



SOUND WAVES

VRPS Spring 2016



From the President

Okay, by the time you read this Spring will have sprung here in Texas...and I guess in most of the northern hemisphere. Many places will be thankful for the coming of spring and the improving temperatures it brings. In this part of Texas we almost missed old man Winter. Only a few days even reached freezing temps since this time a year ago. Can you say "Global Warming?" ... nah, me either. Oh well, enjoy it while you can cause you cannot change it.

But Spring does bring about the normal

things that collectors fancy, including the ability to get out and hunt for that elusive "great find". Or, if you have been cooped inside and wanted more pleasant temps to go outside and strip a cabinet, now is the time. Our annual Spring auction will be history when you read this. I always look forward to this annual treat as a way to get rid of some items and bring home different stuff...that I just gotta have. We had a great time at the "Olden Times Musical Museum in Duncanville in February. Thanks to Rick Wilkins and the gang at the museum, we were treated to a really special time. Forty-nine of our members and guests showed up to take the 3-hour leader led tour. This is a brand new state of the art museum, which is a far cry from the lack luster environment which housed the previous "attempt" at a museum. What is so special about this museum is the fact that stuff works...yep, all of it. Rick and a few others have spent hours putting these mechanical and electrical displays together so that when the ever-present question, "Does it work?", is presented, the answer is always the same..."watch this".

Elsewhere in this issue you can read George Potter's more detailed account of the museum visit. Also, watch for a reminder notice somewhere in this issue regarding an upcoming auction that will a highlight for me personally this year...at least so far. I will be selling at auction the Les Sims Collection. If you like nice items and items that rarely come on the market in this area, then you will not want to miss this sale. I always use this issue of the SoundWaves to remind you that now is the time to begin making plans to attend one of the numerous radio meets though out the country. You will not regret attending one of these events, including our neighbors to the north in Oklahoma. If you need a suggestion or two, contact me. Until next time, good hunting.

—Jim



Notes from the January 16, 2016 Meeting

Club VP Randy James conducted our meeting, held at the city of Irving Senter East meeting facility. He reminded us that our February meeting was to consist of a tour of the Olden Times museum (a private museum) in Duncanville. Club member Rick Wilkins is the museum curator and one of its guides. Randy also announced our board decision to make the theme of this years' convention "Edison", so we can focus on Edison-related items for our collecting and exhibition at the Convention. Randy introduced our "Radios in Vintage Movies" program presented by our member Mary Ann Caruth (assisted by Mike McCarty in media management).

The theme of her program was movies that featured a radio or "radio" itself as an important element of the movie plot. For each movie, she discussed its history and plot while her presentation showed clips of the credits, lead-in and enough of the movie to reveal the role of Radio in the plot. One example used the known broadcast time for a radio program to serve as an alibi for an innocent man held by authorities, once he related what he had heard being broadcast. Another example came from the movie Nancy Drew Detective, a 1938 classic movie that features her boyfriend Ham radio operator saving the day by converting an old diathermy machine to a spark transmitter. He sends a Morse-code message from the basement where the heroes are held captive by the "bad guys". The message is picked up by someone who recognizes Morse code, and they are freed by Mr. Drew. In the movie the boy's ham rig has the call letters W8YZR displayed. In another movie clip we saw the famous Philco console and its remote control unit. The plot involves the radio, and Actor Boris Karloff asks what operating range the remote control has – answer 200 feet. There was an interesting Charlie Chan episode illustrating really bad science, using a radio as a murder weapon. It was based on the premise that a vacuum tube could be made to explode with a loud high pitch sound (high "C") at the resonant frequency of the glass envelope. This was no doubt inspired by the legendary opera singer who could break wine glasses

(as well as ear drums) with her voice.

During her presentation, Mary Ann showed many interesting examples, including, as well, commercials involving radios. Obviously, she had put forth a great deal of research and effort in compiling the many well-chosen examples shown to us.

The Nancy Drew movie can be watched on YouTube in its entirety at the following links. It can also be seen on DVD or movie downloads.

- https://www.youtube.com/watch?v=l_HnpobGOaE
- <https://www.youtube.com/watch?v=JcgtjtVSymY>

Author's Notes:

I collect old 16mm movie films and have the 1937 Gene Autry film "The Big Show". In one scene, Gene sings at the Dallas radio station while his cowboy singing buddies listen on the typical old Philco radio. One of the listeners is Roy Rogers, who is not even listed in the film credits at that time. (The Texas Centennial and buildings at Fair Park are featured in this film). Isn't it great being able to go back and pause on old radios with our remote controls when watching old movies?

