The UCLS Newsletter

Volume 5 Issue 5 Deceber 2018

What is it?

Because it is on a tripod, this must be a surveying tool.

The first UCLS member to correctly identify what it is and its purpose becomes eligible for a free lunch at their next chapter meeting.

Answers may be emailed to Susan at srmerrill@ucls.org. The earliest date and time of response will determine the winner.

In this issue:

We have packed this issue with the Holiday delight
Time before Christmas make salaries seem bright
The history of fruitcake has been explained
Your UCLS Membership is not a pain
Now is the time for resolutions to be made
Your Conference registration must soon be paid
"Huh" is a word that is used worldwide
Boundary disputes, we should never hide
Surveyors reminisce about things in the past
We all must contribute for this profession to last
Merry Christmas to all!

We invite you to share charismatic photos of yourself and/or a coworker, panoramic images of Utah's scenic wonders, or pictures of survey related tools and equipment. Additionally, we need interesting and unique descriptions or survey related stories to share with our membership. Remember, if you do not participate you have no right to complain. Please let us know your thoughts, recommendations, suggestions, or complaints.

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"Maybe Christmas doesn't come from a store. Maybe Christmas perhaps means a little bit more!"
-Dr. Seuss

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The History of Fruitcake

by: Lee Colvin

No one ever eats a fruitcake. It is always given as a gift, then rewrapped and given to someone else. The process continues until someone in the chain is creative enough to come up with a use for one, such as a doorstop or wheel chock.

If a fruitcake contained fruit, it might be considered edible. But instead, it contains tiny fragments of colored synthetic polymer, which have the texture of a pencil eraser and the taste of year-old antifreeze.

Johnny Carson once postulated that there is only one fruitcake in the world, its constant circulation giving the impression that there are millions of them. My research confirm that, up until 1993, there was indeed only one. In June of that year, a technological breakthrough enabled its replication into millions of fruitcake clones. Let us now review the landmarks in fruitcake history:

1107 A.D. -Fruitcake invented by an alchemist attempting to turn calking tar into gold.

1321 A.D. -Fired from a catapult during the Crusades, the fruitcake breaches a wall around the ancient fortified city of Sidon, allowing the Christians to swarm inside and defeat the Muslim defenders.

1409 A.D. - A treasured artifact of the Crusades, the fruitcake is given by the Pope to an English prince in need of a replacement cobblestone for his driveway. This marks the beginning of its use as a circulating gift.

1773 A.D. -The fruitcake comes to America as ballast in the hold of a tea freighter. In their haste to jettison the loathsome loaf, the colonists heave their entire cargo of tea overboard into Boston Harbor, creating the Boston Tea Party and hastening the American Revolution.

1861 A.D. -Eleven southern states secede from the Union when Abraham Lincoln tries to give the fruitcake to the governor of Georgia for Christmas.

1876 A.D. - General George Armstrong Custer presents the fruitcake to chief Sitting Bull as a peace offering. Mistakenly believing that Custer is trying to humiliate him by publicly offering him a gaily-decorated buffalo chip. Sitting Bull leads 3,000 Sioux warriors in a massacre of Custer and his entire regiment.

1898 A.D. -Accidentally dropped from the bridge of the battleship Maine, the fruitcake holes the vessel amidships, causing it to sink in Havana harbor and triggering the Spanish - American war.

1968 A.D. -Taken to the moon for permanent disposal by Apollo 11 astronaut Neil Armstrong. Buzz Aldrin mistook it for a moon rock sample, and brought it back to earth on the return flight.

1993 A.D. -Scientists unlock the secret of the fruitcake, synthesizing the tiny colored “fruits” from jellied automatic transmission fluid. Petrochemical recyclers immediately flood the market with millions of fruitcake replicas.

The Time Before Christmas - November 2018

Christopher M. Wickern, PLS

'Twas the time before Christmas, when all through the land...
Corners were missing, confusion at hand.
Marks on the ground, could no longer be found.

Evidence of the past, did not seem to last.

Some were deemed lost with the passage of time.
And the meddlers had meddled, the land was unsettled.

Friends became foes with no monuments secure,
No Peace to be found, the cadastre unsure.

The family was nestled before the hearth and fire,
When out near the fence, there arose such a clatter, I sprang to the deck to see what
was the matter.

When what to my wondering eyes did gain?
A man marking boundaries in the public domain.
That moment I knew... a Surveyor by name.

More rapid than eagles the courses they came, as the humble Surveyor called each
distance by name.
"Now Vera and Arpent, Rod and Chain", we go to find line and mark them quite plain.

The courses were laid and distances met,
Across the broad valley to the store that was set,
The stone that was found had been hidden by time.

He ran the lines and bounded his way,
All the way round to the beginning point, they say.
Marks were found, restored to their place,
He set his caps, secure, for posterity's sake.

He marked the line plainly for all to see.
The only thing left was to draw up the plat and tend his aching knee.

The cold and snow he left behind him.
He knew he must eat... but was simply content to get off his feet.
He changed his wet clothes and warmed up his skin and that's when he knew, the map
must begin.

With the findings he noted, and boots on the mat,
He sipped his hot coffee and drew up his plat,

His footsteps were large as he crossed that last hollow,
He leaves his marks for others to follow.
His work not complete 'till all was in order,
His map now enshrined in the book of the Recorder,

The commission fulfilled, the boundaries now settled,
Confusion was gone despite those who meddled.

In the time before Christmas, Peace was at hand.
Foes were again friends throughout all the land.

My humble prayer for my fellow surveyors,
Take heart your high calling, in you the public does trust.

May your lines be clear and monuments found!

Uh oh . . . it's a whiteout.

I hope that you all had a good Christmas and I wish you all a very Happy New Year, but talking about Christmas I must tell you about my Granddaughter who came to me just before Christmas wanting help.
She said "Grandpa can you help me because Mom has been so good to me and I want to buy her a present but I have no money."

