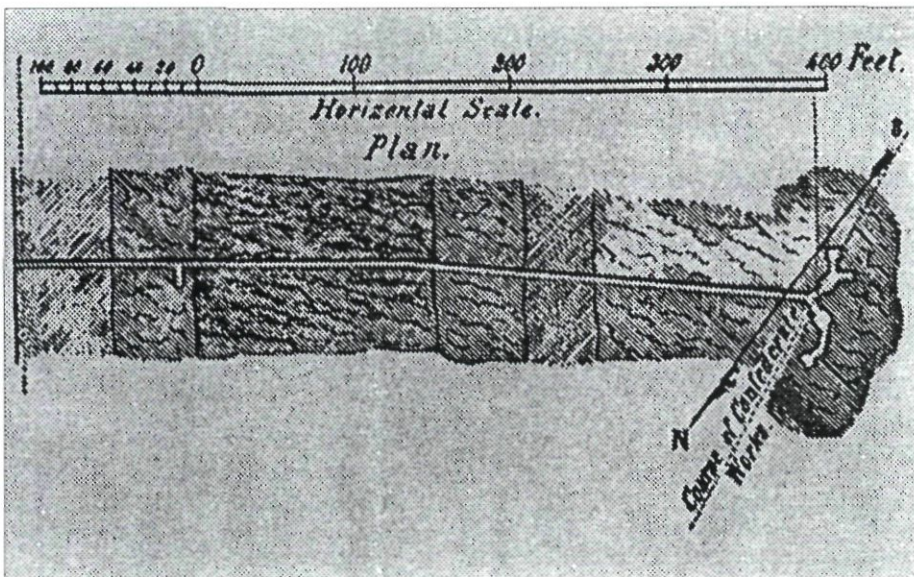
All was now in readiness for the grand explosion and the breakthrough of the Confederate lines. Excitement mounted among the Union leaders. Skepticism changed to optimism.

General Grant ordered General Burnside to take full advantage of the explosion of the mine by mounting a general assault with his entire corps. Burnside decided to use a "colored division" to lead the initial assault on the Confederate line after the detonation. Most of the men in this division were former slaves. They had little combat experience, but their morale was so high that Burnside considered them his best troops.

The colored division held training maneuvers to prepare for their mission. The soldiers were told that a gap would be opened in the Rebel lines, through which they should advance without pausing until they reached the commanding crest of a ridge behind the Confederate army. If they could seize and hold that high ground, Lee's army would be cut in two, and there would be nothing to stop the Yankees from marching on to the Confederate capitol at Richmond.

General Grant planned the explosion and coordinated assault for 3:30 a.m. on July 30, 1864.

Only twelve hours before the scheduled blast, General Meade learned that Burnside planned to use the colored division as his shock force. Meade did not think the division had had sufficient experience in battle, and he was afraid of being accused of using black men as cannon fodder. He ordered Burnside to use white men for the initial assault, with the



The tunnel from above.



Carrying powder to the mine.

colored division following later.

Burnside argued so strenuously against this last-minute change that Meade finally called in General Grant to settle their disagreement. Grant sided with Meade.

Now, Burnside had to select a new division for the initial assault. He had his division commanders draw lots to see who would lead the attack, and the lot fell to General James Ledlie.

On the night of the scheduled detonation, Grant and Meade went to Burnside's headquarters, a mile from the line, where they would have a good view of the explosion. Burnside positioned himself a half-mile closer. General Ledlie, who was supposed to command the assault, positioned himself in a bomb-proof shelter. There he drank a quart of rum. His leaderless

troops milled about behind the Union line, unaware of exactly what they were supposed to do.

At 3:15 a.m., Pleasants sent a man into the tunnel to light the

fuse. A few minutes later the man came running out of the tunnel, breathing hard. He reported that he had lit the fuse, and that it had appeared to be burning well when he last saw it.