Bill McKeown

[Note: complete list of films available on VRPS website on the events details page.]



Notes from the February 20, 2016 Meeting

Jim Sargent, George Potter and Larry Lindsay arranged a complete tour with Rick Wilkins of the "Olden Years Musical Museum" in Duncanville, Texas. The museum has been in the making for over two and a half with numerous changes during construction. The VRPS Director's approved in January to cover the tour cost and then set the tour date for the monthly meeting time in February.

On Saturday February 20th members and their guest started arriving at 10am. There were 55 in attendance and that may be a record for a meeting! Some of the members I haven't seen in a long time. After a film orientation we broke up into two groups for a tour that lasted for about two hours. At select locations during the tour there were interactive computer display screens which gave you a more in depth information on phonographs, radios, TV's, light bulbs, music boxes and calliopes. Yes folks, I did say radios and TV in a musical museum.

One highlight was a fully operational Spherical Audion tube that graced a home-brew receiver, which by the way was built in Dallas, Texas around 1914-15. You were able to hear a local radio station on the air that was being picked by this tube! The display also had several radio receivers from the 1921 period that was the first year for commercial broadcasting. There was a large display of Edison light bulbs showing different manufacturers, and many music boxes that were built before the turn of the century.

Calliopes were shown with a complement of musical instruments, some with a complete band playing. Unlike some museums, many of the machines were played for the members. Did I not mention clocks? A prominent clock tower structure greets you as you drive up at the museum. The clock and mechanism is an early 1800's clock, created in Ulm, Germany. It was acquired and shipped to Texas by museum curator Rick Wilkins. This clock is not only a marvel in technology, but has German high quality craftsmanship as well. A local clock society helped to assemble and install the clock's mechanism and continues to service and maintain this beautiful clock. Inside, the museum's gift shop has several music box paintings displayed on the walls.

Several years ago our club visited and toured the old museum, but since that time many more machines have been acquired and some taken out of storage and placed on display. Members and guest were surprised at the quality of displays and machines that quite frankly many would never have seen in our lifetime.

My sincere thank you to Homer De Ford, whose collection was on display and Rick Wilkins who helped acquire this large collection over many years. —George Potter

Auction Notice for April 30, 2016

It is time for Another Great Radio Auction brought to you by Sargent Auction Service. Yep, this sale is just around the corner, but you can begin browsing the sale now at

http://www.auctionzip.com/auction-catalog/Another-Great-Radio-Auction-the-Les-Sims-Collection_FPSXS8oLJE/?pageNum=1&displayNum=25&sortValue=1&photosFirst=false&keywords=

This sale will feature the Les Sims Collection. Les, a long time member of the VRPS, passed away last year. Les was a collector of fine radios, tube audio, table fans, typewriters, toasters, signs, and a whole lot more. You will have the opportunity to bid on all of these, either on-line or in-person, at 3630 Cavalier Drive in Garland on April 30th.

Sale preview will be Friday, April 29th, at noon and again on day of sale. Doors will open Saturday morning at 8 am. Our pre-internet auction will begin at 9 am. This part of the sale will focus primarily on thousands of radio and audio tubes from Les Sims. If you are a tube buyer, this is a fantastic opportunity to buy some of the best tubes, especially audio, I have ever offered at auction. They will not be sold as part of the internet auction.

Les was a long time service technician for Hillcrest Audio and a connoisseur of fine tube audio equipment. This sale will include McIntosh, Fisher, Marantz, EICO, Dynaco, Scott, and more. Not only that, but his personal stock of service literature will cross the auction block. This stuff rarely comes on the market, especially in this quality and quantity. Make your plans to attend this sale.

Also, included in this sale will be an extremely rare 1929 RCA Theremin, complete with provenance. Learn more about this specific item by visiting www.rcatheremin.com - registry #200135.

Terms and Conditions: all items are as is where is; payment cash, good checks, Discover, M/C and VISA; 5% buyers premium for local sales, 10 % buyers premium for internet and absentee bidders. Contact me with questions. Jim Sargent, auctioneer TX 16135

Upcoming Spring Auction

As a reminder for the upcoming Spring auction, as you put items in the sale, please be careful to note correctly the "working" status of these items. It is not often that we have an issue, but it does come up occasionally that radios listed as "working"....in fact do not (or even come close). While all agreements are between the buyer and the seller, we encourage you to mark the item as "unknown" if you have not tried recently.