"Of course" I said, "but why don't you send a letter to Santa Clause as I am sure he would help you?"

"That's a good idea" she exclaimed, and immediately sat down to write her letter that went something like this.....

Dear Santa,

I would like you to bring a present for my mom, but I am not sure what you will bring so if you would send me $10 I can buy the present for her, as I know the kind of things she likes. She is so good to me and she deserves a good present.

Please send it quickly in time for Christmas.

Lots of love Lucy

Given the task of sending the letter to the North Pole, I went to the local post office to dutifully complete my assignment. The postmaster led me to a red box marked "Santa Clause" to which I deposited the letter.

The post office employees must have sorted the letter and donated money to Olivia's cause. She received a letter addressed from the North Pole, a $5 bill, and a note saying "from Santa."

How pleased she was to open the letter and see the $5 bill. However, a disappointed look soon came upon her face and she quickly scribbled a reply.

Dear Santa,

Thank you very much for the gift of $5. I did ask for $10 but you do not need to send me another $5. Those thieves in the post office probably stole the money and I am sure Grandpa will give me the rest.

Lots of Love Lucy

A man is flying in a hot air balloon and realizes he is lost. He reduces his height and spots a man down below. He lowers the balloon further and shouts: "Excuse me, can you help me? I promised my friend I would meet him half an hour ago, but I don't know where I am."

The man below says: "You're in a hot air balloon, hovering 30 feet above this field between 40 and 41 degrees latitude and 120 and 124 degrees west longitude.

'You must be a surveyor," says the balloonist.

"I am," comes the reply. "How did you know?"

"Well," says the balloonist, "everything you have told me is technically correct, but it's of absolutely no use to me and I still don't know where I am."

The man below says: "And you must be a land developer."

"Well yes," replies the balloonist, "but how did you know?"

The Surveyor says: "You don't know where you are or where you're going. You've made a promise that you can't keep, but now you expect me to solve your problem. You're in the same position as you were before we met, but now it's my fault."

Land Surveyor Salaries in the United States

Salary estimated from 1,037 employees, users, and past and present job advertisements on *Indeed* in the past 36 months. Last updated: November 22, 2018

How much does a Land Surveyor make in the United States?

The average salary for a Land Surveyor is $78,966 per year in the United States. Salary estimates are based on 1,037 salaries submitted anonymously to *Indeed* by Land Surveyor employees, users, and collected from past and present job advertisements in *Indeed* in the past 36 months. The typical tenure for a Land Surveyor is 1-3 years.

New Years Resolutions

By: Lee Colvin

1. Keep daily calorie intake below 50,000
2. Do not shave with gasoline powered equipment
3. Do not use corporal punishment on children whose chemistry set contains nuclear material
4. Eliminate all sexist attitudes. Visualize the Sports Illustrated swimsuit edition models in heavy winter clothing.
5. Do not humiliate the homeless by giving them clothing from your current wardrobe
6. Share the mixed nuts with your family before picking out all the cashews
7. Save a dust mite - shed skincells generously
8. Install a louder horn in your car so you will not have to honk so often
9. Bathe often enough that the loosened dirt can be described as "particles" rather than "bergs"
10. Be creative - use toes instead of fingers to show your contempt for motorists who cut you off
11. Keep your speed below 70 mph when applying makeup or using a cell phone while driving in heavy traffic
12. Show respect for endangered species - eat spotted owls sparingly
13. Minimize criticism of the Eisenhower administration
14. Cut down on air pollution by refusing to exhale before brushing your teeth in the morning
15. Do not greet church leaders or public officials with the words, "Hey Dude!"
16. Promote highway safety by removing your vehicle from potholes promptly
17. Help preserve our right to keep and bear arms - repel attackers with dynamite, not guns
18. Use plutonium only as directed
19. Maintain your uvula in good condition
20. Use the stairs in public buildings to avoid getting stuck on the escalator if the power fails
21. Do not floss your teeth within 20 feet of a public mirror
22. Do not force children to watch Lawrence Welk re-runs
23. Appreciate Andrea Bocelli's voice
24. Find out who Andrea Bocelli is
25. Do not operate jet fighters while texting
26. Recycle aluminum cans, but not navel lint
27. Only volunteer to crush grapes with your bare feet at a local winery if your podiatrist has verified that you are 100% free of toe jam
28. Keep your underarm hair shorter than your sleeves
29. Review these excellent suggestions monthly to ensure that you are staying on track

Twas the night before Christmas, when all through the house
This troubled leader was stirring, annoying the mouse.
As things move along will the employees still care?
This new and bold vision, will we ever arrive there.

I so wanted to relax, get snug in the bed
But fear of the unknown danced in my head
My wife with her book, and me with my Mac
Hoping to settle down for a long winter's nap.

When there in my task bar, I saw an icon
Into my inbox an email had gone.
"Bad news" my mind thought in a flash,
"We must have done something to lose some cash".

As the light from the screen gave off a soft glow,
I pondered and hoped it's something I already know.
When what to my wondering eyes should appear,
But a message of thanks and tidings and cheer.

The address was strange, but still quite familiar
I knew in a moment it must be Jill from HR.
Surprised by how this message to me came
I was shocked and humbled as I read all the names.

There was Jason and Margie and Angie and Jack,
And the intern from marketing who has that thing on his back,
From the people downstairs to the folks down the hall,
I read through the names and it included them all.

Possibly cruel, possibly kind,
"What's in this message?" entered my mind.
So to the 'Read email" link I went,
To finally know just what was sent.

With a move of my hand and a deftly placed click,
The message opened, although I felt sick.
I wasn't quite sure of just what to expect,
For a moment in time, I was a bit of a wreck.

There were pleasant reminders of the year gone by
Pictures from parties like the 4th of July.
A collection of colleagues and friends, what a sight!
This was beginning to turn into a quite pleasant night.

The message was crafted with such effort and thought,
I felt I was receiving so much more than I ought.
The pictures were nice and whisked me away,
To happy times, each a very special day.

