

# SOUND WAVES

Vintage Radio and Phonograph Society, Inc.

October 2008

## From the President.....

Jim Sargent

As I sit here typing this article we are about 2 months away from our annual convention. I always look forward to this time of year because I get to renew so many old friendships. With the price of gasoline being what it is, many of you who live outside the city and state will be making your first and possibly only trip to the metroplex this year. Knowing that, we will try to cram as much fun and action into the three days as we can. One of the things we have heard over the last few years is the request for us to increase the number of items members can put up for auction. Well, here is your chance. We will still guarantee 5 of your items to be auctioned each day. Nothing new there, but instead of allowing only 5 additional items each day, we will allow 20 additional items each day for a total of 25 lots per member, per day, time permitting. We have gotten better about moving items and the additional items will be welcomed by all involved (except maybe the handlers!!). Speaking of the handlers, as always, Mike Grimes will be looking for a several good folks to assist with the auctions. Volunteers here are critical. In fact, every position at our convention is staffed by member volunteers, so if you can assist somewhere, let Mike or me know. Also, this is our 34<sup>th</sup> year and our 33<sup>rd</sup> convention. Nothing spectacular about the numbers until you realize that there are only a small handful of active antique radio organizations with a resume that goes back that far. This is a tribute to you as members and those who have lead our merry band of collectors over the years. We celebrate Radiola at this years convention, but more than that, we celebrate ourselves and the hobby of collecting radios of all vintage. Come join us in Mesquite!!



## 2008 MONTHLY MEETING PROGRAMS

### SEPTEMBER 20, 2008 (Garden and Arts Building)

Designing and building of amplifiers will be our topic. What is a SE class A? What kind of input topologies are used commonly in them? 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)

**Note a schedule change for October!** Our program "the Alignment procedure of Superheterodyne receivers" will be rescheduled for early 2009.

We will have a "show and tell" concerning "**phonographs and amplifiers.**" The program will be coordinated by George Potter and Gary Reeves. A discussion of phonographs as collectables and some detail of what to look for and how they work will be presented. Members, please bring any phonographs or amplifiers that may be of interest. You will have an opportunity to discuss your example.

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

Annual Convention.

### 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

972-898-7251 (cell)

## NOTES FROM THE BENCH

If you use the radio schematics from Rider's, keep in mind that a resistor value may be followed by a "M" which does not mean "meg" or times one million. It means the Roman numeral for thousand or times one thousand. The schematic will designate times one million with the familiar "meg" suffix.



If the oscillator in your set is operating, there will be a negative voltage between the grid and the cathode that you can measure with a VTVM. Also, you may try holding a small AM transistor radio near the oscillator. By tuning the transistor radio across the band you will hear the beat with the set's oscillator if it is working.

If you want to build an oscillator, design it as an amplifier.

Ohm's Law to remember:  $E = I \times R$  Just cover the one you want to know, i.e., cover E and it  $I \times R$  equals  $I \times R$ .

Occasionally you run across a listing for Litz wire. There are several variations of the spelling. Litz wire is a special type of multi-stranded wire used to increase the "Q" of a coil for an inductor. It is made by individually insulated strands wound together as one wire. It reduces the "skin effect" AC resistance of a coil made from such wire. Very useful where "Q" is important.

An unusual WEB site for identification of vintage radios can be found at [http://archives.radioattic.com/archive\\_a1.htm](http://archives.radioattic.com/archive_a1.htm). It has thousands of jpeg pictures of radios indexed by make which is easy to browse. The model number is indicated and is a quick way to identify your radio. It is not a price guide. You can download the picture and/or print for your reference.

Often it is useful to use component Source Date Codes to determine the age of a radio. The Electronic Industries Association, founded in 1924, devised Source Codes for component manufacturers but was not widely used until after the War in 1945. Thus, they are most useful for dating radios after that time period. The code can especially be found on potentiometers and speakers with a stamped or inked number. The numerical scheme used: a source code (manufacturer) followed by the date code. An example such as 1372565 translates: 137 is the manufacturer (Chicago Telephone Supply); 2565 is the 25th week of 1965. There are some pit-falls such as reversing the

numbers, using six or seven numbers, and, of course, just because a component has a certain date does not necessarily mean the radio was manufactured near that date. It could have been replaced or came from some large inventory. For further discussion and listing of sources, the website <http://www.provide.net/~cfh/pots.html> is very useful.

Need radio related logo to dress up your literature. A great web site is [www.ominous-valve.com/logos1.html](http://www.ominous-valve.com/logos1.html). A trick is to download the logo you want into a document file. Then use PowerPoint to add it as a clip-art picture import. You can then place it into any document you like and size it. It will be in color and look great!

Mike G



### NOTES FROM THE SEPTEMBER 20, 2008 MEETING

Mike Grimes filled in for President Jim Sargent for our group of about 18 people. He reminded us of the upcoming phonograph program to be presented at our October 18 meeting by George Potter and Gary Reeves. He said that we can bring items of interest, related to phonographs, along for a show-and-tell part of the meeting. Mike also mentioned that the location of the December Christmas party will be at the Garden Arts building (same as our meeting place this year), instead of our previous location. Also - new rules for auction items – we can bring 5 items that will be guaranteed to be put up for auction, plus any number of additional items that will be put up as time permits. For next year, a planned program is a timely seminar on the new digital-only TV broadcasting system.

