



HLARA RADIOGRAM

The Quarterly Publication of the Heartland Antique Radio Association, Inc.

October 2006 Edition

Greetings from the President



The Heartland Antique Radio Association is proud to present the first issue of the *HLARA Radiogram*. The *Radiogram* will be published four times a year for the benefit of HLARA members. I had hoped to have the first issue out in January 2006 but with the re-organization and incorporation of the club as well as induction of new officers, there just wasn't time. Next was the Summer Sizzler, which was a great success. Now that everything has settled down and I have ran out of excuses, The *Radiogram* is off and running.

The *Radiogram* will be a great source of technical and historic information as well as information about past and future club activities. The *Radiogram* is a color, electronic publication in Adobe PDF format. It will be distributed by e-mail to HLARA members. A few hard copies will be printed for the benefit of members who do not have e-mail. Please enjoy this issue of the *Radiogram*. I encourage all HLARA members to contribute ideas and articles for future issues. The *Radiogram* can only be made better by the participation of all members.

Until next time,
Chris Cunningham
HLARA President

STEINITE LABORATORIES of Atchison, Kansas By Curtis Lutz

Steinite Laboratories was a radio company started by Fred W. Stein, who grew up in and finished his education with the eighth grade at Atchison. Fred then had a three-year apprenticeship with the Kansas Railway Power and Light Company. In 1908, he and a friend started an electrical business; later he began an electrical contracting business on his own. He served in the US Navy during World War I.

In 1922 Stein formed the Atchison Radio & Electric Co. and in 1923 began selling galena crystals under the name "Steinite," claiming 1,000-mile reception. Luckily, as he said years later, not too many people complained. Next he started selling detector assemblies, then complete crystal sets and even a one-tube set, all sold by mail-order from printed advertising (mostly newspapers).

In mid 1925, Steinite acquired the remnants of the Tri-City Radio Electric Supply Co. (Tresco) of Davenport, Iowa, an Armstrong licensee that had fallen on hard times (mostly due to a court decision that prohibited Tri-City from subcontracting manufacturing to others).

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Bob Shindhelm
Curt Lutz
Dan Weilacher

For more info see HLARA.org



Steinite Console

Steinite continued

Tri-City/Tresco models manufactured during this period are identified by Tri-City labels with an Atchison, Kansas, address.

In October 1926 Steinite introduced an AC-powered receiver using series-string '99 tubes. There were three versions of this receiver, and by 1927 it was selling so well that a Chicago sales office was opened. The last version of this receiver, the Model 990, actually sold for less than the Atwater Kent "tin can" (Model 40).

Lots of things happened in 1928, with Steinite acquiring an RCA license, then introducing a conventional AC set (again, selling for \$2 less than the A-K Model 40). Then the Steinite Company was sold to Chicago capitalists Jacob Abelson and Oscar Getz (Abelson's son-in-law). Alfred Crossley of the Naval Research Laboratory then joined the company as chief engineer.

The manner in which Steinite got its RCA license is legendary, as told by Maclaurin in "Invention & Innovation in the Radio Industry" (p. 135). Seems that Senator Jim Reed of Missouri called one day at the office of David Sarnoff (who was GM of RCA) and brought with him the president of a Missouri radio company who had been denied a license. "I am going to sit in this office until my friend here is given a license," Mr. Reed is quoted to have said. Sarnoff arranged an appointment with the president of RCA, and a license was granted.

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Steinite Crystal Radio



Steinite Battery Set



Curt Explaining Details about his Beautiful Steinite Radio

Steinite continued

In October 1928 Steinite bought control of the Leslie F. Muter Co, a radio parts manufacturer, and Steinite's merchandising efforts were reaching new highs.

An additional plant was acquired in Auburn, Indiana, and another plant built at Ft. Wayne, which was expected to more than double the company's size. At its peak in October 1928, Steinite employed 1,185 workers and turned out a reported 2,000 receivers per day.