The tip of my pen, I held tight in my teeth,
As these thoughts encircled my head like a wreath.
The message was clear and touched my heart,
It reached out and grabbed me from the very start.

"We know you work hard", the message began,
"With grace and poise and an attitude 'We Can'"
"You care about us, and it really shows"
"We sent this message because we want you to know."

"We want to say thanks for a year spent with you"
"Our work is much more pleasant because of all you do"
"Keep up the good work and never despair."
"When things get tough, we'll always be there."

I closed my computer with a smile on my face,
I could now rest in a peaceful place.
"I'm the most fortunate leader", I said to my wife.
"Merry Christmas to all and to all a good night."

A Surveyor's Christmas Tree

"Huh" Is the Closest Thing We've Found to a Universal Word

February 26, 2018

Written by Joanie Faletto

Imagine standing in front of someone who only speaks a language that's entirely foreign to you. You have a message to relay to them, but don't know how to communicate it. Can you come up with a common sound? A gesture? An unmistakable written symbol? It's a difficult scenario. There is one word that could build a tiny little bridge across all language barriers: Huh?

The "Huh" Heard 'Round the World

You say it when you're confused. You say it when you didn't hear what was said. You say it when you're just starting to realize something. It may feel like an instinctive reaction, but it's not. You likely take the automatic, guttural "huh" for granted, but this unassuming word holds a lot of power. Research points out that "huh" is much more than a filler, and more useful than a puzzled interjection. According to a 2013 study by researchers at the Max Planck Institute for Psycholinguistics in Nimegen, the Netherlands, "huh" is a universal word. What that means is that it's understood the world over, regardless of language or culture. We challenge you to think of another word that can do that.

Researcher Mark Dingemanse and his team analyzed recorded bits of informal language from five continents, including Spanish, Chinese, Icelandic, and indigenous languages from Ecuador, Ghana, and others. Of the 31 dialects they compiled, all had this one little word in common. It wasn't just that they share a short word that requests clarification; every "huh" across the language audibly resembled "huh". As stated by the researchers, "The similarities in form and function of this interjection across languages are much greater than expected by chance."

What's in a Word?

Identifying "huh" as a universal word implies that it's, well, a word. (Huh, who knew it has an entry from Merriam Webster?) Like it or not, it follows the rules of language. The researchers argue that exclaiming "huh" is more complex than just a reactionary utterance, showing that it is a "lexical, conventionalized form that has to be learnt, unlike grunts or emotional cries." Yes, that means somewhere along the line, you actually learned the word "huh," just like all the other vocabulary words you use every day. "Huh" can be considered a universal words because it is not innate; it's learned and it has distinct meanings. It doesn't exist in the animal kingdom, whereas emotional cries do, and young kiddos don't use it until after they start speaking.

"Huh" is then both a word, and a universal one, because "it is shaped by selective pressures in an interactional environment that all languages share: that of other initiated repair," says the researchers. As Arika Okrent explains in Smithsonian Magazine, " The dynamic, often fraught environment of human conversation, in which grave misunderstanding or a hurt feeling or an embarrassing gaffe is never more than a syllable away, calls for a word that instantly signals a need for clarification, is as brief as possible and is easy to produce, without complicated tongue coordination or lip movement."

But is "huh" a truly universal word? Does it pop up in every language on Earth? Are the researchers sure it'll turn up everywhere they look "No," Dingemanse tells Smithsonian, "but we are ready to place bets."

11 weird and wonderful Christmas traditions from around the world

- **Giant Lantern Festival, Philippines**

The Giant Lantern Festival (Ligligan Parul Sampernandu) is held each year on the Saturday before Christmas Eve in the city of San Fernando- the "Christmas Capital of the Philippines." The festival attracts spectators from all over the country and across the globe. Eleven barangays (villages) take part in the festival and competition is fierce as everyone pitches in trying to build the most elaborate lantern. Originally, the lanterns were simple creations around half a metre in diameter, made from 'papel de hapon' (Japanese origami paper) and lit by candle. Today, the lanterns are made from a variety of materials and have grown to around six meters in size. They are illuminated by electric bulbs that sparkle in a kaleidoscope of patterns.

- **Gavle Goat, Sweden**

Since 1966, a 13-metre-tall Yule Goat has been built in the center of Gavle's Castle Square for the Advent, but this Swedish Christmas tradition has unwittingly led to another "tradition" of sorts - people trying to burn it down. Since 1966 the Goat has been successfully burned down 29 times - the most recent destruction was in 2016.

- **Krampus, Austria**

A beast-like demon creature that roams city streets frightening kids and punishing the bad ones -nope, this isn't Halloween, but St. Nicholas' evil accomplice, Krampus. An Austrian tradition, St. Nicholas rewards nice little boys and girls, while Krampus is said to capture the naughtiest children and whisk them away in his sack. In the first week of December, young men dress up as the Krampus (especially on the eve of St. Nicholas Day) frightening children with clattering chains and bells.

- **Kentucky Fried Christmas Dinner, Japan**

Christmas has never been a big deal in Japan. Aside from a few small, secular traditions such as gift-giving and light displays, Christmas remains largely a novelty in the country. However, a new, quirky "tradition" has emerged in recent years - a Christmas Day feast of the Colonel's very own Kentucky Fried Chicken.

- **The Yule Lads, Iceland**

In the 13 days leading up to Christmas, 13 tricksy troll-like characters come out to play in Iceland. The Yule Lads visit the children across the country over the 13 nights leading up to Christmas. For each night of Yuletide, children place their best shoes by the window and a different Yule Lad visits leaving gifts for nice girls and boys and rotting potatoes for the naughty ones. Clad in traditional Icelandic costume, these fellas are pretty mischievous, and their names hint that the type of trouble they like to cause.