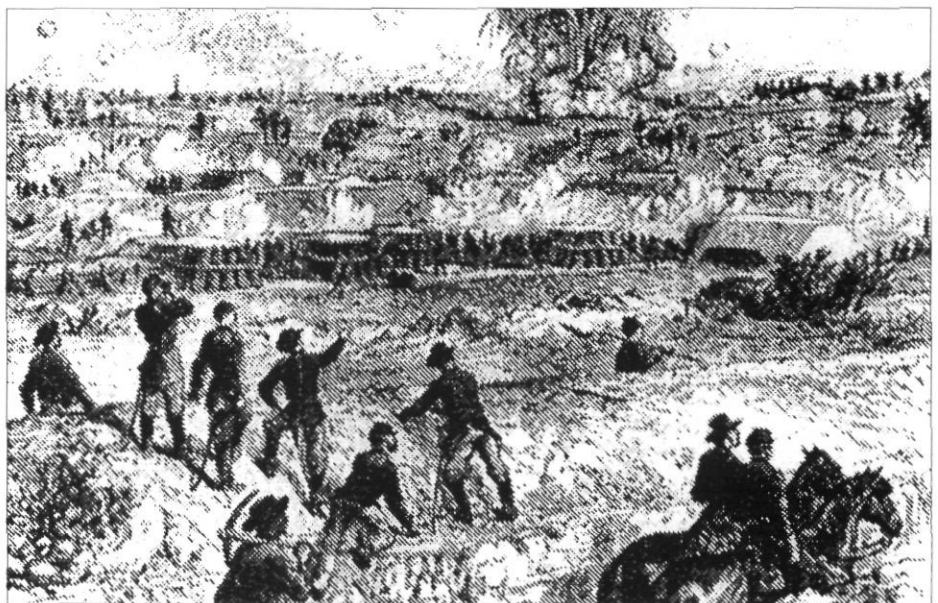
The fuse was a hundred feet long. Pleasants waited, his heart beating violently. All was quiet in the tunnel.

The generals up on the hill looked impatiently at their watches.

Fifteen minutes went by, then another fifteen minutes. Nothing happened.

Fuses were known to falter and then suddenly flare up; Pleasants was reluctant to send anyone into the tunnel to investigate the trouble until he was certain the fuse had burned out.

Not until 4:30 a.m. did Pleasants send Sergeant Harry Reese, the Mine Boss, into the tunnel to find out what was wrong. After a nerve-racking journey, Reese discovered that the spark had died where one fuse was spliced to another. He was crawling out of the tunnel to get another fuse when he met a lieutenant



The explosion.

crawling in with the needed fuse. Reese and the lieutenant spliced the new fuse onto the old, lit it, and quickly scrambled out of the tunnel.

At 4:45 a.m., as dawn began lighting the sky, there was a deep rumble. Then the earth rose in a high mound, which split apart as flame and dark smoke shot skyward. Huge clods of earth filled the air, along with cannons, rocks, and human bodies. Some onlookers described the upheaval as a combined earthquake and volcano.

Pleasants' project looked successful. A long section of the Confederate line was obliterated. Many sleeping Confederates were killed, and the survivors were so terrified that they deserted their posts in panic.

Colonel Pleasants estimated that the actual opening in the Confederate

line was at least five hundred yards wide. He waited to see the Union army pour through the void he had created. To his astonishment, no Union soldiers moved for several minutes. Finally, Ledlie's division moved ahead in a hesitant, careful way.

When Ledlie's men reached the destroyed fort, they gazed in wonder at the huge crater the explosion had caused. All sorts of objects protruded from the surface of the crater, including the half-buried bodies of Confederate soldiers, some of them still alive. Many of the attacking Union soldiers busied themselves digging out their enemies.

None of the leaderless Union troops advanced beyond the crater. They positioned themselves in the big hole and stayed there, while the Confederates rushed infantry and artillery to the crest of the ridge

behind their damaged line.

The Confederate counterattack was already underway, when the colored division finally received an order to advance.