However, the reign of expensive consoles was already over. Although Steinite was reorganized in early 1930, with Jim Tully (formerly of Bremer-Tully) in charge, it was in receivership with debts of \$1.3 million by April. Magnavox bought the Ft. Wayne plant in May 1930. Steinite reorganized again in October of 1930, intending to make private-branded radios, but only lasted another two years before disappearing.

Interestingly, Fred Stein, after a short-lived attempt to make radios under his own name in 1930-31, invented a device to measure moisture in grain – a device that is still being manufactured by Fred Stein Labs, Inc. His son took over when Fred Stein died in November 1972 at age 84.

Source: "Radio Manufacturers of the 1920s," Vol. 3, Alan Douglas, The Vestal Press, Ltd, 1999

Members Workbench

By William Thomas

Each issue I will be seeking out a member's workbench for a feature article. For the first article, I'm going to cover Bob Shindhelm's workbench. Bob was the first antique radio collector I met in the Tulsa area. As a ham operator, I was immediately impressed with all the equipment on Bob's workbench. See Figures 1 and 2 for nice views of his test equipment and work area.



Figure 1: Bob's workbench side view

Bob's work area is located in his garage, which is pretty well consumed with the hobby, including a radio repair workbench, a radio restoration and woodworking bench, and many shelves of radios and parts. He told me that the two workbenches were already in the garage when he purchased the house. Since then he has added shelves and storage areas, as well as all his test equipment and woodworking tools. He has also installed good lighting, power, tool and test lead holders, and a suitable work surface to work on the radios.



Figure 2: Bob's workbench front view

The key piece of test equipment in any radio shop is the signal generator, and Bob has a top of the line HP 606A generator that covers 50 KHz to 65 MHz. This signal generator has a perfect sine wave, accurate calibration and precise output control, with no signal leakage. Bob wrote an article that described how he acquired the signal generator from eBay in the February 2006 issue of *Antique Radio Classified (ARC)* magazine. As noted in the article, he needed to build a special heavy duty shelf to hold this unit. It can be seen near the middle of Figure 1 next to an oscilloscope, with a large gray front panel and two meters. Speaking of oscilloscopes, this is another handy piece of test equipment and he has a Tektronix 465B unit – another “standard” for the workbench.

Bob has a large collection of test equipment, in fact when I asked him to write them down on a piece of paper, it numbered well over 25 pieces. This includes several signal generators, volt / ohm meters, power supplies, test receivers, frequency counters, signal tracers, capacitor checkers, oscilloscopes, tube checkers and Variac / isolation transformers.

As you can see, he has a wide range of hand tools including four soldering irons. His favorite soldering iron is a 60-watt American Beauty Little Dandy which he has on a

variable voltage source to adjust heat. Other soldering irons have 25-, 100- and 250-watt ratings.

All antique radio repairs involve “checking out the tubes,” and Bob has three testers to help him do the job – a Hickok 600A, Jackson 648A and Triplett 3413A.

A workbench is isn’t complete without a radio, and on the night I stopped by Bob’s house to take these pictures he had a very nice RCA Radiola 60 playing full force on the bench. This radio, along with a close up of many of his hand tools can be seen in Figure 3.



Figure 3: RCA Radiola 60 playing on the bench

Every article on radio repair emphasizes the need for using isolation transformers and Variacs when repairing radios. Bob’s main unit can be seen in Figure 4 and includes a Variac and a 500-watt isolation transformer tucked up under the shelf. A modern, and very useful piece of test equipment, can also be seen in this figure – the Elenco LCM 1950 digital Multimeter. The meter measures volts, amps, capacitors, resistors and inductance. It’s a handy device which is used often when repairing radios.



Figure 4: Homebuilt Variac control unit and Elenco digital meter

Speaking of meters, Bob has several including a Triplet 666R 1Kohm/volt VOM that is needed when checking voltages that were measured with a similar meter in many of the Rider's schematics. He also has an RCA WV98A VTVM Senior Volttohmyst, Triplet 630PL 20Kohm/volt VOM and an RCA WB76A AC VTVM.