- **Saint Nicholas' Day, Germany**

Not to be confused with Weihnachtsmann (Father Christmas), Nikolaus travels by donkey in the middle of the night on December 6 and leaves little treats like coins, chocolate, oranges and toys in the shoes of good children all over Germany, and particularly in the Vavarian region. St. Nicholas also visits children in schools or at home and in exchange for sweets or a small present each child must recite a poem, sing a song or draw a picture. In short, he's a great guy. But it isn't always fun and games St. Nick often brings along Knecht Ruprecht (Farmland Rupert). A devil-like character dressed in dark clothes covered with bells and a dirty beard, Knecht Ruprecht carries a stick or a small whip in hand to punish children who misbehave.

- **Norway**

Perhaps one of the most unorthodox Christmas Eve traditions can be found in Norway, where people hide their brooms. It's a tradition that dates back centuries to when people believed that witches and evil spirits came out on Christmas Eve looking for brooms to ride on. To this day, many people still hide their brooms in the safest place in the house to stop them from being stolen.

- **Lighting of National Hanukkah Menorah, Washington, D.C. -US**

The Jewish holiday of Hanukkah is celebrated with much fanfare across the United States with one of the most elaborate events taking place on a national stage. Since 1979, a giant nine-metre Menorah has been raised on the White House grounds for the eight days and nights of Hanukkah. The ceremony in Washington, D.C. is marked with speeches, music, activities for kids, and, of course, the lighting of the Menorah.

- **Venezuela**

Love Christmas, but think it could be improved by a spot of roller-blading? If the answer is yes, visit Caracas, Venezuela this year. Every Christmas Eve, the city's residents head to church in the early morning - so far, so normal - but, for reasons unknown only to them, they do so on rollar skates. This unique tradition is so popular that roads across the city are closed to cars so people can skate to church in safety, before heading home for the less-than-traditional Christmas dinner of 'tamales'.

- **Day of the Little Candles, Colombia**

Little Candles' Day marks the start of the Christmas season across Colombia. In honour of the Virgin Mary and the Immaculate Conception, people place candles and paper lanterns in their windows, balconies and front yards. The tradition of the candles has grown, and now entire towns and cities across the country are lit up with elaborate displays. Some of the best are found in Quimbaya, where neighborhoods compete to see who can create the most impressive arrangement.

- **Cavalacade of Lights, Toronto**

In wintry, wonderful Toronto the annual Cavalcade of Lights marks the official start to the holiday season. The first Cavalcade took place in 1967 to show off Toronto's newly constructed City Hall and Nathan Phillips Square. The Square and Christmas tree a re illuminated by more than 300,000 energy-efficient LED lights that shine from dusk until 11pm until the New Year. On top of that, you'll get to witness spectacular fireworks shows and engage in some outdoor ice skating.

Vermont Towns Settle Colonial Boundary Dispute

CBS News, April 26, 2010

A Colonial-era boundary dispute between two Vermont towns that were never exactly sure where one ended and the other began is finally going to be settled. But it was old maps, not GPS or Google Earth, that ultimately found the common ground for the towns of St. George and neighboring Shelburne. The process has pointed out the art of trying to read the minds of the original surveyors and land granters to establish where the lines were drawn.

"It's a matter of 'let's get this defined'" said Phil Gingraw, chairman of the St. George Select Board. "Two-hundred-and fifty years ago, people would not really have cared. Today, I think, things have changed a lot, and that's why we need definition.

Vermont itself was a by product of a land dispute between the colonies of New Hampshire and New York.

Both issued land charters for the area between the Connecticut River and Lake Champlain. Much of what became Vermont was first surveyed in the 1706 using primitive equipment in near-trackless wilderness.

"Sometimes, the early surveying errors were so spectacular, we've found areas that had never been in any town," said state archivist Gregory Sanford.

It wasn't until the 1980s, for example, that the Vermont Legislature awarded a 380-acre parcel known as Perley's Gore to Montgomery, even though it has existed for more than 200 years without belonging to any town.

These kinds of boundary disputes aren't uncommon:

-During the severe 2008 drought, the state of Georgia tried to reassert its right to its northern boundary on the 35th parallel, authorized by Congress in 1796 when the state of Tennessee was created. The point on the parallel where Georgia, Tennessee and Alabama meet is on the southern bank of the Tennessee River. It turned out the 19th-century surveyor tasked with finding the western end of Georgia's northern boundary was off by just over a mile, ending Georgia just south of the river. That left Georgia unable to tap into the river and pump much-needed water south into Atlanta.

-The monument where the four corners of Arizona, Utah, New Mexico and Colorado come together is off by 1,807 feet. But the surveying error has become irrelevant, since the states have adopted the accepted location as the only spot in the country where four states meet.

"These (disputes) occur when this exact thing happens," said Curt Sumner, executive director of the American Congress of Surveying and Mapping, in Gaithersburg, Md. "Somebody has reason to question or be questioned about where their property lies."

Solving them is never easy.

"That's part of the puzzle-working, mind-reading part of what surveyors get into," Sumner said.

On Aug 18, 1763, acting under the auspices of King George, then-New Hampshire Gov. Benning Wentworth granted charters for the towns of Shelburne and St. George.

Neighboring communities, including Vermont's biggest city, Burlington, had already been laid out. So Shelburne and St. George were squeezed in, their maps overlapping. There was an effort to settle the dispute in 1848, but the issue lingered.

In 2007, a couple built a house on the disputed territory and had to ask for building permits in St. George, even though tax maps showed the land to be in Shelburne.

Despite modern mapping techniques, the towns had to use the old maps, look at stone walls and rock piles and survey the area again.

Even then, the towns had to submit to an arbitrator, because the original maps overlapped.

"You can go to the store and for a couple hundred dollars buy a GPS that will tell you you're within a few feet of a location," said Gingraw. "If you buy an expensive one, you can be within millimeters. That's what people want, a firm definition of where their property is and what's theirs and what's not theirs."

Under the arbitration agreement reached in February, both towns got some land. The house, meanwhile will be considered part of St. George. Still needed is a final survey that sets the monuments marking the boundaries, which must be approved by the Vermont Legislature.