Mike introduced our speaker, member James Ross, who gave us a presentation on the design of tube-type audio amplifiers. It was obvious that there is a lot of interest in “antique audio” as well as antique radios and phonographs. Of course, modern tube-type audio is a large field of interest in itself, and it has a large calling (culture; cult) of people that swear it sounds better than solid state systems.

In his discussion, James concentrated on single-ended (as opposed to push-pull) triode audio power amplifier output stages and their drivers. He did mention that push-pull design might be a topic for a future program. He walked through the process of determining requirements for power supply and bias voltages, bias resistance, output transformer impedance, operating points, voltage swings, and other factors – based on the audio power output desired and the choice of tube type. He talked about the compromises between low-distortion and high power output performance. It became apparent that, besides the rigid formulas that James discussed, there are also lots of rules-of-thumb that come from experience and a lot of testing and experimentation. You could tell from the questions that a fair number of members in the audience have had technical experience in designing tube circuits. One question was “why is single-ended so popular”? Answer: There is no crossover distortion.

(Author’s Note: What about the other types that result from being single-ended, e.g. intermodulation, harmonic? Maybe with enough copper and iron, the single-ended may be the best.)

There are many sources of design information available.

James showed us an array of printed material including publications in the following list, which appeared on the front cover of his handout:

Printed material:

From Audio Amateur Press:

Mullard- Tube Circuits for Audio amplifiers

An Approach to Audio Frequency Design

Valves For Audio Frequency Amplifiers

Beginner’s Guide to Tube Audio – Bruce Rozenbuilt

Principles of Power – Kevin O’Connor

The Williamson Amplifier – Wireless World

#### **Web sources:**

[Http://www.aikenamps.com](http://www.aikenamps.com) (Has very clear design help)

[Http://www.tubecad.com](http://www.tubecad.com) (Aikido and many, many other sources)

[Http://www.bonavolta.ch/hobby/en/audio/audioel.html](http://www.bonavolta.ch/hobby/en/audio/audioel.html)

[Http://www.angelfire.com/electronic/funwithtubes/index.html](http://www.angelfire.com/electronic/funwithtubes/index.html)

[Http://www.members.aol.com/sbench101](http://www.members.aol.com/sbench101)

See you at the convention.

Bill McKeown

#### **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.**

## Notes from the July 19 Repair Session

At this session we had about 23 people with about 10 radios brought in. About 8 of the radios left in playing condition. The remainder were diagnosed and a plan established for completing the repair job at home. As usual, the ones brought in by the more experienced members were the toughest, because they had already spent a lot of time trying to get them working. The tougher ones were often those that had been previously mis-wired by someone else or in the recent process of attempting a repair. A particular set the author was working on, a Majestic Model 50, had a number of problems – the worst being open I.F. transformers. One I.F. transformer had an open secondary winding. After rigging an R/C-coupling patch on that stage, it turned out that another one was bad. As is typical for a Majestic, the bad parts were difficult to get access to. We used a Micronta signal injector (see Author's Note, below) to find the dead stages. As we ran out of time, we were getting signal all the way through from the 1<sup>st</sup> I.F. to the speaker. The local oscillator was working OK as indicated by a strong negative bias on the oscillator tube grid.



All through the session, there would be the sound of another set coming to life (not always with really good sound). Besides the learning experience, a number of people were happy to leave with a working radio or at least the knowledge of how to make it work. There was a lot of exchange of ideas among the "experts" on each radio to help locate the problems. Once again, Gary Reeves cranked out schematics, as needed, from the computer.

There was a good mix of experience-level, and those that are fairly new at this hobby and were there to learn gained a lot from the session. Of course, even those with a lot of experience can always learn more "tricks of the trade", by observing how other experts tackle a problem and what equipment they employ in their troubleshooting, and how they use it to advantage. Besides our Repair Sessions, our NOTES FROM THE BENCH articles are a good source of tips and tricks.

**Author's Note:** The Micronta (Radio Shack) signal injector is a simple one-transistor oscillator in a hand-held case – powered by 6 volts from four AA batteries. It dates from the early '60's. It has a pushbutton, a little red indicator light (this was made before LED's existed) to tell you it's working, and a probe to touch to the point in the circuit where you want to inject a test signal. The oscillator has very strong feedback so it generates a signal that is very rich in harmonics, at about 1KC. It is so rich in harmonics that you can hear the 1KC tone with the signal applied anywhere from the grid of the audio

output tube (or transistor), all the way back to the antenna – including I.F. stages. It will even make a video pattern on a TV. Your body acts as a "ground plane" for the signal. As you work your way back stage-by-stage, the signal gets louder and louder, unless there is a dead stage. If so, you have pinpointed the problem area. Of course it will not tell you if the local oscillator is dead, but there are easy ways to find that out, anyway. ("What way is that?", you say - The local oscillator will always have a grid-to-cathode negative bias generated by the oscillation. If it's zero or positive, the oscillator is dead. This tool has helped find problems in many radios, especially back during the time when

transistor radios were an expensive item and worth the trouble to repair. Many of them were the transistor portables and pocket radios - made for large pockets. The real advantage of the signal injector is that you don't have to worry about tuning a signal generator to the right frequency in order to get a response, when you're simply looking for a dead stage.



See you next session.

Bill McKeown

