



SOUND *WAVES*

VRPS SUMMER 2011

FROM THE PRESIDENT



By Jim Sargent

Ahhhhh....summer, seems to just keep on going....and it has only just begun! Not sure where you are, but here in north Texas the heat has been consistently in the upper 90's and 100's for a long time. We really need some rain, and I know there are parts of the country that would be glad to give us some of their's. Unfortunately, it does not work that way, so we might as well make the best of it. So that brings me to my annual message to the masses. Take advantage of the numerous outdoor flea markets and radio meets that happen during the summer months. A list appears every month in our hobby publication, *Antique Radio Classified*. Beverly and I will be heading to Willowbrook, Illinois the first weekend of August to attend Radiofest, put on by the Antique Radio Club of Illinois. I know several of our members will be there also. I began going to Radiofest in the early 1980's when it was in Elgin.

It is large, fun, and always informative. While attending this event, I have never failed to learn something new about our hobby or see a rare item for the first time. This year has a special opportunity for me. I have been asked to conduct their radio auction on Thursday evening, which is the kick-off event for their 3 day meet. I am looking forward to the challenge.

Moving closer to home, do not forget about our own VRPS upcoming events. The Repair Session in July (remember the 9am start time) is always fun, and we use that time to repair as well as to teach basic repair principles. Bring in your challenging radio problem.

In August, while it is still hot, we will have our second swap meet of the year. Get there early for the best deals, and remember, most folks are gone before the noon hour.

Skipping ahead to November, it is not too early to begin thinking about our annual convention. This is number 36, WOW!! Your directors have lined up a great banquet entertainment, as well as a great Friday Forum. Dust off the old radios for the display contest, gather items for the auctions, and come ready to have fun. More information will be forth coming. Until next time, good hunting and stay cool.

NOTES FROM THE BENCH

By Mike McCarty

In the 1936-1939 time frame, some radios used a then new device developed by Mallory for providing C- bias needed by certain tubes. This cell looks vaguely like a silvery metallic acorn, and is in a holder looking somewhat like a fiber terminal strip, but with a springy clip. For an example circuit showing a bias cell, and its placement, see the Philco 602 which uses one, or the Philco 624, which uses three. The Mallory bias cell uses essentially the same chemistry as a carbon zinc cell. It provides 1.0 Volts +/- 10%, however at no more than one microampere. The physical construction is that of an acorn shaped cup manufactured from zinc, and an end cap, somewhat smaller than a dime, from carbon. The cell was filled with an electrolyte at the time of manufacture, and then sealed by crimping the rim of the cup around the carbon cap with an insulator around its edge. Shorting these cells can ruin them. Never attempt to measure their output voltage using a VOM type meter; one must use a high impedance meter like a VTVM or DVM. VOM type meters draw fifty microamps or more, and can damage the cell. Another way to ruin them is to leave them in a radio for seventy five years, during which time they dry out. A radio having one of these cells in it normally plays, but the sound is distorted because of improper bias. I recently began work on a vintage radio employing one of these cells which was, naturally, dried out. I measured its output voltage, which was approximately 0.009 V, clearly out of tolerance. What to do?

What I did was to use a small twist drill held between my fingers, and holding the cell with the carbon cap in the downward position so the tailings would not fall into the cell, drilled a small hole through the carbon cap, somewhat off center so as not to interfere with the spring clip which must contact the carbon cap. After doing this, I could see a brownish deposit, which was the remains of the now thoroughly dried out electrolyte. I then used a small syringe with needle, like that used for injections, to inject enough distilled water essentially to fill the cup. I was careful not to allow the metallic needle to contact the zinc cup, in order not to short the cell. I measured the output voltage with a DVM, and saw that it immediately rose to about 0.3 V, and was rising quickly. Over the next half hour, I saw the voltage rise to 0.932 V. I would occasionally shake the cell gently, and see the voltage drop, then begin rising again. After a half hour or so, the cell attained a fairly constant voltage, which did not drop nor rise further. At that time, I sealed the hole in the cell with a drop of Ambroid brand cement, used by model airplaners to cement balsa wood, and left the cell overnight. This cement is supposed to be non-reactive (resistant to nitro methane fuel used in the model airplanes) and resistant to heat from the model airplane engines, so I considered it to be a reasonable try. The next day, the cell was still generating 0.932 V, and I considered that the "rejuvenation", if such it may be called, seemed successful, since it was within the tolerance of such a cell when brand new. The radio it is installed in has been successfully played for several hours. Only time will tell, however, how long this rejuvenated cell will work. If it fails soon, then I'll rig up a holder for a hearing aid cell somehow.