Shelburne Town Manager Paul Bohne said the issue was never particularly contentious, but it did need to be settled.

"It's been fascinating to get into the history and go back to Benning Wentworth and what was in his head," Bohne said. "When all was said and done, he had given the same land to different towns."

Reminiscence Of An Old Surveyor, Part III
Other Equipment

by: Knud E. Hermansen
P.L.S., P.E., Ph.D., Esq.

This is the third and last article of surveying equipment and procedures that are now relegated to history. I have been surveying for around half a century. I started before electronic distance measuring was common. Transits and steel tapes were the prevailing equipment found in a survey firm. Metal detectors were rare. As a result, I have had experience with surveying equipment that will never be used again by the modern surveyor.

My two previous articles have discussed taping, the compass, and the transit. I shall now delve into other procedures and equipment known and used in historical surveys which I often took part.

Plane Table - In the early mapping surveys I often participated in, we used the plane table and alidade to prepare a site map and topographic map while in the field. In the days before computers, the plan table was an excellent tool to prepare an accurate map in a hasty manner. I have been told that almost all the soil maps prepared in the 1920s and 1930s were done using the plane table and alidade. I had not made my debut on the surveying field at this time so I have no first-hand knowledge of the accuracy of his information.

The plane table was a large board, the dimensions of which I can no longer remember. It was the size of a typical drawing board that engineering and surveying students once had to purchase when studying in their major. This board was mounted on a tripod. The board came with the tripod mounting ring fastened to the underside of the board. The mounting ring was a size that was equivalent to the transit mounting ring. The board, once mounted on the tripod, was set up at waist level. There was no attempt to plumb this over a known station though I suppose there were situations when this should be done. It was possible to do so.

A large sheet of paper was fastened to lay flat on the top of this board using tape or tacks. The alidade was then placed on the board, atop the paper. I suppose an alidade could be described as a transit scope fastened to a flat scale - the scope being above and parallel to the long length of the scale. Somewhere on the scale was a bubble that was used to level the drafting board or plane table.

With the plane table leveled, a long shanked pin was inserted through the paper into the board. This represented the observer's position. The mapping of the area could now begin.

The rodman, armed with a stadia board, would hold the stadia board at a point to be located by the person at the plane table. Using the stadia hairs apparent when viewing through the scope in the alidade, the distance from the alidade to the stadia board would be determined. On the plane table, the scaled distance would be measured from the long-shanked pin along the edge of the alidade where a point would be marked and labeled on the paper. The orientation of the scale's edge on the alidade being the same direction as the scope is pointing. This procedure was repeated numerous times until the surveyor was satisfied the paper fastened to the plane table was complete with the information necessary for the map being produced on the plane table.

Elevations could be obtained by the simple expediency of setting the alidade level using a scope bubble for this purpose. Most alidades had a plate and Vernier to read a vertical angle that would allow the elevation to be determined by trigonometry. Many alidades had what is known as a Beaman scale that would allow calculations without having to look up trig values. I will omit discussing the Beaman scale and how it was used. In truth, I am rather rusty in remembering how to use it after more than four decades without practice.

The end result is that the survey crew returned to the office with a completed map of the area often including contour lines. The only consistent fault I found with the plane table was the fact that survey work on a hot summer day using a graphite pencil often left the map sheet covered with smudges.

Stadia Board - I have mentioned the stadia board while speaking of using the plane table. The stadia board may be visualized as a level rod with much larger graduations. The stadia board was somewhat wider than a level rod in order to accommodate the larger graduations. The larger graduations allowed for seeing the rod at longer distances.

I suppose reading stadia distances is a lost art. It was a rather simple procedure unless there was trig involved. The difference in the rod readings between the upper stadia wire or hair and lower stadia hair was obtained and multiplied by 100 giving the distance in feet, assuming the stadia board was so marked in feet and decimal parts of a foot. I will confess to reading the stadia rod at ranges that I could only read half of the stadia rod - that is using only the center wire and top wire or bottom wire. In such cases, the interval between the middle and upper or lower stadia hair was multiplied by two before multiplying by 100.

In theory if the stadia rod could be read to the nearest 0.01 of a foot, the horizontal distance could be calculated to the nearest foot. Conversely, if the instrument operator made an error reading of 0.01 of a foot, the horizontal distance would be in error by a foot. This precision was acceptable

Reminiscence of an Old Surveryor continued...

I will say that I met more than one old surveyor that laid off subdivision lots using stadia to the annoyance of the modern surveyor who find the distances between corner monuments varying by as much as two feet with no consistency in the error that would allow a dependable deficiency or an overage to be applied when retracing the lot boundaries. Perhaps I have solved a mystery involving some old subdivisions and corners found.

Heliotrope - I will comment briefly about the heliotrope though its use in private practice was very limited. The heliotrope was an elongated target, fasted to a tripod, and plumbed over a point. The heliotrope, I used, was composed of two rings along the elongated board with a mirror at the end farthest from the instrument observing the heliotrope. One heliotrope I used actually had two mirrors that allowed the sun's light to be bounced from the sun using the first mirror of the heliotrope that then reflected the sun's beam through the two rings to the observer. The double mirrors was required if the sun was behind the heliotrope as it was pointed toward the instrument. The rings in the heliotrope were aimed at an observer standing behind an instrument that was being used to measure angles. The mirror at the rear was adjusted to reflect the sunlight down through the rings toward the instrument operator producing a bright light for the observer to aim upon. Given the sun's apparent movement, the person at the heliotrope had to continuously adjust the mirror. I was always impressed that when standing at the instrument, I could see the bright light reflected by mirror on the heliotrope for up to 30 miles away in some cases.

