SOUND WAVES

Vintage Radio and Phonograph Society, Inc. July 2008

From the President.....

Well, no doubt summer is here, and if history is any indicator, it will be here till the leaves fall from the trees. Hot summers are a way of life in north Texas, and I am pretty sure it has nothing to do with global warming. A few things have changed since last time I was able to pen this column. One, the sale of my home in Mesquite finally came about. It was a painful 14 month process, but thankfully, that is finally over. Next, Beverly and I are living like nomads in a 28' motorhome on our 10 acre plot of ground in Granbury. As I write this, our new home is currently just a plot of 10 plus acres...just waiting for construction to begin. Hopefully soon we will see sides and roof lines beginning to take shape. I am having withdrawal symptoms from not being able to look at my favorite radios for the last 10 months. That will all end soon…we hope.Oh, regarding the living in the motorhome, don't feel too sorry for us. The vehicle is actually parked inside a 2200 square foot building, which will eventually serve as a combination garage, workshop, and storage building.

Each year I encourage you to use a portion of your vacation time to visit another organization's antique radio meet, whether Illinois, Michigan, New York, or something closer to home, I believe there is benefit from attending these events. If you do plan to travel, don't forget about the things we do locally, including our monthly meetings, repair session, and our August swap meet. By the way, that swap meet will be at the Senter East location, our only visit to that building this year. Long story there. Catch me some time when we both have several minutes to spare.Until the house is completed, we will be living without a landline telephone and email will be sporadic. So, if you need me quickly, my cell phone (972-742-8085), will be the best way. I hope you are making your plans for our annual convention in November. Taking a cue from the new book on the early years of RCA, we are featuring Radiola. Get your contest items ready now!

Jim Sargent

NOTICE

I attempt to send out a meeting reminder via email before each club event. If you have not been getting this notice then I do not have your current email address in my address book. If you want to be notified, please send a note to me at bsargent@swbell.net and I will add you.
Jim

Which is better- a VTVM, VOM, or DVM?

Generally, you want as high impedance as possible in a voltage measuring instrument. So, conventional wisdom of old was “use a VTVM” when measuring in tube circuits. Today, you might be tempted to substitute a DVM for that. However, high input resistance isn’t the whole story.

First, a characterized meter can have its effect compensated for in a measurement, while an uncharacterized meter cannot. So, an autoranging DVM which presents a different load resistance depending on what range can result in inability to calculate what the undisturbed value would be. An example of this is when you are simultaneously attempting to measure the voltage across a component and the current through it. If you place the DVM directly across the component and measure the total current through the parallel combination, then you can subtract the calculated current through the DVM from the total read. This is done by dividing the voltage displayed by the DVM by its resistance. This can only be done if it is well characterized. A lower resistance but well characterized VOM may be a better choice in this application.

Also, a DVM is a digital device, and as such, it generates noise, which can be injected into sensitive circuits.

Another thing not often accounted for is this: Suppose that you use a VTVM or DVM with a well-characterized resistance of 10 Meg (actually, likely 11 Meg for the VTVM). Suppose you have also on hand a VOM with 20 K ohms per volt and want to measure 800 V. Which meter presents the least load on the voltage source? The VTVM and DVM each present (approx) 10 Meg resistance. However, the 20 K ohm/volt meter, on a 1000 VDC scale, has (1000 V)*(20K ohm/volt) = 20 Meg ohms resistance, and loads the circuit half as much. At one time I needed to measure the output voltage on an electric fence. I used a few 10 Meg resistors in series with a VOM at 20 K/V and it did the job better than my DVM could.

Also overlooked sometimes, is that the VTVM normally has 1 Meg actually in the probe to isolate the leads from disturbing the circuit, while DVMs and VOMs rarely (if ever?) do.

Any analogue display is superior to ANY digital display for showing trends and for many jobs like alignment, where one is looking for a maximum. Even expensive DVMs (like the very nice Fluke I have) which has an “analogue” bar chart like display and can do 20 samples/second cannot compete with a nice VTVM or VOM for doing some alignment work.