I asked Bob to tell me about a few interesting repair projects. He started off by telling me about his "worst" experience – which was repairing a Crosley Model 515. This radio looked good when he bought it from a local antique store, but it had bad output tubes, output transformer, speaker and power transformer – it seemed like everything was bad! On a better note, he rebuilt a Majestic Model 15 by using a car radio schematic from the RCA 1937 Tube Manual. This radio uses 2.5V tubes with 175Khz IF transformers.

When Bob gets a radio for restoration he looks it over very carefully for any obvious problems. Then he measures the B+ line for any shorts to ground – resistance should be at least 200K ohms. If all looks well, he will plug in into the Variac and slowly bring up the AC voltage. Tubes should light at about 50-60 volts, and the rectifiers should start conducting around 70 volts or more. If all goes well, the radio will come to life.

Since most repairs involve replacing parts, I asked Bob where he buys most of his components. Antique Radio Supply, Radio Daze, Vacuum Tubes Inc and Affiliated Electronics here in Tulsa are his favorite sources of parts.

I hope you have enjoyed this overview of Bob Shindhelm's repair bench, and would like to see your workbench featured in the next article. Let me know if you are interested.

Regards, Bill Thomas

My Structured Approach to Radio Repair

Part One: Don't Plug It In!

By Chris Cunningham, HLARA President

This is part one of a multi-part article about how I approach the task of bringing an old radio back to life. I plan to start with the basics and progress to more complex techniques. I'm going to assume you are familiar with electricity and know the difference between a resistor and a capacitor. If you don't, that's fine. There are many good books that cover basic electrical theory and many good articles on the internet.

Notice the title includes "Radio Repair" rather than Radio Restoration. Restoration implies returning the radio to like-new condition. Part of the charm and history of an old radio is the patina it develops over its lifetime. I prefer to get the radio in good, solid working condition, then clean, repair and oil the cabinet to the point it looks good for display. I make no attempt to conceal that the radio is fifty-plus years old and has survived through several wars and perhaps two or three generations of children. That is my philosophy of radio restoration in a nut shell. Now that we have that out of the way, let's get started.

**Dan's
Speaker**



By Dan Weilacher, VP/Editor

I hope my fellow radio enthusiasts enjoy the HLARA Radiogram. This is my first attempt at putting together and editing any sort of a publication. All your input is welcome as well as any submissions for future editions. If you would like to share how you got started collecting radios please email it to me.

Now for my story:

I first got interested in old radios when I had acquired my Grandmother's Zenith console radio after she passed away. This was not as straight forward as it would seem. It all starts out with my Grandparents purchasing a Zenith 6-S-152 console in Cleveland, Ohio in 1937, making payments on it as my mother later recalled to me. Mom also revealed that through many years my Grandmother, Cittu (which means grandmother in Lebanese) had a cloth cover she made to cover the radio while they were not listening to it. In the evening they would pull it off and all 6 children would surround the set and listen in to radio shows.

I cringe when I see an eBay description that reads like this: “Old tube radio for sale. I plugged it in and nothing happened. Sold as is.” In reality it should read something like this: “Old tube radio for sale. I plugged it in, it crackled and blew fire out the back and now I must sell it to replace my wife’s curtains that I burned up.” This little story brings us to my first and number one rule:

Don’t plug it in! Your radio is old, and chances are good that it’s not going to work. If you plug it in, you’re more than likely going to do more damage to the radio. Some will say, “I use a dim bulb tester or a variac to protect the radio.” That’s all well and good, but why bother? Unless someone has worked on the radio before you, it’s safe to assume the filter and bypass capacitors are bad. I save the dim bulb tester and variac for powering up the radio after some basic work has been performed.