When the Negro soldiers reached the crater, they found themselves under fire from Confederate artillery on the ridge they had been trained to seize. The colored division pushed past the aimlessly milling white soldiers in the crater and tried to advance toward the ridge, but they came under murderous fire, took heavy losses, and finally fell back toward the crater.

Then, the whole Union assault force retreated. Colonel Pleasants, watching from a parapet in front of an artillery battery, was so angry that he shouted at General Burnside, "You have nothing but a damned set of cowards for your brigade commanders."



The appearance of the crater after the Confederates rebuilt their line.

Grant said it was "the saddest affair I have witnessed in the war. Such an opportunity for carrying fortifications I have never seen and do not expect again to have."

The siege of Petersburg dragged on for eight more months, until April 2, 1865, when Lee was forced to pull out of the trenches at Petersburg to defend himself elsewhere. The road to Richmond was then open, and the Union soldiers marched into the Confederate capitol. Lee surrendered on April 9.

By the time the war ended, Lieutenant Colonel Henry Pleasants had been promoted to Brigadier General.

SOURCES:

"A Stillness at Appomattox." by Bruce Catton. Pocket Books. 1952.

"Battles and Leaders of the Civil War." Century Publishing Company. 1888. ⊕

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 Professional Liability claims past 5 years Yes No If yes, send a sheet with claim details

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Product News

Trimble Adds RTK to Entry-level GPS Survey System

Trimble (NASDAQ:TRMB) introduced today at the '97 American Congress of Surveying and Mapping (ACSM), a Real-Time Kinematic (RTK) option for its entry-level 4600LSTM survey system. Now, the affordable and simple-to-use 4600LS can be used for stakeout in addition to topographic, control and GIS. For each application, surveyors can reap the large productivity advantages of GPS; no line-of-sight requirement and surveys can be done while moving, even out to 10km. The 4600LS with RTK also enables first-time GPS surveyors to enjoy the added confidence of knowing within seconds that they have valid, cm-level positions as they occupy a point.

For an interactive look at company news and products, visit Trimble's site on the World Wide Web at <http://www.trimble.com>

Trimble Introduces World's First "Sub-watt" GPS Survey Receiver

Trimble (NASDAQ:TRMB) introduced today the world's first GPS survey receiver to draw less than 1 watt power consumption at the '97 American Congress of Surveying and Mapping (ACSM). With "sub-Watt" power consumption, a surveyor can use the improved 4600LSTM up to eight times longer between battery changes while significantly reducing battery costs and carrying weight for GPS surveys.

Now surveyors can significantly extend the survey hours from all battery types used by the 4600LS, or choose lighter weight, less expensive batteries than previously required. As an example of this new power efficiency, four standard C-size alkaline batteries in the 4600LS can provide 32 hours of survey operation. How energy efficient is this? It would take 14 C-size batteries to power a typical flashlight for the same amount of useful time.

For an interactive look at company news and products, visit Trimble's site on the World Wide Web at <http://www.trimble.com>

Trimble Enhances GPS Total Station 4400 with Everest Technology

Trimble (NASDAQ:TRMB) introduced today at the '97 American Congress of Surveying and Mapping (ACSM) - the addition of Everest™ Multipath Rejection Technology to its GPS Total Station® 4400. Everest (patents pending) is a breakthrough in multipath environments such as near buildings, mine walls, vehicles, trees, water, or other reflective surfaces. Everest extends the benefits of real-time GPS surveying to many sites that were not previously viable due to multipath interference.