Often, you simply want a “quick check”- is voltage present, and at about what amount? A VOM can do this better than just about anything, especially when you want to do it in a relatively inacessible location, like under the dash in the car.

Measuring low resistances is often best done with a VTVM with a mid scale reading of 10 ohms. Trying to measure less than 100 ohms or so on any reasonably priced DVM is generally difficult to impossible.

Measuring nonsinusoidal true RMS is a challenge, and those DVMs which have it are very useful when this is necessary. It’s not often necessary, however. Most VTVMs and VOMs are somewhat iffy for measuring AC at low voltages, while DVMs sometimes have a nice 300 mVAC scale. Many VTVMs can be used to measure VAC up to 300MHz or so, and most DVMs fail that miserably. Many DVMs respond to DC when on AC scales, which VTVMs and most VOMs (with “output” connections) do not.

VTVMs and some DVMs can be used as “blow out proof” uA meters when used on DCV scales in series with components for purposes of measuring leakage.

Another place where a VOM can be “better” is when the original spec’d values shown on a schematic were read with a 5K/V VOM. One might have to add some parallel resistance to a modern DVM or even 20K/V VOM in order to get the proper values to come out. That’s a bit of a thing to watch for when dealing with vintage equipment. Sometimes worse is “better” for purposes of checking older radios.

Sometimes the best “meter” isn’t a meter at all. I’ve frequently used a Neon Test Lamp as a “is this wire hot?” indicator. I simply hold one probe in my hand, and probe around with the other one. It’ll quickly indictate what’s hot and what’s not. It also can show that a “ground” really is a pretty weak ground, or even not connected, very easily. Most meters fall down on this miserably. Of course, this method of testing for a “hot” wire only works for AC where the capacitive coupling of my body to ground provides the current needed to illuminate the lamp. This can also work as an RF indicator in situtations where the power is great enough (over 50W or so) without needing any connection to the circuit at all.

Was all that really an answer? Probably so. But the true answer can be summed up in three words —-

“**IT ALL DEPENDS”**

Mike McCarty

2008 MONTHLY MEETING PROGRAMS

NOTE CHANGES IN OUR MEETING LOCATIONS. Meeting places change with dates. The Garden & Arts Building is located at 906 South Senter, Irving, Texas. Refer to the WEB site if you get confused. Meetings start at 2pm. (UNLESS OTHERWISE NOTED). Call us on the cell *tellie* if you get lost.

JULY 19, 2008 (**Jaycee Center for the Arts**)

Annual Repair Session. Bring your tired problem radios and our "experts" will have a go at helping with the circuit repair (note a change in the location). We will meet about 8am at the **Jaycee Center for the Arts**, just off HWY183. You will remember this is where we have been having our Annual Christmas party. A program will follow to begin about noon with a discussion of the morning activities. Also, Cleo Cherryholmes and Bill McKeown will discuss the inner workings and purpose of components of a typical superheterodyne radio.

AUGUST 16, 2008 (Senter East Building)

Swap meet. Starts 7am (but knowledgable members usually get there earlier) 'til about noon. No meeting or program.

SEPTEMBER 20, 2008 (Garden and Arts Building)

Designing and building of amplifiers will be our topic. What is a class A SE? What kind of input topologies are used commonly in them? On September 20th you can find out. We have all had to deal with amplifiers in most of our radio circuits. Member James Ross will present a class A SE triode amplifier and some input design circuits. The math on a standard grounded cathode and expected output will be explored. He will tell you just what the heck an Aikido line amp is and what class A2 amplifiers are. Don't miss it!

OCTOBER 18, 2008 (Garden and Arts Building)

Our program presentation will be "The Alignment Procedure of Superheterodyne Receivers" by Cleo Cherryholmes. An actual demonstration will be performed along with discussion of the necessary equipment and the process. Although some manufacturers' variations in alignment circuitry looks different, the basic process can be followed. This will be discussed as well.

NOVEMBER 14-16, 2008 (Hampton Inn & Suites, Mesquite, TX)

2008 Convention-The theme is RADIOLA

DECEMBER 6. 2008 (Garden & Arts Building)

Annual Christmas Party. 6pm.