Use your eyes. Carefully remove the chassis from the cabinet. After an initial cleaning with a paint brush and shop vacuum, take a good look at what you have. Many problems will be apparent if you look carefully. If anything is missing, check to see if you have a replacement or order the parts. It’s hard to test a set with missing tubes. This would also be a good time to procure a schematic. Check the speaker for tears and obvious faults. We can use a test speaker for now; however, if the original is in bad shape, we’ll need a replacement or arrangements to have the original one repaired. Verify that the set has the correct tubes in their correct locations. Take a good look at the wiring. Is the insulation cracking and falling off? This often happens with rubber insulation. If the rubber is intact, it will still do its job but will probably crumble if you move it. Cloth insulation will usually be fine. You should also look for signs of past repairs.

A generation later when I was a kid, I used to look up at the big black dial and marvel at the neat tuning needles.



Cittu would always let me spin that large wood tuning knob and watch the second and primary tuning hand whirl around and around. I was mesmerized by it! The older grandkids (I was the youngest of the all the grandkids) were not allowed to do this and she would slap their hands if they laid a hand on it the way I did.

Thirty years later after her 99th birthday she passed away and the old Zenith still resided in the corner of her dining room. Like it happens so often in many families a certain group of relatives “raid “ the premises ,and as it was, the Zenith quickly went to the state of Florida.

Several years had passed and my Cousin that had the radio was moving back to Cleveland, from Florida. Through the grapevine my mom heard he still had the radio and was going to throw it out because he could not get any new components or someone to work on it. My mother thought I would be interested in it and asked him to return it to Cleveland with his move, and she would hold it for me.

If someone else has been poking around in there, it could mean trouble. If your radio has a transformer, take a close look at it. If it looks wet (oily) or if some tar has seeped out of it, take note. This doesn't necessarily mean it's bad, but it is an indicator that the transformer has gotten hot. This is a clue that you may have a short in the power supply. You should also look for burned wires and resistors. These items usually don't burn on their own. Something drew excessive current causing them to overheat. Note their position in the circuit so you can look for the offending fault.

Re-Cap the set. If your radio is full of brown or black tubular capacitors, prepare to replace them all. The same goes for the electrolytic filter capacitors. Can capacitors can sometimes be reformed by bringing the voltage up slowly in stages, however, I prefer to replace them with modern equivalent components. Filter caps are an important part of the power supply, and if they dead short, you can cook the transformer or perhaps the rectifier tube. Why take chances and leave a weak link in the set? Leave the old cans in place for aesthetic purposes. The new caps will fit under the chassis. If you are a purist, you can open the can and conceal the new parts inside. In short, I replace every capacitor in every set that lands on my bench. One exception might be the little brown mica capacitors. These usually hold up pretty well over time. Just remember, if you have trouble down the line, these could also be suspect.

Replace the power cord. Take a good look at the power cord. If it is in questionable condition, replace it. Antique Electronic Supply sells a beautiful cloth-covered power cable. It's perfect for 1930's sets. On radios that use the standard brown lamp cord, I usually grab an extension cord and lop off the end and use it.

After 8 months, I drove back to Ohio for a visit and brought back the radio in my truck. Several days later went to the Library in downtown Tulsa and looked up the schematic in Riders .I got on the internet and did a little research about general repair of old radios. I found all the capacitors, tubes and grille cloth I would need and in short order started trying to repair the set. Unfortunately I could not get it to work. I then eventually stumbled upon our own Curt Lutz and Curt found a bad wire wound resistor that I had overlooked. I had the cabinet professionally refinished and then I reassembled the whole radio. I was very proud and happy to see Cittu's radio once again in its glory and playing. I feel she's smiling looking down at the way my family gathers to OTR and big band music.

