



# THE FLASH

**Dedicated to the  
preservation and  
education of  
wireless, radio,  
television and  
associated  
equipment**

Volume 28, Issue 1

The January 8th Meeting is at the Miller Library in Castle Rock

Jan/Feb 2017

## **The Phoenix Project: Resurrection of a Telegraph Key From the Ashes**

*By Martin Guth*

June 11, 2013 is a date that shall live in infamy for many of us who lived in Black Forest at that time. The most destructive fire in Colorado history, two people died and 590 houses were burned to the ground along with 22 square miles of forest. My house was a total loss as was the home of Jeff Herrle, another CRC member. Along with the trees, the wildlife and the houses, many antique radios and radio related items met their end on that day.

To set the scene, several hours before the fire hit my neighborhood I was in my basement frantically wrapping up some of the best of my mineral collection. About a mile to the west were a number of houses heated with propane, each house having a large tank situated nearby. When hot enough these would violently explode, sometimes with enough force to knock the adjacent house off its foundation. I could feel the sharp impact of each blast through the concrete floor and knew that as soon as I heard the last of the explosions, the fire had passed through that neighborhood and that mine would be next. I never had the chance to hear the last of the explosions as a very agitated sheriff's deputy was pounding on my door, and in rather explicit terms he told me to evacuate immediately. At that point I had only one radio in the car, a Zenith Trans-Oceanic Royal 3000, and was unable to return to the basement for any more. The one item I wanted to save above all others was my father's Telegraph Apparatus Co. key that he used in Vik, Iceland during WWII to communicate with inbound and outbound aircraft as part of air traffic control. In 2002 I had done a chrome plating restoration job on this as the original plating had pitted somewhat after many years of storage in Florida. I presented it at the January, 2003 CRC meeting as a show and tell item (see Flash March-April, 2003). Associated with the key, I had a mint condition Hammarlund SP-200 that I wanted to save (see Flash September-October 2001) as that was the type of radio my father

*Story Continues on Page 3*



Figure 1: Burned Hammarlund SP-200

## **We're Invited! Come See a Tesla Coil!**



After the January Castle Rock meeting David Boyle will be demonstrating his Tesla coil at his home in the Castle Rock area. David will have his radio repair and restoration workshops and collection display open for viewing. David's home is fewer than 15 minutes from the library. Printed directions will be at the meeting. January is the only time that he can do this for the club due to the required "darkness" outside to see the high voltage plasma streamers. David will also have his "Jacob's ladder" available to view.

## Message from the President

Since the last edition of the *Flash*, we have entered a new year and we now look forward to another year of our club activities. I hope you all had a great Holiday Season and had a chance to spend some quality time with family and friends and to stay warm working on a radio or two.

The club is going strong as we enter the New Year. We have been picking up new members over the last few meetings and have had some members step in and start helping the club in key areas such as is the case with our new *Flash* editor Alan Burch, and our assistant auctioneer Cliff Shelby. Thanks guys and now it's time to look at the annual process for nominating and electing new officers for the club. This will be a main topic of the upcoming January meeting so give this some thought and consider yourself as a potential candidate and how you might help the club in an officer's role.

We have got a full schedule of events ahead of us this year and our meeting schedule is published in this issue. As we did last year, we are moving the old traditional September meeting date to August 20<sup>th</sup>. Thanks as always to David Boyle for working with the libraries to set up the meeting rooms.

Our Annual Spring Show and radio display competition will be alongside the 11<sup>th</sup> Annual Vintage Voltage Expo on Sunday March 26<sup>th</sup> 2017 at the same venue (Ramada Plaza). We decided at the last meeting that our "special display" category for this event would be "radios of the 1940's." This is just an amazing



event for the club as it brings out the best in what we do, and it's held adjacent to the Vintage Voltage Expo which is a fun and interesting sort of vintage electronics flea market.

Thanks to all that came to the well-attended November meeting in Castle Rock. We had a solemn moment at the beginning of the meeting to honor the passing of member Ken Hodge. Robert Bauman stood and talked about Ken and his experiences while a video of Ken at our Spring Show playing his hand-cranked street organ was showing on the screen. It was a moving tribute. (Thanks Larry for bringing that video clip.)

Also at the meeting we discussed the recent club events, including the auction and special estate sale of Mark Anderson's uncle. Mark showed up and we thanked him for working with the club and his donation; there were many books and metal project boxes in the raffle that he donated. We also auctioned off a few radios and some other items in addition to the raffle. With the show-and-tells rounding out the meeting, we concluded a great get-together.