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 will need volunteers in organizing other programs, so consider presenting a program yourself. Call me anytime or send me an email.

Mike Grimes

972-384-1133 (home)

972-898-7251 (cell)

THE OLDEN YEARS MUSICAL MUSEUM'S COLLECTION OF EDISON LIGHT BULBS

Notes from the April 19, 2008 Meeting

Our V.P. Cleo Cherryholmes filled in for President Jim Sargent for our group of about 30 people. He reported that our spring auction wasn't quite as big as in the past – about 300 items instead of the usual 400 to 500. There were an unusual number of outstanding consoles, however. Our program director, Mike Grimes, reminded us of our upcoming June trip to Duncanville to see the WILKINS OLDEN YEAR MUSICAL MUSEUM operated by member Rick Wilkins. George Potter described the museum and encouraged those present to make the trip.

Mike introduced our guest speaker, Richard Kearley who was active in the radio industry back in the '30's. Richard was at the very first meeting of our VRPS, held at the Ramada Inn on Hwy 80. George Potter and Scott Puitt were there, also.

Richard said he grew up listening to classical music on WLW Cincinnati, which came in better than the "local" 500 watt station. The family radio was a 1928 or 1929 Atwater Kent. His career choice was with WSM Nashville (as opposed to someplace up North, e.g. WLS). The station was owned by a life insurance company, National Life. It was at 1000 watts at the time, and at 890 on the dial, while WLS (World's Largest Store – owned by Sears) was running 100,000 watts at 850. In 1927 the NBC Network was established, with CBS following in '28. AT&T built the first hookup between San Francisco and New York, but because of the long distances involved, was troubled with delays between the high and low frequency portions of the audio band. (Richard didn't say how they solved that problem).

Richard reminded us that no one "knows" how radio works and that the "ON THE AIR" signs are a misnomer, because it works even through the vacuum of space (see "Moonbounce" – later).

Richard talked at length about broadcast antennas. Before 1932 they were not all "verticals" using vertical towers as the antenna. Instead, they were horizontal arrays of long wires supported at their ends by strictly structural towers. These were fed by wires from a "house" below and comprised a center-fed doublet. Our local station on 820 has one vertical tower, making it omnidirectional. Multiple towers allow control of the radiation pattern, where needed. KRLD has two towers, creating a null at Hartford, Connecticut. The Mexican stations are a problem, giving no consideration to how their patterns reach into the U.S. For example, a station on 1050 from Monterrey operates at 150,000 watts, omnidirectional. For a time, this unregulated higher power was used to advantage by broadcasters such as one in Phoenix, Arizona at 620 KC – the transmitter was actually across the border in Mexico. WWL 870 in New Orleans has two towers that provide directional control away from the Gulf of Mexico. The antenna design includes big "hats" on top of each tower.

Stations were pushing for more and more power to get wider coverage. WLW ran 500Kw for about 5 years, and more and more stations were going up to that level. There were problems near the transmitting antennas, and congress eventually put a limit of 50,000 on AM transmitters.

Richard spoke very highly of his WSM boss and mentor Jack DeWitt, who came from Bell Labs. When WSM wanted to cover an extensive area and make the jump to 50,000 watts, Jack proposed they license at 650 KC to get really good distance, because of the relatively low frequency. (KLBJ Austin already had 590, and KLI Los Angeles had 690). He proposed a very tall antenna – 323 feet taller than the Washington Monument – actually 878 feet. The feed line for the antenna is interesting, consisting of a square array of four conductors spaced out from a central pair "twin-lead" and having an impedance of 250 ohms. This new setup created coverage of the whole U.S. There were 50,000 letters per week coming in from people who had received the station.