Subtense Bar - I suppose the subtense bar I used from time to time was more common than a heliotrope in private practice but not by much. The subtense bar appears as a much shortened level rod rotated from the vertical to be horizontal or roughly parallel to the ground. The subtense bar was mounted in its center on to the top of a tripod. The tripod was centered over a traverse station or control point. From one end of the bar to the other was a known distance. The subtense bar that I used had a sight tube in the center. The bar was rotated about the tripod top until the sight tube was centered on the instrument operator. This would put the length of the subtense bar perpendicular to a line between the subtense bar and instrument. The instrument operator would measure the angle between the ends of the subtense bar. Using trigonometry, the distance between the instrument and the subtense bar could be calculated. The accuracy of the distance was a direct function of the accuracy in measuring the angle. The subtense bar was a very useful tool in measuring those distances that could not be taped. I would use the subtense bar in measuring distances across water bodies. I also used it from time to time when I did not have an extra person to help me tape the distance.

Plumb Bob - I will repeat my statement from my first article and say that I don't believe a plumb bob can be found among the equipment of the modern surveyor. The plumb bob was necessary for taping. It was necessary to hang the plumb bob under the tripod in order to place the instrument over the point, there being no optical plummets on survey equipment at the time. Finally, the plumb bob was required to give back sights and fore sights over marks and monuments in the field. I have heard of more than one employer that docked the pay of an employee that forgot to bring their plumb bob to the field.

The use of the plumb bob would seem rather easy but it was not. Consider my previous explanation on the use of the plumb bob when taping. Hanging the plumb bob under the tripod to allow the instrument to be centered over a mark required the person to have mastered the art of a slipknot. A slipknot allowed the plumb bob to be raised or lowered depending on the adjustment of the tripod legs and how close over the mark was necessary to aim the point of the plumb bob. To use other than a slipknot caused a knot to be left in the string. A knot in a plumb bob string was a crime commiserate with wanton destruction of property.

The person had to be adept at wrapping the string around the head of the plumb bob. The wrapped string was fastened in such a manner that a tug at the string's end would unwind the string without leaving a knot. Many surveyors purchased gammon reels that alleviated this task.

Leroy Set - I will depart from surveying equipment in this one instance to speak of the LeRoy set. While it may not be classified as surveying equipment, almost every surveying firm had a LeRoy set unless the firm had a person gifted with beautiful handwriting.

The LeRoy set was a lettering set using lettering templates and a scriber. The scriber had three arms. One arm went into a long slot on the lettering template. A second arm went into a pin that followed the indent of the letter or number in the lettering template. The third arm held a pen that would ink the letter or number on the paper, mylar, or vellum. The letter templates came in different sizes, fonts, and styles. I spent many hours using a Leroy set. Probably a quarter of that time was spent getting the ink to flow smoothly out of the pen. I may have exaggerated this time a little. Getting ink to flow was an art that usually involved the tongue and lips not to mention scattered across the vellum or mylar. This reminds me that another quarter of the time was spent removing ink that did flow out of the pen but in the wrong location or too copiously on locations without enough pounce. Enough said on that topic as it brings back many frustrating moments.

Reminiscence of an Old Surveryor continued...

Chain - I will admit to only using a chain one time. I would be perceived as really ancient had I admitted to frequent use of the chain - so I won't do so. For those surveyors that have never seen a surveyor's chain, the surveyor's chain does not appear like the chain an individual would find in a hardware store. The links in the surveyor's chain are approximately 7.92 inches. Each link is a length of wire with a loop at each end of the wire shank that connects to a ring loop that connects to the loop on another similar link for the chain. A four-rod chain will have four brass tags with one to four fingers. One finger is found at the one-rod length along the chain. Two fingers are found at the two-rod length and so on. When measuring, a surveyor would count the number of rods plus the number of links to the object measured - although many a rural surveyors simply gave the number of rods and perhaps half rods without bothering to count individual links.

While there is sag in a steel tape, it hardly compares to the large sag found when holding the chain above the ground. Furthermore, every loop in that damn chain seemed to catch and clog with sticks, grass, mud, and other debris gathered when dragging the chain along the ground. To further agitate the temperament of the user - in one case being me - the debris would somehow snag and hold two link loops together thereby doubling the chain back upon itself involving some length of the chain. If there is a log with some small appendage sticking from the log you can count on the link loop snagging the appendage. There were always some vegetation protruding from the ground that would snag the chain. Links soon stretched or even broke. Of course, these problems were all relayed to me since I can't be that old to have personally experienced the agitation caused by measuring with the chain.

Dip Needle - Metal detectors were around since World War II but their widespread use in surveying firms seemed to occur in the mid to late 1970s. Surveying without a metal detector resulted in many pincushion corners since an existing pin or pipe that was buried to mark the corner was not always found before a new monument was set.

One trick that I often employed before owning a metal detector was to hold a compass and slowly float the compass just above the ground and look for twitches in the compass needle. This technique allowed me to find many metal corners that were just below the ground surface. In the 1960s up to the widespread use of metal detectors, dip needles were commonly used to find the buried metal corners. Dip needles were composed of a box with a long, looped strap. The box contained a magnetized needle. The box had a window allowing observation of the needle.

Using the long strap to allow the surveyor to stand up, the box was hovered over the ground while the needled was observed. The sensitive, magnetized needle dipped when influenced by nearby metal. By this means, the surveyor could discover if there was a metal pin, pipe, or bar below the ground surface. The dip needle was not as sensitive to buried metal as modern metal detectors. I don't believe I ever found a pin or pipe that was buried more than half a foot below the ground surface using a dip needle.

EDME - Early electronic distance measuring equipment, known as an EDME or EDM, using shortened initials, were a separate item of equipment from the transit or theodolite. Often the operator would have to remove the angle measuring equipment and mount the EDM directly on the tripod. Later, the EDM and angle measuring equipment were configured so the EDM was mounted on the standards of the angle measuring instrument.

The first EDM I used was a tellurometer or cubic tape. A tellurometer was set up on both stations and pointed toward the other station using a null needle to find the optimum pointing. Each tellurometer would determine the distance between the opposing tellurometers. The two distances were averaged. The tellurometer used microwaves to determine a distance. You could switch between speaking to the other operator and measuring a distance. Distances were calculated using a paper form that I shall mention again with the next item of distance measuring equipment.