Note that David Boyle will be giving a demo of his Tesla coil at his house after the next meeting. See the notice in this issue. I look forward to see you all at the January 8<sup>th</sup>, 2016 meeting in Castle Rock!

*Tom Zaczek*

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## CRC MEETINGS

Meetings are held on the 2nd Sunday of every other month starting in January (except May is 3rd Sunday) at 1:00 pm. The meetings consist of business, "show & tell", raffles, auctions, swap meets, technical discussions and other subjects of interest

## CRC MEMBERSHIP

Annual membership in the CRC runs from July to June. Dues entitle members to attend meetings, "The Flash!" our newsletter, participation in our spring show and Fall auction. Current annual dues are \$20. New memberships will be prorated to the following June.

## Schedule of CRC Meetings and Events 2017

DATE (2017)	EVENT	LOCATION	NOTES
January 8 <sup>th</sup>	Meeting	Castle Rock Miller Library	
March 12 <sup>th</sup>	Meeting	Littleton Bemis Library	
March 26 <sup>th</sup>	Annual Spring Show	Ramada Inn Thornton	Vintage Voltage
May 21 <sup>st</sup>	Meeting	Littleton Bemis Library	Castle Rock unavailable
July 9 <sup>th</sup>	Meeting	Castle Rock Miller Library	
August 20 <sup>th</sup>	Meeting	Littleton Bemis Library	Castle Rock unavailable
September (TBD)	Annual BBQ & Auction		Usual Place
November 12 <sup>th</sup>	Meeting	Castle Rock Miller Library	



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used throughout the war. Unfortunately, both went down with the ship.

The day before foundation demolition and trash removal, I decided to dig one last time through the rubble for lost artifacts. On this day, in the rain, I had to dig through the sulfur-smelling muck consisting of burned drywall, fiberglass insulation and whatever else had fallen in from above. Knowing the burned key was located near the SP-200, I removed that and everything around it, a difficult task as much of the debris consisted of iron, wet fiberglass, ceramic and glass shards and roof shingles. Typically, the remains of a burned radio consisted of the speaker frame and a molten mass of tubes, capacitors and wires. In the case of the SP-200, the corroded steel cabinet survived, but the aluminum chassis flowed like water and anything organic such as plastic and rubber burned away completely. Copper and brass began to melt, indicating a temperature approaching 2000 degrees F, but I was determined to find that key and restore it no matter what. Having carefully



Figure 2: Telegraph Apparatus Key After the Fire

moved the bedsprings, frame and other rubble away, I soon found what was left of the once shiny and elegant telegraph key. It wasn't shiny anymore.

The restoration of something like this is more an exercise in materials science than anything else we normally encounter in antique radio restorations. Fortunately, in my engineering career I had the opportunity to engage in quite a bit of that along with electronic design, so I had at least some idea as to what I was facing. Since most of the mass of the key is steel, that part of it was recoverable. However, some of the smaller pieces were brass, which melts at around 1700 F depending on the alloy, and while some survived to be reused, others did not. For example, a brass nut and bolt running through a steel post were not recoverable although the post was.

To start with, the entire assembly had to be taken apart.

Since almost everything on the key was first plated with nickel and then chrome, I had to deal with what happened to the plating after exposure to high temperatures. Although neither nickel or chrome melt at around 2000 F, every piece was seriously oxidized during the fire, resulting in a complex mix of corroded materials. In short, the plating bubbled and lifted off the brass and steel, both of which then corroded underneath. The corrosion and bubbled plating made removal of nuts and bolts very difficult as wherever threads were in contact, the pieces were firmly locked together by the corroded and sometimes partly molten metals. I had to use multiple different processes to get things apart as it seemed each piece had its own unique set of problems.



Figure 3: Steel Post With Partly Molten Brass Screw and Nut

Some pieces came apart with brute force, although that was difficult to do without further damage to the parts. I removed some plastic grips from spring clamps and glued them onto a pair of pliers which then allowed me to grab onto things with minimal damage. For the stubborn pieces I was able to spray on some Blaster Chemical penetrating catalyst, a common chemical used to loosen rusted nuts and bolts. For even more stubborn parts I had to spray the stuff into a can and soak them, sometimes for weeks, before I could even get anything to budge. To loosen some screws, I would heat the parts with a blow torch and then drop them into a can full of chunks of dry ice in an attempt to break the bond via thermal shock, often with interesting special effects. On a couple of occasions, the shock treatment in parts with dissimilar metals such as brass screws in a steel post would break the bond due to the different coefficients of thermal expansion. Finally, for the nearly hopeless cases I used 85% phosphoric acid that I have for cleaning mineral specimens as that will dissolve chrome plating. This required careful monitoring as the acid will also attack steel if left in for too long.