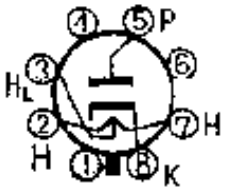
WSM became the first licensed FM broadcast station, going on the air at 44MC with Armstrong's system. Armstrong had put up 5 stations when the FCC was "inspired" to change the FM frequency allocation to the new

(Continued on page 5)

NOTES FROM THE BENCH

THAT PESKY 35Z5 RECTIFIER

The early 1940's saw an increase in the use of 5-tube All American radio sets using a 35Z5 as the rectifier, and with it a host of annoying attributes. A couple of simple checks can reduce or eliminate these annoyances. The 35Z5 is a 35 volt .15 ampere series rectifier tube, which employs a tapped filament for use in lighting a type 47 pilot lamp. Many simple tube testers do not check the tapped filament, so re-seating the tube and turning on the radio results in quick flash of the new #47 pilot lamp. To remedy this problem, always check the resistance between pin 3 (counting clockwise) and pins 2 and 7, if it is open (infinite resistance) toss the tube. Try putting a 300 ohm .5 watt resistor across the pilot lamp, this will protect both the rectifier tube and the pilot lamp and only reduce the brightness of the lamp a bit.



Blake Dietze

DIAL LAMP WILL NOT LIGHT!

Symptom: In an AC/DC set with a dial lamp across a tap on the rectifier tube, like a 35Z5GT or 35W4, the dial lamp refuses to light, even though the set warms up and plays normally. Replacing the lamp doesn't help, and the wiring to the dial light is in good shape and shows continuity to the lamp.

Tip: Look for a wire directly across the dial light tap pins on the rectifier tube. The tube likely must be replaced, as removing the wire will cause the dial light to blow out the next time the set is powered up. Always check the heaters on these rectifiers for full continuity and jumpers on the heater before powering up the first time, to save dial lamps.

Why: The rectifier heater is probably open between the input and tap. When this happens, the dial light immediately blows out when the set is powered on. Replacing the lamp just burns out the new one. During WWII new tubes were not always available, so the quick'n'dirty solution was to jumper across the burnt out heater section. Sacrificing having a dial lamp in order to get the set working may have made economic sense even after WWII when the 35W4 was used. Such a jumpered tube may be used in a set with series heater string but no dial lamp without a problem.

Mike McCarty

(Notes From The Bench is provided for information only. The VRPS or the authors accept no responsibility for the use or misuse of the information)

.....Continued "Notes from April Meeting"

band of today by RCA's David Sarnoff. Jack DeWitt was acquainted with Sarnoff and when Richard asked him how he liked the man, he said "I knew him all I cared to know". He also told Richard that there is no truth to the story about Sarnoff operating radio-telegraph to/from the Titanic.

The MOONBOUNCE Experiment – This was an experiment that "shocked the world". The US Army Fort Monmouth, New Jersey Laboratories put together an Army team of four men, headed by Colonel John (Jack) H. DeWitt, to try bouncing radio signals from the moon. Major Armstrong was a key player, making the receiver. (It was called project Diana). On January 10, 1946 they succeeded in transmitting a signal to the moon and receiving the signal back some 2 ½ seconds later. The result was witnessed by three witnesses, one being the president of M.I.T. The event made sensational news for weeks.

Jack came back to WSM out of the Army - to work on the new TV systems.

Bill McKeown

The Olden Years Musical Museum Tour

By George Potter

For our June monthly meeting, VRPS arranged to visit and tour the Olden Years Musical Museum located in Duncanville just south of Dallas. James (Rick) Wilkins has for as many years as I have known him (about 35 years to be exact) has assembled and maintained this impressive collection of phonographs, mechanical music machines, records/wax cylinders, radios, televisions, and last but not least Edison light bulbs of all descriptions. The collection is of Homer DeFord and ,yes, of the DeFord lumber and hardware fame in Duncanville, Texas. After college Rick tried his hand of working with phonographs and it turned into a lifetime career. I mean, not many of us could say we made a living at our hobby and passion as Rick has done. He is one of the few I have known over the years that have been able to be successful and make a living at this. He repaired phonographs and musical devices and turned to maintaining this large collection over the years. To me, just seeing where he repairs these machines is a treat in itself. He can find or repair a part and refinish a cabinet right here. In his shop are hundreds of horns, records, parts, and music machines of all descriptions and many are for sale.