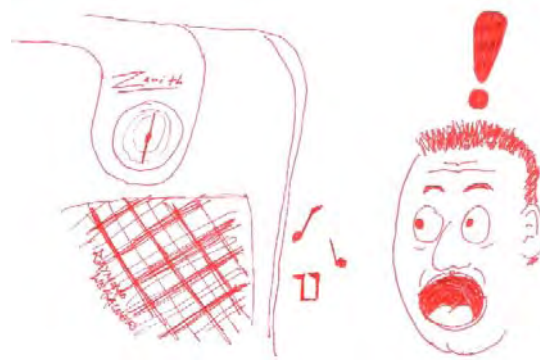


I find them for sale quite frequently for less than a dollar. I have some that are a little heavier than usual and are about ten feet long. You can buy replacement cords for a couple of dollars, but why spend more money for the same thing? While we are talking about power cords, I should mention transformerless AC / DC sets. The chassis on these sets can carry full line voltage. If you plug it in one way, the chassis is hot when the radio is on. If you plug it in the other way, the chassis is hot when the radio is off. Either way, this can ruin your day if you are careless. The issue of AC / DC set safety is an article in itself. There are some clever ways to alleviate this danger without compromising the operation of the set. Perhaps I will write a future article about how to fix this problem. For now, any radio you work on should be powered through an isolation transformer. Please keep in mind, a variac *is not* an isolation transformer.

Let's see where we are. We have fixed a few obvious problems. We replaced a couple of wires, installed all new capacitors, and replaced the line cord. We replaced a missing tube and verified all tubes are in their correct location. Now is the time to drag out the dim bulb tester and the variac. We're ready to put the juice to it and see what happens.

We can go a long way before bringing out any test equipment. In the next issue, we'll use our eyes, ears, finger, and some structured logic to continue the process of bringing our piece of history back to life.

Four years ago my brother threw a huge family reunion in Ohio. I loaded up the Zenith and drove back. Everyone brought some of my grandparent's memorabilia and we had a huge time machine display, but the Zenith was the star attraction. My cousin who originally "heisted" the radio arrived and immediately saw it, his jaw dropped and his eyes bugged out. His mouth flopped around and stuttered, finally forming the words "that's the same model radio that Cittu had" I said, no it is Cittu's radio!



He couldn't believe it was the same one. I could see he was kicking himself over and over for not keeping it and finding a way to restore it. I got such a big kick out of this, it was sweet justice delivered as Sinatra was belting out of the radio I had such fond memories of. The radio is and will always be known as Cittu's Radio. I am merely the custodian of it for now.

Illustration by Raymond Weilacher

Ramblings on Capacitors

Robert B. Shindhelm

As collectors of vintage radios, we have all learned that 50-, 60- or 70-year-old capacitors are not reliable. The electrolytics are generally dried out in these radios and are no longer functioning. And the paper capacitors that haven't failed will. It has become a common ritual, for radios that we wish to preserve and use, to routinely replace all of the electrolytic and paper capacitors in the set to forestall any problems. Generally speaking mica capacitors are not a problem and are not routinely replaced. [*Lately there have been reports of micas failing in cheap IF transformers of radios of the 1950s vintage and later. – Editor*]

All filter capacitors, paper or electrolytic, are generally replaced with electrolytics. Quality electrolytic caps with axial leads and labeling that is easily interpreted are readily available. As long as the original caps are replaced with ball park capacitance values with proper working voltage and observing the proper polarity, problems are rare.

Before discussing paper capacitors it might be wise to discuss units. The unit of capacitance is the *FARAD*. Without getting into definitions, let it be said that this is a very large unit. The capacity of the condensers (read capacitors) of most of the old radios that we will be working on can be conveniently expressed in mfd. or *microfarads*, which are millionths of a farad, or fractions thereof. Occasionally the smaller caps and many of the mica caps will in mmfd. or *micro-microfarads* which are the millionth of a millionth of a farad. Now, during the last 50 years or so, several changes have taken place. One thing that you will notice is that there are no longer capacitor sizes such as .002, .02, .2, 2.0, .003, .03, .3, .005, .05, .5 mfd., etc. The modern sizes are .0022, .022, .22, 2.2, .0033, .033, .33, .0047, .047, and .47 mfd. This may be a little disconcerting at first, but all you can do here is pick out the closest size and go for it. The capacity is usually not all that critical. Another thing is that the component manufacturers have generally adopted the SI system of units and we now have *picofarads* and *nanofarads* as well as microfarads. The term *picofarad* is the same as the micro-microfarad term which it replaces and it is represented by the abbreviation *pf*. The *nanofarad* is different. It is equal to 1000 picofarads, or to 1/1000 of a microfarad. I haven't seen the nanofarad term used much, so I'll end the discussion of it here.