The Case of the Troublesome Teletone by Bill McKeown

This mystery revolves around a radio that had many problems. In the end, the biggest mystery was how this radio could play at all, with so many faults. The radio, a Teletone 195, showed up at our annual Repair Session, held in July. Although it played, it sounded bad, with a very weak and distorted output – mostly the higher-pitched sounds. The owner—Kenny Stradley—hadn't found a schematic diagram for this model, but for reference he used one for a different (older) model, by the same maker.

The older model used all octal-based tubes, while the "mystery" radio has some miniature tubes and some octals. But they are typical AA5 tubes, electronically. (The tube lineup – 12BE6, 12BA6, 12SQ7, 50B5 and 35Z5). The owner had re-capped the radio, carefully replacing each capacitor one at a time. Because the radio didn't work very well he made a wiring diagram by tracing the wires and using tube manual data to designate the pin functions for each tube socket, e.g. G1, G2, P, K, F etc. This required some translation of pin numbers from the octal tubes of the reference diagram to the 7-pin types in his radio.

He found several things that didn't make sense or correlate with the reference schematic. (At this point, it was tempting to think – because the set actually played – that there just might be only one thing wrong with it). So it was brought to the Repair Session to uncover that *one* thing. Because it played weakly, the first task was to determine whether the audio section had problems. With the volume control fully clockwise, touching its CW terminal with a screwdriver blade produced very little noise. (Normally this causes loud scratching and humming sounds). This indicated that the RF sections might be OK, but something was really wrong downstream in the audio section.

In looking for clues, a coupling capacitor from the 12SQ7 plate to the 50B5 grid appeared to be a mica capacitor; therefore it had not been replaced. It looked suspiciously like some that are actually paper capacitors, encapsulated in Bakelite. They are almost always leaky, causing a positive bias on grid G1 of the audio output tube (the 50B5 in this case). However, a voltage check did not show the usual associated positive grid voltage level, but amazingly there was a negative voltage (about -0.4 volts) instead! How could that possibly happen? A quick tracing of wiring for the 50B5 revealed that there was no cathode-bias resistor for it – its cathode was connected directly to circuit ground. An additional voltage check showed that the B+ supply voltage was running low, implying that excessive current was being drawn somewhere.

This symptom correlated with the lack of a cathode bias resistor for the 50B5 because it would certainly draw a lot of current without negative grid bias (relative to the cathode). The reference schematic showed a 150 ohm, 1 watt resistor in the cathode of its 50L6 output tube. If you look at a large number of radio schematics, you will find this to be a typical value and wattage rating. Sometimes there is an electrolytic capacitor across it (sometimes 20 Mfd or more) to get more amplification from the output tube. Typically, the voltage on the cathode ends up

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being around 6 to 8 volts. So a 150 ohm 1 Watt resistor was installed, after which the radio perked up quite a bit, but it was still a little weak and had poor sound. The negative G1 voltmeter reading had still not been explained, and we had no theory relating the improper cathode bias to that symptom.

The only other possibility was an inaudible high frequency oscillation impressing a large voltage on the 50B5 control grid – enough to cause rectification by the grid. A new voltage measurement for the 50B5 G1 showed it to be about -7 volts with a station tuned in!! Now it was time to check some more wiring, and tracing the 50B5 grid-return resistor wiring showed it to be connected to the AVC buss! This resulted in the bias on the output tube changing as you tune through the stations, causing distortion on strong signals. So now the grid return resistor was re-connected to circuit ground, and the grid voltage measured to be a small positive voltage. The radio then worked almost normally - but still had poor low-frequency sound output.

At this point it appeared that someone had “re-engineered” this radio. Therefore this was a case where the mystery could include any random set of surprises. So a “detective” might be better off if the radio had not played at all - he might be inspired to just go ahead and totally trace out the radio’s circuitry. This is a good idea anyway as it makes it possible to search through published diagrams for other radios, looking for similar circuits and comparing component values with those designed into circuits developed by manufacturers. In this radio, for example, an extra 33K resistor had been installed in series with the coupling capacitor that is connected from the center lead of the volume control to the first audio tube (12SQ7). This attenuated the audio signal only a little, but it served no good purpose and was removed. Such a resistor does not appear in any typical radios, so it would stand out right away when comparing the traced-out circuit with other examples.