For an interactive look at company news and products, visit Trimble's site on the World Wide Web at <http://www.trimble.com>

First One-Meter Commercial RemoteSensing Satellite Reaches Testing Milestone in Preparation for Launch

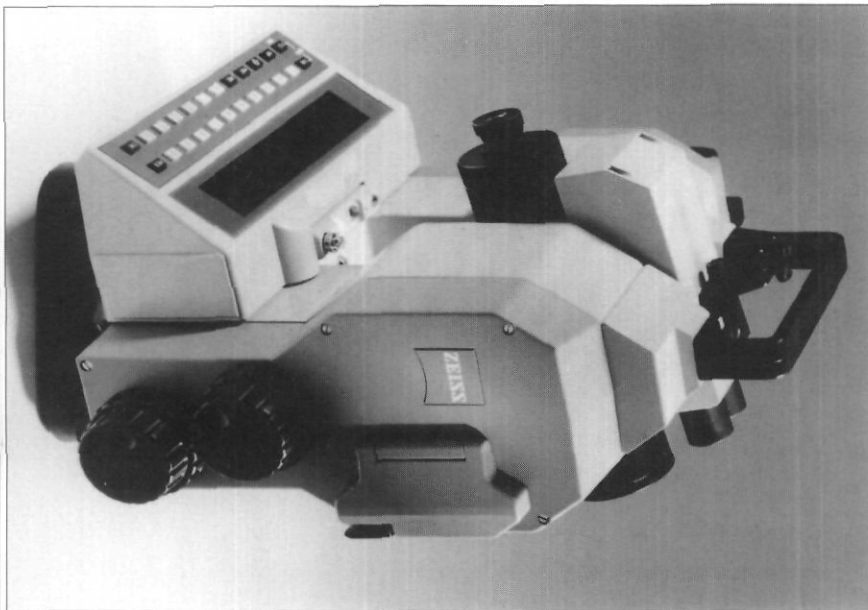


The user-friendly, high-speed, high performance LD90-3100 EHS-GF and LD90-3300 EHS-GF series of non-contact pulsed laser range finders from Riegl U.S.A., Orlando, FL, have a glass-fiber coupled remote optical head and split optics design for easy integration into various two or three dimensional distance profiling systems. Versatile, extremely rugged and lightweight, the high performance and economic Riegl LD90-3100 EHS-GF series of non-contact pulsed laser range finders offer a typical range capacity of 200 meters (660 ft.). With a +/- 2 cm (+/- 0.8 in.) accuracy and 4 mm (0.1 in.) resolution. In contrast, the LD90-3300 EHS-GF series offers a 300 meter (990 ft) range with a +/- 10 cm (+/- 4.0) accuracy. Both models have a 12 KHz measurement update rate which can be triggered externally for easy integration with scanning mirror systems. The sensors come with a standard MK 36 remote optical head for general applications.

Space Imaging EOSAT today announced that a critical testing milestone in the development of its first commercial remote sensing satellite has been reached and that plans for a December 1997 launch from Vandenberg Air Force Base in California remain on schedule. The company's new one-meter satellite will be the first commercial space-based remote sensing capable of generating imagery of the Earth's surface with the ability to identify objects as small as one-meter in size.

Rec Elta® 13 CM Motorized Computer Total Station

Compact, Powerful, Flexible, DOS Compatible



New Rec Elta® 13 CM Motorized Computer Total Station.

The new Rec Elta® 13 CM compact total station from Carl Zeiss is a powerful, versatile, and the most sophisticated total station of the Rec Elta series. It offers a wide range of benefits, from the automatic determination of instrument errors, stationing and setting out to reliable data processing, and can be used for the entire spectrum of surveying from simple topographic surveys through cadastral and engineering surveys up to precise basic surveys and special measurements in civil engineering and road construction.

Integrated application programs of the Rec Elta 13CM have been enhanced by servo-controlled features. Motorized mode makes the handling of the instrument easier, faster, and more comfortable. Operation in manual mode allows rapid coarse setting of the target point at variable speeds. Fine adjustment may be continuous or in discrete steps with a minimum resolution of 1" (0.3 mgon). Click stops over the rotary motion range facilitate defined fine adjustment.

For complete details and pricing, contact your Zeiss dealer or Carl Zeiss, Inc., Surveying Division, One Zeiss Drive, Thornwood, NY 10594. (800)873-6277; fax (914)681-7472. E-mail: survey@zeiss.com. Internet: www.zeiss.com

New DiNi® 11, DiNi® 11 T, and DiNi® 21 Digital-Levels with Added Practical Performance Features & Operating Convenience.