Another interesting problem presented itself when I tried to remove the burned metal label which is composed of brass plated steel, as apparently it had gotten hot enough such that the brass plating effectively welded it to the baseplate. Before doing anything else, I started on one corner of the label to see if it would come up with a razor blade. I didn't care about bending it as it was done for anyway.

The label was originally attached using two tiny press-fit pins, but they had frozen in place before I did the original



Figure 4: Starting Nameplate Removal

When I re-attached the label in 2002, I simply tapped the former pin holes and used the smallest stainless steel screws I could find. That worked well until after the fire when I tried to get them out with a screwdriver. It didn't take long



Figure 5: Drilling Out Nameplate Screw

For some reason one of the two screws drilled out without a problem but I found that the second had become much harder, possibly from the heat. After snapping off two drill bits and nearly damaging the baseplate, I decided a partial hole was enough and that I could glue the replacement pins from the spare key in, one now being shorter than the other.

After months of experimentation, trial and error, frustration and finally success I was able to disassemble everything. The final step before plating was to sandblast most of the pieces with glass beads, although I had to be careful as you can end up with a matte finish that will not result in a shiny plated surface. For nuts and bolts though, this really wasn't a problem. I could have sanded all of the pieces with fine sandpaper, but the bubbled chrome is extremely tough and rounded surfaces would have been difficult to sand evenly. My only hope was that stripping off the old plating in preparation for the new would take care of surface roughness.

The first question one might ask is what to do about parts that were completely ruined by the fire. The long arm at the top of the photo has a phosphor bronze spring section in the center that softened and sagged, but did not melt

restoration job in 2002. At that time, I had to very carefully drill them out, but that was relatively easy as they were brass.

to discover these also were corroded in place, and none of the processes used to remove larger screws worked on these. The procedure this time again was to drill the screws completely out, a process that started well until the drill bit snapped off.

completely. I could have replaced the flat spring section, but the rest of the bar was badly deformed so I decided to not re-use that. I did re-use the coiled spring that's visible on the bar as that cleaned off nicely with the sandblaster and still had plenty of spring left in it. But since this is a rather rare telegraph key vs. a similar Vibroplex key of that era, parts are very hard to come by. Before starting on this project I spent months scouring eBay and other online sources for another one to no avail, but all was not lost. Enter CRC member Robert Baumann to the rescue! He had one in fair shape that he was willing to part with, and with that I was able to finally complete the project. Many thanks to Robert for that. Although I could have used most of the parts from the extra key, I preferred to use absolutely as many as possible from my father's key even if the plating on some of the pieces might be a little rough.

After the fairly long disassembly process, I was ready to have the parts re-plated, and there I ran into some trouble. Fifteen years ago there were chrome plating shops both in Colorado Springs and Denver, but no longer. I widened