Later I used a Hewlett Packard laser EDM. With this instrument, you knew you were pointing at the reflector because you would see a bright red light as the laser light was reflected back to the instrument. That probably did not do my eyes any good. Not that standing in the path of microwaves was healthy.

Both items of equipment, the tellurometer and laser EDM, required a needle be nulled, numbers read, frequencies shifted, and an entire sheet of a paper form employed were various readings were made, entered, and manipulated. I believe the form was published by an IRS agent who first invented the 1040 long form.

Temperature and atmospheric corrections had to be hand calculated. Prism corrections were applied to every measurement of the laser EDM. It was a complicated and time consuming process to determine a distance. Yet, it was far faster and more accurate than obtaining long distances by taping.

If my memory serves me, the Guppy was the first instrument I possessed that gave a distance directly without a lot of data entry on to a form and intermediate calculations. I will not further describe this popular EDM. After the Guppy, the angle measuring and distance measuring were combined into one instrument known as the total station.

Twelve-volt batteries powered these early EDMs. I often used the battery in my car or hauled around a heavy twelve-volt battery to power the EDMs. To save weight I later used a motorcycle, 12-volt battery. If my memory serves me

Reminiscence of an Old Surveryor continued...

correctly, the batteries never seemed to last an entire day. They seemed to always be drained at the farthest point from the road.

I will end discussing the early EDMs with the statement that the horizontal distance always had to be calculated using the zenith or vertical angle. The EDM was mounted on the standards of the angle measuring equipment, the offset had to be taken into account. Long distances often required numerous prisms stacked upon each other in order to get sufficient light reflected back to the EDM to effectuate a measurement.

GPS - I suppose someone seeing this heading will exclaim that the GPS is not an old piece of equipment regulated to history. If you had seen the GPS equipment I first used, you would admit it was historical and that equipment is relegated to history.

The historical GPS equipment was large and cumbersome. Several twelve-volt car batteries were often required to operate the equipment and obtain sufficient satellite data. The GPS receiver could not be used at any time of the day or for that matter any day of the week. There were not sufficient satellite constellations to allow for 24-7 operation of the GPS. Depending on the satellite constellation configuration for that day, data could only be collected during a limited time window. I often occupied a station in the darkest hours of the night in order to comply with a pre-determined window of opportunity for receiving satellite data. I met more than one police officer that was very suspicious of my activities.

Spending hours on a station to obtain sufficient data was common. In fact, multiple observation windows (think days) of observation were often required. In the earliest GPS, the timing of when the GPS was to be turned on was important. When I speak of timing, I mean down to the odd minute.

Now I ask, does the GPS I have just explained remind you of what a person now uses as they run around with that lightweight GPS receiver on a prism pole, collecting numerous locations in a day?

Other Equipment - My colleague, Carlton Brown, has written several articles about slide rules and early calculation machines so I shall not mention those. I will say that when I first started surveying there were no calculators. I used logarithm tables and had to look up trig functions in a book. Unless you have tried to look up log and trig values in a book of tables, you have no idea of the errors that often resulted from trying to interpolate values using the tables in the book.

I have no doubt there were other items of equipment used by historical surveyors that I have not mentioned for the simple reason that I have never used the equipment or forgotten I used the equipment when writing this reminiscence. Forgetting is easier and more common as I get older. I am sure surveyors of my age can add their thoughts and should do so before we pass into history.

Active Membership

For a good number of UCLS members, including myself, there is no difference between being a member and being an active member.

We are state and chapter officers. We plan and host the annual conference and fall forum; we publish the UCLS Foresight and Newsletter; we review questions for the entrance exam, and oversee the scholarship fund; we do legislative and public relations work; we develop standards and monitor ethics; not just for the council, but for the profession as a whole, and represent it locally and nationally.

However, we are the minority, no more than the proverbial tip of the iceberg.

A large number of members do no more than pay their dues. A fair number attend chapter meetings and functions, sometimes sporadically. More members attend the annual conference than participate in chapter activities. All too few can be enticed or cajoled to do something "for the good of the order".

Why is there such a disparity? Why are so many of us inactive?

I believe the primary reason is that we all have life apart from our work and therefore have other important things to do. We have families and affiliations that make compelling demands on our resources, both time and money. We cannot do everything, and must choose.

Unfortunately, our priorities are sadly unbalanced - if we concentrate only on our work and on our personal obligations and make no time for the profession - if we do not, as the saying goes, give something back to it.

We do not do more because we think the profession is taken care of by DOPL. There is nothing for us to do but comply with the laws and regulations of the board. The less we hear of the law and from the Board - the better. After all, the Board is concerned only with individual practitioners: granting and renewing, and occasionally suspending or revoking licenses, and imposing fines. It is not concerned with us in the aggregate or with the profession as such, other than to chastise the worse of us.

Furthermore, we do not do it because we are individualists. We work in isolation from each other. We do not even like to compete, and would just as soon let someone else have a job on which we bid. It is not strange that we view an association like the UCLS, either as a self-servicing club or a meddlesome league- the kind of group one does not want to join, if they would have someone like oneself as a member; and for which one does not want to exert oneself, if one does join.

This is not to say that the well-being, or at least the reputation, of the profession is not tied to individual performance. It is manifest in daily practice by serving our clients well and by being honorable and dignified in all we do; it suffers as a result of poor service and deplorable demeanor.

Individuals, however, cannot promote the well-being of the profession as a whole by acting alone. Matters concerning both the legal status and the communal stature - not to mention the financial blessings - of the profession require concerted action and cooperative effort. There is strength in numbers!

It follows that we should join the Council for our own good and that we should participate - and participate vigorously - in activities that benefit us all.