A new design feature setting the DiNi® 11 and DiNi® 11 T models apart from the rest of the DiNi family is their storage device. A PCMCIA card with SRAM capacities from 64 KB to 8 MB provides entirely new performance capabilities.

For complete details and pricing, contact your Zeiss dealer or Carl Zeiss, Inc., Surveying Division, One Zeiss Drive, Thornwood, NY 10594. (800)873-6277; fax (914) 681-7472. E-mail: survey@zeiss.com. Internet: www.zeiss.com ⊕



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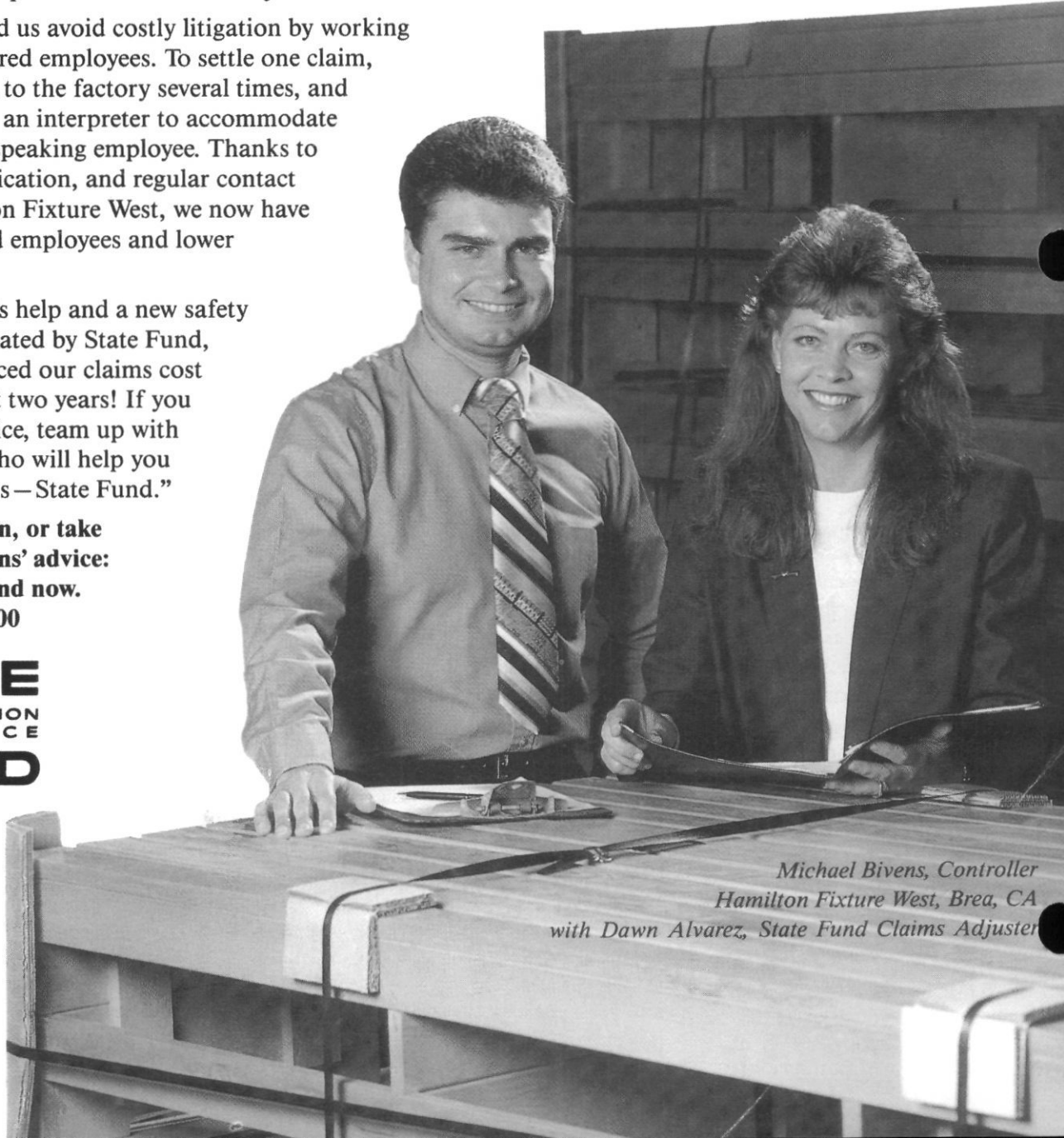
“In 1987, we experienced a dramatic increase in on-the-job accidents. We called our workers’ comp insurer, State Fund. They sent out a team of specialists to help turn things around. One of these specialists was claims adjuster Dawn Alvarez.