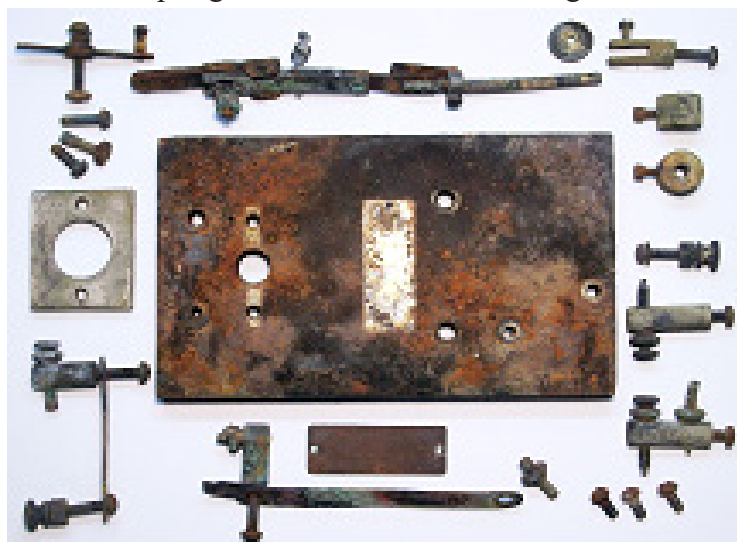


Figure 6: Disassembled Damaged Pieces

the search area and found the one and only chrome plating shop in Colorado: Quality Plating in Yuma. Since they are accustomed to plating car bumpers and Harley mufflers I decided to take the pieces out to them along with a set of instructions as this was well outside their normal range of projects. In the process I did find out why we only have the one shop in Colorado, and there are several reasons. One is that chrome plating is a rather nasty process environmentally as the chemicals used are dangerous and chromium itself is a toxic heavy metal. The main reason, however, is that new fire regulations require plating shops to install overhead sprinkler systems, something they typically avoided in the past. If the sprinklers ever turn on for any length of time, the chemical vats in the plating room may run over and create a \$500K toxic spill cleanup problem. The shop in Yuma

has solved the problem by having a perforated plastic floor over a full concrete basement underneath that could contain large amounts of spillover in the event of a fire. Another reason for the disappearance of chrome plating can be seen in recent model vehicles where you will find very little, if any of it.

In June of 2015 I delivered the parts in person and observed the processes involved to some degree. The first step is to chemically strip off all of the chrome plating, after which parts that are damaged to the extent mine were needed to have rough spots buffed and polished. The shop was heavily backlogged at the time and it took 6 months to get the pieces back, but the total cost was only \$105. The entire project took much longer than expected as some

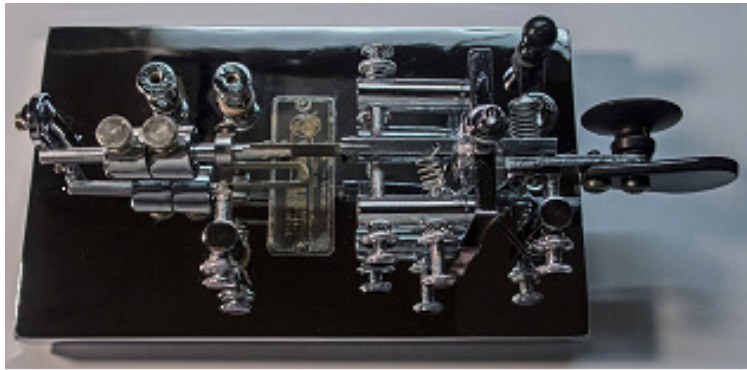


Figure 7: Restored Telegraph Key

other nuisance items such as getting a new house built got in the way. And due to the use of about 70% of the original and partly damaged pieces, some of it may not have the perfectly smooth and polished look as coming out of the factory some 75 years ago. That said, it's now shiny again.



Figure 8: Fred Guth in Vik, Iceland 1943

Due to the nature of dealing with corroded and molten metals, this became my most difficult radio related restoration project to date. But now that it's once again in nearly original condition it's ready for another 75 years of service and after all, that's what it's all about, right, Dad?

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### Join the Colorado Radio Collectors Email Group

We highly recommend that all CRC members join our email group. This is the best way for us to communicate with you in between meetings and copies of the Flash.

These instructions describe how to use your current e-mail address to join the CRC colradcol e-group WITHOUT having to create a new Yahoo account.

- 1) Send an email to [colradcol-subscribe@yahoogroups.com](mailto:colradcol-subscribe@yahoogroups.com) with no subject.
- 2) You'll receive an email from the group asking you to confirm your request. (make sure to check your spam folder). Fill in the request to be a member and submit.
- 3) If you have any issues with the instructions here, the group owner will assist you with the process. Please send an e-mail to: [coloradoradiocollectors@yahoo.com](mailto:coloradoradiocollectors@yahoo.com) for assistance.

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### Tiny Town 2016 Season Update

On Sunday, Sept 25 the 101<sup>st</sup> season at Tiny Town Colorado was complete.



As was most of the summer, the weather was great, the crowds large, the railroad coaches full and the ice cream cold.

At 5pm as the last tearful child wailing "I don't wanna go home" left the park and the locomotives were safely resting in the roundhouse, we all felt some very mixed emotions. It's great to relax after a hectic summer but we're also sad that 7 long months will pass before the sound of happy people and steam whistles fill the valley again.

But the winter months will be filled with equipment maintenance, tiny building restoration and new projects for the 102<sup>nd</sup> season.

A contract has been let for a new steam locomotive to make its debut in the spring of 2018 and our new caboose will be carrying kids next May.