In any case, watch for those bias cells; a bad bias cell may be the explanation for why your radio doesn't sound as nice as you thought it should.



Mike McCarty at his work bench (Area 51?)

MALLORY BIAS CELL



Designed to furnish initial bias for RF, IF and AVC tubes. Size, only $1\frac{1}{32}'' \times \frac{5}{8}''$. Noiseless; non-reactive at audio frequencies. Provides a no-current potential of 1 Volt \pm 10%. Cells may be used in series for higher bias voltage. These cells greatly eliminate distortion caused by conventional bias arrangements.

18c

A3379. YOUR PRICE

BIAS CELL HOLDERS

A3387. For one cell. NET..... 6c
A3388. For two cells. NET..... 12c
A3389. For three cells. NET..... 15c
A3390. For four cells. NET..... 21c

Bias cell illustration 1937 Allied Radio catalog.

Notes from the April 16, 2011 Meeting

Bill McKeown

The club met at the Senter East Building in Irving, TX. President Jim Sargent welcomed the group and called for another "round robin" of introductions so everyone could get to know where members are from and put faces to names. Jim declared that our annual Spring auction, held this year at the Senter East building, was well attended and was generally a successful event. John Butz-Fiscina announced that he would be moving back to New Jersey and said he would greatly appreciate any help packing his collection.

Mike Grimes outlined our future programs and introduced our program topic – the history of television. He put forth that television is a "sister" to radio, expanding on radio technology to broadcast and receive pictures as well as sound. He discussed the very early days of television when the scanning was done mechanically. Paul Nipkow of Germany invented a mechanical means to scan an image in 1883, but it was 40 years later when Scotsman John Baird began to experiment with using the technique to scan images for transmittal of live images.

Mike introduced Kurt Ehrlich who discussed the history of electronic television. In 1925 Baird gave the very first closed-circuit public demonstration of television – an important historical event. The BBC then broadcast brief signals for him in 1929. His mechanical TV system was very limited in performance, with only a few lines of detail. In 1924 he went to the vacuum photocell to overcome the slow response of the previously used selenium photo detector. Kurt explained that 1929 was a key year in TV development. Although the Braun tube (CRT) had been around as a pretty obvious candidate for displaying received television signals, the big problem was development of a camera, or way to scan the image electronically. In the United States, there was a flurry of activity by the major corporations and laboratories working with mechanically scanned images and exploring possible ways to scan electronically. Even the best mechanical systems offered very poor resolution, such as 48-line pictures, as indicated by the fact the signals could even be carried over telephone lines. The first broadcast TV station, licensed to RCA, was W2XBS in the Bronx, New York. Philo Farnsworth had developed his all-electronic system and publicly demonstrated television in San Francisco. This was the kind of breakthrough needed to make TV a practical way to "televise" quality moving images. Farnsworth called his invention an "image dissector". He and his supporters were very wise in getting immediate patent protection, something many early radio pioneers failed to do, leading to financial problems. Many others were working feverishly to get their own schemes to work – especially Vladimir Zworykin working for RCA. Zworykin had promised RCA's chief David Sarnoff to develop a system within two years at a cost of \$100,000. He made good progress in developing a camera tube, with many important inventions that led to success. However, in 1932, RCA was cited for patent interference by Farnsworth and lost the case in court. In 1939 Farnsworth and RCA entered into a licensing agreement. This marked the first time RCA had to pay royalties to anyone. As with any new technology, there were many inventors within and outside RCA that built on previous work to create a useful camera tube. RCA's family of tubes included the Orthicon, the Image Orthicon and the Vidicon. An important TV event was the demonstration of TV by RCA at the 1939 New York World's Fair, broadcast from their W2XBS station. Kurt made handouts available which presented time-lines for events in the development of television and discussions about the major players.