We had approximately 35 people show up including a few new members and wives too. Now you would think this is a typical museum where it is totally hands-off of everything. Well, as you walk by you see pennies and nickels lying around to feed the machines. Rick plays anything there, as some of the machines were for commercial use in the early teens. Yes, there are a few peep show devices there too (no….. I can't believe they had those things back then!). There are calliopes from small to as large as on a steamship, player pianos, and even complete mechanical bands assembled in a cabinet. These are well-tuned and restored and if they don't play that day, Rick will still have a job repairing them. Fixtures on the ceilings throughout are illuminated by Edison light bulbs of every candle power. At one time, both Rick and I had the largest collections of light bulbs in the Southwest. Yes, he even gave me the bug for phonographs and light bulbs. To those who didn't attend, you missed a one of a kind exhibit. I'm sure there are items here that even the Smithsonian in Washington D.C. doesn't have. There are beautiful pictures of Edison from young to old adorned on the walls, along with many artifacts from the period.

It was great seeing some of the members I haven't seen in years attend this tour. As always, we have to admit VRPS has some pretty enlightening meetings and this definitely ranks as one of them. Keep watching our website and SoundWaves newsletter, as Mike Grimes will be continually posting meeting events coming up in the future. Remember we have a large VRPS swap meet coming up on the third Saturday in August….see you there!

VRPS CONVENTION 2008
NOVEMBER 14,15,16 2008

IT'S NOT TOO EARLY TO MAKE YOUR HOTEL RESERVATIONS FOR THE 2008 CONVENTION!

Call the Hampton Inn to make your reservations now. Tell them that your reservations are for the VRPS or Vintage Radio and Phonograph Society Convention to get the $82.00 rate.

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The theme for this year's convention is RADIOLA. The time is now to start preparing your entries for the contest.Listed below is this year's categories. Notice that there are some changes in this year's list and that there are less categories.

VRPS 2008 CONVENTION OLD EQUIPMENT CONTEST CATEGORIES

1. CRYSTAL SETS
2. 1920'S BATTERY RECEIVERS
3. AC TABLE AND CONSOLE RADIOS, 1940 OR EARLIER
4. AC/DC TUBE RADIOS
5. TRANSISTOR RADIOS, PRE 1965
6. PHONOGRAPHS AND RELATED ACCESSORIES, PRE 1928
7. MICROPHONES AND REPRODUCERS
8. MILITARY AND AMATEUR RADIO EQUIPMENT
9. NOVELTY RADIOS, TUBE OR TRANSISTOR
10. OPEN CATEGORY - ANY RADIO OR PHONO ITEMS THAT DO NOT FIT THE LISTED CATEGORIES
11. CATHEDRAL RADIOS
12. TEST OR SCIENTIFIC EQUIPMENT
13. VINTAGE TUBE AUDIO (NEW CATEGORY)
14. RADIO OR PHONOGRAPH EPHEMERA
15. CHARACTER RADIOS- RADIOS THAT RESEMBLE A REAL OR FICTITIONAL CHARACTER
16. ART DECO OR CATALIN RADIOS
17. 2008 CONVENTION THEME- RADIOLA

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MORE PICTURES FROM THE MUSEUM TOUR

MEMBERSHIP DUES
SEVERAL OF THE MEMBERS HAVE EXPRESSED CONFUSION ABOUT THE MEMBERSHIP RENEWAL PROCESS AND I HOPE TO CLEAR UP ANY CONFUSION. ON THE MAILING LABEL OF THE SOUNDWAVES YOU WILL FIND YOUR RENEWAL DATE- EXAMPLE 11/01/09. TO BETTER FACILITATE RECORD KEEPING WE WENT TO A SYSTEM WHERE ALL DUES ARE DUE ON NOVEMBER 1. THE ANNUAL DUES ARE $17.50 FOR THE U.S. AND $20.00 FOR FOREIGN. PLEASE MAIL YOUR DUES TO :
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