Wayne



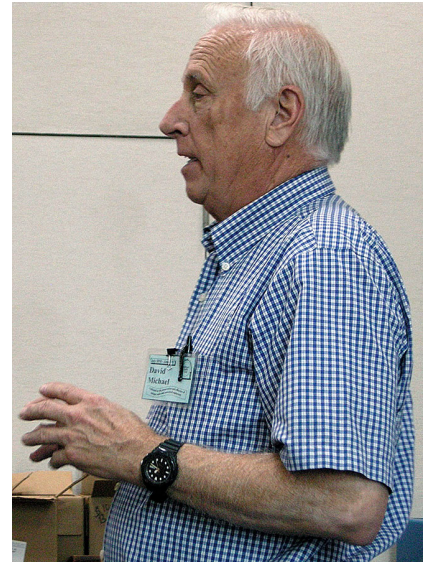
## Photos from the CRC November 13th Meeting



New Member: Rex Gosset



Trunk Sale After the Meeting



New Member: David Michael



Tom Zaczek's 1946 Bendix Model 636C, 6 Tube Radio



Tom's 1947 Bendix 636 with a Brass Grill



Merril Cambell with His Zenith Trans-Oceanic Royal D7000Y 1973-1978



Zenith Trans-Oceanic Royal D7000Y 1973-1978



Bill Dial's 1924 and his 8 Tube Superhet Radio Kit



Bill's 20s Superhet from the Auction



Cliff Shelby's Showing his Homebrew Stereo Amp with Bluetooth



Yuriy's Yedidovich Explaining the function of his PLC velocio.net for info.



Cliff's Hombrew Stereo Amp





# **The Open Trunk**

## **Member Submitted Advertisements**



### **Repair Service**

Radio repairs for club members. Reasonable rates. Good references.  
Call David Boyle 303-681-3258

### **For Sale: by Dave Boyle**

Most of the following instruments have been completely refurbished, repaired as needed, and calibrated. Most have manuals and test leads.

Prices are negotiable...please make offer.

- 1) Eico 5 inch oscilloscope. Model 425. Perfect for old radio repair work. Completely electronically rebuilt with new CRT! \$68.00
- 2) Eico "Professional" VTVM, 6 inch meter \$40.00
- 3) Ballantine Labs. Model 321 VTVM. True RMS and p-p measurements. 19 inch rack mounting \$25.00

### **Radio Chassis For Sale:**

- 1) RCA Radiola Model, 80,82, 86 complete dual chassis and mounted speaker. VG condition, with tubes including 2ea VG 45 tubes. Make offer.
- 2) Philco Model 91. Complete working chassis with 12" good speaker. Working tuning meter too! Make offer.
- 3) Philco Model 37-610 complete chassis with tubes, good condition complete with bezel and glass. Make offer.

Call David Boyle, 303-681-3258

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### **Wanted**

1920's Wooden Horn Speakers and a Crosley Musicone Speaker.

Also 1920's battery sets, especially Neutrodyne sets, Pre 1930 AC Radios and a Crosley Widget Console Radio

Michael O'Leary 602-354-7011 moleary9@cox.net.

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### **Wanted**

1948 Motorola 5A9B portable radio, Maroon color. Good condition only.

Dewey Reinhard 719-596-5516 deweyfly30@gmail.com

### **Wanted**

Broadcast or recording mics, especially from 20's to 1950's.  
Crosley Pup Info  
NBC chimes, all eras.  
Tom Keeton 303-797-8073

### **For Sale**

Patterson PR-10, 1933 Amateur Radio Receiver.

10 tubes, fully electronically restored. View on the internet.

Best reasonable offer.

David Boyle. 303-681-3258

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### **For Sale**

I have collected radios of all types for 30 years and now it is time to let them go to new homes.

Please call me for an appointment to see if any of them would fit in your collection.

I have tube radios including Tombstone, Cathedral, and Novelty etc.

I also have a large collection of transistor radios both shirt pocket and Novelty type.