Too many of us simply do not see the benefit of an association such as the UCLS. We see only what it will cost us and, perhaps not unfairly, ask what we will get in return. Our willingness to join and to participate in the activities of the association is conditioned by a skepticism about both the benefits of belonging and the efficacy of the organization.

What makes us skeptics; it seems to me, is our immediate self-interest, our limited vision, and our disbelieving attitude.

We look for a payoff, but there really is no immediate or direct gain from being active in UCLS. If anything, we are likely to expend more of our time and money on the UCLS than we would were we not active. The reason is that the aims of the Council are broader than our own personal concerns, and that our advancement of these aims would be suspect, were we to benefit from it personally.

The Council can benefit us generally. It can stem the flow of work out of our hands as a result of technological advancements, by providing educational opportunities, such as workshops and conferences (even espousing mandatory continuing education). It can lessen the lack of clear understanding of the tasks of the profession among some of the practitioners, and counteract blatant misrepresentations of the profession by some of its representatives. In addition, it can boost the stature of the profession through public relations efforts. The gain from these efforts may not be easily measured, but it is not less real.

What stands in our way is the lack of vision on the part of too many of us. We are constantly warned that we are being overtaken by events over which we should have control, but are so entrenched in our work that we fail even to notice what is happening. This is said about the use of GPS equipment and the applications of GIS and scanning technology. It is no doubt true that many of us are old dogs, unwilling to learn new tricks. It is also true that surveying is a conservative activity, and that changes in instrumentation have not changed procedures radically. (A resection, after all, can be done with compass and chain, a logarithmic table and a Gunter's rule!)

All it takes on the part of each of us is a little faith and effort. As with most things in life, the belief that participation in the activities of the UCLS is worthwhile is like a self-fulfilling prophecy. One of my colleagues used to say that you get out of it what you put into it.

The function of the Council is to promote the profession. We might all benefit from periodically reading the UCLS bylaws and articles of incorporation, visiting its website, contributing to its publications, and be inspired to do more - to do something for the profession. We might also do well to give a hand, literally and figuratively, to those who are presently active in the Council, and thereby join their ranks.

Anonymous - but participating - UCLS Member

Making a Difference

2019 UCLS Conference

Wednesday, February 20, 2019			
12:00-1:00	Registration		
1:00-1:30	Welcome – Opening Ceremonies New Mission Statement		
1:30-3:00	Assigned Topic/Call for Papers **Presenter Name**		
3:00-3:30	Break		
3:30-5:00	Open Discussion **Ombudsman**	Minor Land Division Regulations Mohave County, Arizona **Jason Foose**	Surveying the Ephraim Tunnel **Leon R Day** **Cory Squire**

Thursday, February 21, 2019				
7:00-8:00	Late Registration – Hot Breakfast			
8:00-10:00	Risk Management for Surveyor's **Gary Kent**	Identifying and Locating Roads **Deveron Anderson**	UDOT – Right of Way Design **James Olschewski**	FAA Part 107 Remote Pilot License Review **Aerotas**
10:00-10:30	Break			
10:30-12:00	Risk Management for Surveyor's (continued) **Gary Kent**	THREE "HALF"S **Jason Foose**	Accuracy and Precision **Tim Kerr** **Peyton Hatch**	FAA Part 107 Remote Pilot License Review **Aerotas**
12:00-1:30	Lunch – Vendor's/Officer Announcements/Surveyor of the Year Award			
1:30-3:00	The Surveyor's Judicial Role **Gary Kent**	THREE "HALF"S **Jason Foose**	NGS/NOAA Update **Bill Stone** **Dan Gillins**	FAA Part 107 Remote Pilot License Review **Aerotas**
3:00-3:30	Break			
3:30-5:00	The Surveyor's Judicial Role (continued) **Gary Kent**	THREE "HALF"S **Jason Foose**	NGS/NOAA Update **Bill Stone** **Dan Gillins**	FAA Part 107 Remote Pilot License Review **Aerotas**

Making a Difference

2019 UCLS Conference

Friday, February 22, 2019			
7:00-8:00	Late Registration – Hot Breakfast		
8:00-10:00	Health and Safety in Surveying **Gary Kent**	What it takes to collect survey-grade data by drone -or- From drone to linework, or: so you have thousands of photos... now what? **Daniel Katz**	Air Mobility & AGRC Update **Shawn Fernandez** MMRC County Corner Reference Sheets **Gary Ratcliff**
10:00-10:30	Break		
10:30-12:00	Health and Safety in Surveying (continued) **Gary Kent**	Strip and Gore **James Kaiserman**	Utah Easements **Mark Gregersen**
12:00-1:30	Lunch – Vendor's/Lifetime Achievement Award		
1:30-3:00	Leadership: "Anyone Could Lead Perfect People" **Gary Kent**	Three Mile Method of Surveying & PLSS **Jerry Allred** **Dan Webb**	Making a Difference by Bridging the Gap **James C Dahl**
3:00-3:30	Break		
3:30-5:00	Auction – Raffle - Closing Remarks		

October - Where is it?

Tucked between the 215 beltway and the mouth of Big Cottonwood Canyon is a structure hidden from casual view. The aging stone and adobe mill sits near the intersection of Wasatch and Fort Union Boulevards. The Old Mill has an interesting past, which makes it - some argue - the most haunted site in all of Utah.

The old Mill has been used for various purposes, most notably as a haunted house. Tales have circulated about former caretakers of the mill who have died violently, piquing peoples' interest in the site. Many who have visited Old Mill have reported strange events. Cold Spots, growling, and a general creepy feeling are commonly reported.

UCLS members, Aaron Inabnit, followed by Charles Heaton were the first to respond with the correct answer.

UTAH COUNCIL OF LAND SURVEYORS
FALL FORUM 2018

SURVEY TECHNICIAN TRAINING

NOVEMBER 9, 2018
UTAH VALLEY UNIVERSITY

UTAH COUNCIL OF LAND SURVEYORS
FALL FORUM 2018

UTAH COUNCIL OF LAND SURVEYORS
FALL FORUM 2018