Getting back to the final issues - it turns out there were still two more component problems, each contributing to the poor output sound. Poor low frequency audio output can be caused by audio coupling capacitors being too small in relation to the value of the grid return resistor for the tube of the audio stage. If the capacitor value is too small, only the high frequency audio signals are strongly coupled through it, especially if the grid return resistor is one of lower value. If we look at other schematics we can see what values are typically used.

A .01 Mfd cap is big enough for most small AC/DC radios with a small speaker, if a 470K or larger resistor is used to provide grid return*. Radios with larger speakers and output transformers may use .05 Mfd capacitors and 1 Meg grid return resistors for coupling. In some radios as little as .001 Mfd is used with a 1 Meg or more resistor value. However the suspicious .001 Mfd “mica” capacitor (mentioned earlier) was replaced with a .01 Mfd one, leaving the 240K ohm grid resistance as it was (even though 240K is lower than typical). This change also eliminated the slightly positive voltage on the 50B5 G1. The .002 Mfd capacitor connecting the volume control to the 12SK7 was replaced with one having a .01 Mfd value. These last two changes improved the audio sound as much as could be expected for the speaker in this radio.

One lesson from this radio is the importance of fully tracing out its circuitry, using the correct schematic or one that is as close as possible, i.e. having the same or very similar tube lineup. There is really no need to understand the circuit functions, although you need to learn how the symbols on the schematic diagram relate to the wiring and parts in the radio. If you have a working radio, you can compare voltage or resistance readings between them, as well as wiring details. Many schematic diagrams do not show normal voltage or resistance readings, because the diagrams were excerpted from manuals that provided

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that information in tables somewhere else. Once it is working, It will help the learning process and for future work on that particular radio to read the key voltages and add them to your diagram. On a working radio, touch the CW terminal of the volume control (with the control all the way CW) with the blade of an insulated-handle screwdriver to get a feeling for the normal result. If you have a similar working radio, it can also be a reference for meter readings.

Author's Notes: I had success solving a mystery by looking at several radio schematics that all had the same or similar circuit designs for the local oscillator. I couldn't find a schematic for my radio. A spurious, squealing high frequency *audio* oscillation resulted from a bypass capacitor being about 4 times larger than was typical for that particular circuit. Someone had re-capped the set using the adage "more is better" which is true in many cases for bypass capacitors – but not this time. Sometime later, I came across the correct schematic diagram for this radio, and the value shown was .001 Mfd instead of the .0047 Mfd installed by someone. I had found that .002 Mfd worked OK.

TIP: Here is an unambiguous two-letter abbreviation system I designed for the 0 to 9 RETMA color codes - BK, BN, RD, OR, YL, GN, BU, VT, GY, WH. Using it, I have saved many total hours and much ink and drawing space over many years.

*An excessively large capacitor value can cause other troubles, including motor-boating and inter-modulation distortion.

Bill McKeown

Return to Zero



EEWeb.com

SOUNDWAVES IS PUBLISHED QUARTERLY BY THE VINTAGE RADIO AND PHONOGRAPH SOCIETY, INC.

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SOUND WAVES

MONTHLY MEETING PROGRAMS 2016

NOTE: Programs will be held at various locations in Irving, Texas. Make note of the location as they may change from time to time. Senter East, 228 Chamberlain St.; or Garden and Arts, 906 S Senter Rd. Maps are located on the WEB site, www.VRPS.org EVENTS page. Programs start at 2pm. unless otherwise noted. Call us on the cell tellie if you get lost: 972-898-7251 or 972-742-8085.

- March 19, Spring Auction. Senter East Building; Irving, Tx. 6am to 5pm.
- April 16, Program 2pm: Vacuum tubes with Mike McCarty. Senter East, Irving TX.
- May 21, About 7am 'til noon: Tail-gate swap meet. Senter East, Irving, TX
- June 18, Program 2pm: "Audio Systems" with Kert Ehrlich. Senter East, Irving, TX
- July 16, Annual Repair Session. Bring your troublesome radios and phonos. Senter East, Irving TX. 8am to noon.

Programs are subject to change, contingent on scheduling conflicts. As always, your suggestions for programs/ content are welcome. If the programs do not fit your needs and you want something different, let me know. I need volunteers to organize other programs, so consider presenting a program yourself.

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