“Dawn helped us avoid costly litigation by working with our injured employees. To settle one claim, she came out to the factory several times, and even brought an interpreter to accommodate the Spanish-speaking employee. Thanks to her skill, dedication, and regular contact with Hamilton Fixture West, we now have both satisfied employees and lower claims costs.

“With Dawn’s help and a new safety program initiated by State Fund, we have reduced our claims cost 75.7% in just two years! If you want my advice, team up with the insurer who will help you control claims – State Fund.”

**Live and learn, or take
Michael Bivens’ advice:
Call State Fund now.
1-800-892-6000**

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*Michael Bivens, Controller
Hamilton Fixture West, Brea, CA
with Dawn Alvarez, State Fund Claims Adjuster*



Here's Some Important Information About CLSA

The goal of the California Land Surveyors Association is to promote and enhance the profession of surveying, to promote the common good and welfare of its members, to promote and maintain the highest possible standards of professional ethics and practice, and to elevate the public's understanding of our profession. CLSA represents all land surveyors, whether they are employees or proprietors, whether in the public or the private sector.

Representation

- LOCAL: Your local chapter represents you in local issues. Through your chapter representative to the State Board of Directors, the individual member can direct the course CLSA will take.
- STATE: The surveyor is represented at the state level through an active legislative program, legislative advocate, and liaison with the State Board of Registration.
- REGIONAL: CLSA is an active member of the Western Federation of Professional Land Surveyors. This federation is composed of associations throughout the western United States and addresses regional issues.
- NATIONAL: Through institutional affiliation with the National Society of Professional Surveyors and the American Congress on Surveying and Mapping, CLSA is represented at the national level.

Education Opportunities

CLSA presents annual conferences which provide technical and business programs, as well as exhibits of the latest in surveying and computing technology. Seminars and workshops are presented to assist in continuing education. CLSA publishes the *California Surveyor* magazine and the *CLSA News* to keep the membership abreast of changing legislation, legal opinions, and other items which affect our profession.

Business and Professional Services

CLSA provides a fully staffed central office which is available to answer questions or to provide up-to-date referrals concerning legislation, educational opportunities, job opportunities, or other issues concerning our membership. Health and professional liability insurance programs are available to members.

Join CLSA Today!

Application for Membership in the California Land Surveyors Association

Mail Your Completed Application To:

CLSA Central Office
P.O. Box 9098
Santa Rosa, CA 95405-9990

Questions?

Phone (707) 578-6016
Fax (707) 578-4406

* First year's annual dues are to be prorated from date of application

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Signature _____ PLS, PS, CE, or LSIT No. _____

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Mailing Address (above) is: Home Business
Employment: Private (principal) Private (employee) Public Retired

- \$159.00 CORPORATE MEMBER: Shall have a valid Calif. Professional Land Surveyor or Photogrammetric license.
- \$79.50 AFFILIATE MEMBER: Any person, who in their profession, relies upon the fundamentals of land surveying.
- \$79.50 ASSOCIATE MEMBER: Any person who holds a valid certificate as a Land Surveyor in Training.
- \$15.90 STUDENT MEMBER: A student in a college or university actively pursuing the study of land surveying.
- \$318.00 SUSTAINING MEMBER: Any individual, company, or corporation desirous of supporting the association.