Now, back in the good old days, most condensers were plainly labeled with the capacitance, working voltage and tolerance, and I guess some still are today. Many of today's manufacturers, though, have elected to use some sort of code on the cap to provide this information, and that is one of the main reasons for this little discussion. At the present time there is no international agreement or even an agreement among manufacturers to provide a universal code so they can vary among manufacturers. The code on the caps I use seems to be fairly common, so I'll tell you how it works.

I have four caps lying on my desk labeled as follows:

222K 630V

333K 630V

474K 630V

105K 630V

Don't worry too much about the quality of your replacement capacitors. As in nearly anything else, you can spend just about as much as you want to on capacitors, and there are some extremely expensive caps made for high end audio applications. These are fine for those who need them, but you will never be able to tell the difference in the average vintage radio. The cheapest polyester film caps are probably infinitely better than the best paper caps made in the 30's, 40's, and 50's. I use the lower cost , medium quality, polyester film caps sold by Radio Daze, Antique Electronic Supply, Bob's Capacitors and others, and I'll bet I never change one out unless it's been subjected to over voltage or mechanical abuse.

Hope this helps someone. *Bob Shindhelm*

Tips and Tricks

By Chris Cunningham, HLARA President

In this issue of the *Radiogram*, we have mentioned using an isolation transformer. For those who don't know, an isolation transformer allows us to power a radio on which we are working while isolating the device from earth ground. The result is if you touch a live wire or hot chassis on the isolated device, your body won't complete the circuit to earth and electrocute you. If you stick both hands in a chassis and contact both legs of the AC line, you're still going to get shocked. If you are poking around in a live radio, do so with one hand so you don't take a chance of completing a circuit and shocking yourself.

Isolation transformers can be expensive. If you are lucky, you can find a surplus transformer and mount it in a case with a plug and switch. This is what I did. If you can't find a surplus unit and don't want to lay out the cash for a new one, here is a simple solution. Locate two fairly heavy filament transformers of the same voltage rating.

The primary and the secondary voltage ratings must be the same. Connect the secondary windings together so that the secondary winding of the first transformer feeds the secondary of the second transformer.

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Upcoming Events

October 7th HLARA Picnic/Swap meet held at Broken Arrow Central Park 1500 South Main St. Broken Arrow ,Ok Event Starts at 10 am Bring your Weenies, Drinks etc. Charcoal and lighter fluid provided

October 14th OKVRC Fall Vintage Radio Show, Midwest City

October 19th HLARA monthly meeting 7pm Nathan Hale Library ,Tulsa

November 16th HLARA monthly meeting 7pm Nathan Hale Library ,Tulsa

November 17th-19th VPRS Convention See VPRS.org for more details

HLARA Christmas Party To be at the Weilacher's home Date to be announced soon

Tips and tricks continued

In essence, the first transformer reduces the 120 volt line to 6.3 volts. The second transformer takes the 6.3 volts and steps it back up to 120 volts. If you don't have two filament transformers lying around, Radio Shack sells a 12.6 volt, 3 amp transformer for \$10.49. Buy two of these and wire them up in a case with a 120 volt AC outlet. You can make it as fancy as you wish. You could even bring off a tap from between the transformers so your device can double as an isolated 12.6 volt AC power supply. Assuming you have a suitable case, purchase a switch, a plug, the two transformers, and throw in a fuse and for less than \$30.00 you have an isolation transformer that just might save your life. That's pretty cheap insurance.

Mystery Radio

Can you guess what radio this is?