Please call 303-238-1384

Thanks in advance,

Ron Smith RADIOS4US@aol.com

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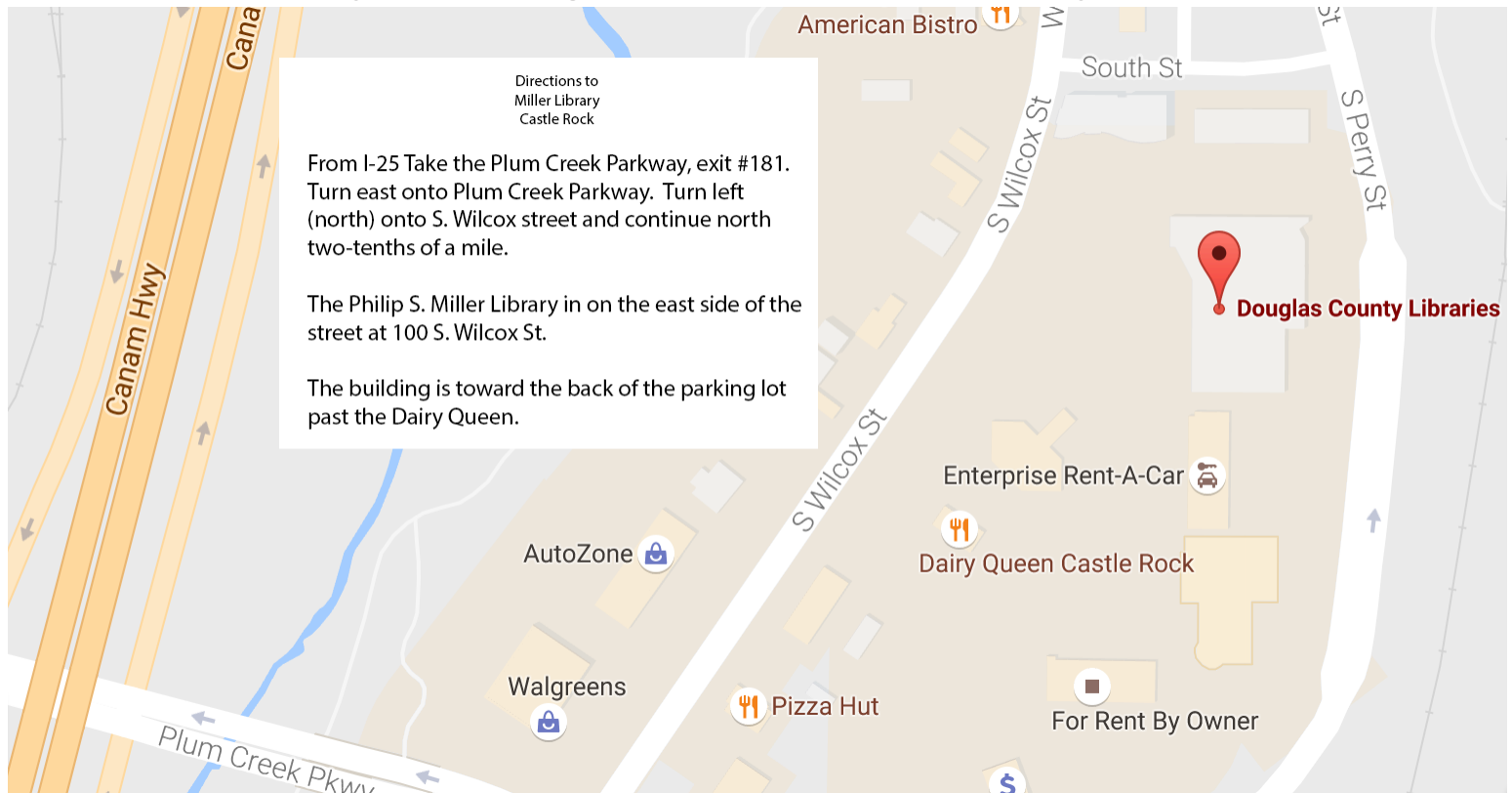
### **WANTED**

1980s Atari 520 or 1040 ST computer components (keyboard, monitor, etc.). I still need it for several specialized programs I wrote including a simulator for transistor and tube circuits. Dave Laude dlaude1@msn.com

### **Submission of Articles and Advertising**

Classified Ads for The Open Trunk and articles of any radio/electronic or historical related subject to be published in the Flash are encouraged and welcomed. The article(s) should be submitted in Microsoft Word, RTF, or as text cut/paste into your email. Submit to Steve Touzalin by email at: stevetou@comcast.net

## The January 8th Meeting is at 1:00 at the Miller Library in Castle Rock



Colorado Antique Radio Collectors  
Antique Radio Club  
417 S. Queen Cir.  
Lakewood, CO 80226

**First Class Mail**