Dues (prorated* from above) \$ _____ + Entrance Fee \$15.00 = Total Amount \$ _____

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CLSA PUBLICATION ORDER FORM	CLSA Member Price	*Non-Member Price	Quantity	Total
1997 Complete Package including PLS Roster, Pre-'82 CE Numerical Listing, PE & PLS Act with Board Rules, Subdivision Map Act & Binder	\$28.00	\$42.00		
1997 Complete Package (as above) including PE & PLS Act with Board Rules and Subdivision Map Act on disk	\$36.00	\$54.00		
1997 Refill Package including PLS Roster, PE & PLS Act with Board Rules, and Subdivision Map Act	\$20.00	\$30.00		
1997 Refill Package (as above) plus disk	\$28.00	\$42.00		
PE Act & PLS Act with Board Rules - 1997 publication (5 1/2 x 8 1/2)	\$6.50	\$12.00		
Subdivision Map Act - 1997 publication (5 1/2 x 8 1/2)	\$6.50	\$12.00		
Audiotape - Subdivision Map Act - by Robert Merritt, Esq.	\$10.00	\$15.00		
1997 Celestial Observation Handbook and Ephemeris (Sokkia) - with HP-41, HP-42 and HP-48 Programs	\$4.50	\$6.00		
California Coordinate Projection Tables - NAD '83 by Ira Alexander, C.E. PLS and Robert J. Alexander, PE	\$8.00	\$12.00		
Right of Entry Cards (minimum order is two)	2/ \$3.00	2/ \$6.00		
Corner Record Forms - FORM PWA-102 (8/88) (minimum order is 25)	\$10.00 (25)	\$15.00 (25)		
Land Surveying Brochure (minimum order is 50)	\$15.00 (50)	\$30.00 (50)		
Standard Contract Forms - Agreement for Professional Services	\$6.00 /pad of 25	\$12.00 / pad of 25		
Land Surveying for the Land Owner and Real Estate Professional by Daniel E. Beardslee, P.L.S.	\$8.00	\$12.00		
Easements and Related Land Use Law in California - 2nd Edition by Donald E. Bender, J.D.,L.S.	\$20.00	\$30.00		
CLSA Coffee Mug - Cobalt Blue with CLSA Logo	\$6.00	\$12.00		
COMPUTER SOFTWARE				
GEOID93 - Calculates estimated geoid heights	\$20.00	\$30.00		
VERTCON - Calculates estimated difference between NGVD29 and NAVD88	\$20.00	\$30.00		
CORPSCON - Calculates geodetic and SPC transformations in NGVD 27 and NAD83 (includes Nadcon)	\$20.00	\$30.00		
HPGN - HPGN-D State wide data file - includes all data submitted to NGS through the Northridge earthquake survey with Seeker	\$30.00	\$45.00		

■ Member Prices are only available to State members of the of California Land Surveyors Association

■ Fax orders accepted with Mastercard or Visa only at (707) 578-4406

■ Mail your order form and payment to:

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*The difference between member and non-member prices may be applied toward membership.

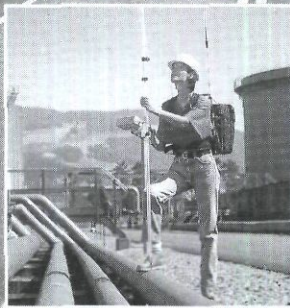
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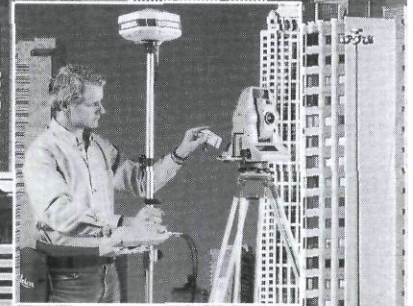
All Terrain Vehicles



Some Days You Need A Total Station.



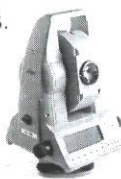
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