Kurt discussed a DVD that was produced as part of the "Modern Marvels" series appearing on TV. It gives credit to Farnsworth as the inventor that he was, but titled David Sarnoff "The Father of Television". Early in his career, Sarnoff worked for Marconi as a messenger. Although he claimed to have communicated with the Titanic, he did handle a lot of messages for the rescued passengers as they were being brought ashore. He was a very successful promoter and eventually became head of RCA. His decisions to invest a lot of money into the development of early TV and, later, color TV were very important to progress. The financial decision to sell color TV sets at cost or even at a loss broke the "catch-22" of there being no demand because there was nothing on the air in color – because advertisers knew there were no color receivers. Of course RCA profited from the making of the new broadcasting equipment. The decision to invest money to develop the NTSC method of color broadcast was also important. Sarnoff's personal clout was a major reason the FCC agreed to rescind its (premature) approval of the impractical and cumbersome CBS color-wheel system. Philo Farnsworth's widow wrote a book titled "Distant Vision" about her husband's accomplishments.

AUTHOR'S NOTES - It is ironic that the RCA NTSC format broadcast signal could still be displayed on a color wheel system, but using the same amount of spectrum as black and white TV. I built a color wheel system from an abbreviated parts kit in 1955, and my family watched it through about 1960. It was on a 12 inch Philco TV at first, and later on a 14 inch rectangular-tube Zenith set. In those days there were only a few hours of color broadcast weekly. The color was better than on commercial sets because a rare-earth-doped red phosphor had not yet been developed. On a business trip during the early 1950's, I visited the Dumont laboratories in New York City to see a demonstration of a Color TV receiver using a picture tube called a Chromatron invented by Ernest Lawrence, the Nobel prize winning inventor of the Cyclotron. Its picture was far better than that of an RCA set sitting side-by-side with it. The tube inherently had no convergence problems and worked very well, producing a brighter, sharper picture. Its downfall was mainly due to extreme radiation of high frequency interference from the face of the tube. (There is a lot of information on Wikipedia relative to color picture tube development).

2011 CONVENTION OLD EQUIPMENT CONTEST

IT'S TIME TO START GETTING YOUR ENTRIES READY
FOR THE CONTEST. BE SURE TO TAKE NOTICE OF THE
NEW CATEGORIES!

1. Crystal Radios Pre 1960
2. Battery Receivers Pre 1928
3. AC Table Radios Pre WWII
4. AC/DC Tube Radios
5. Transistor Radios Pre 1965
6. Phonographs and Related Accessories Pre 1928
7. Loudspeakers Pre 1930
8. Military and Amateur Radio Equipment
9. Novelty Radios- Tube or Transistor
10. Open Category- Radio Related Items Not Included in the Other Categories
11. Art Deco Radios
12. Vacuum Tubes
13. Restoration Category (Entry must include documentation- pictures, etc.)
14. Foreign Radios (Vacuum tubes only)
15. Early Tube Audio Pre 1970
16. NEW CATEGORY- Items With the Name Radio, But Are Not Radios
(Example: Radio Flyer Wagon)

FROM THE VP

By Randy James

It's getting closer- the Convention, that is. It's less than half a year away- November 18-20. Don't do like I do! I always come up with these grand ideas for the Old Equipment Contest entries but, by the time I think about them for six months, then procrastinate for several more months, it's too late to create a masterpiece. If I throw together a mediocre entry I know that Mary Ann Caruth will beat me again (and again). I know for a fact that she has a new TOP SECRET entry in the works. Oh well, maybe someday! Anyway, start getting those entries ready. I have been to other clubs' shows and their contests pale in comparison to ours. The Convention packet (info, registration, etc.) will be mailed out with the next edition of the Soundwaves. You can go ahead and make your hotel reservations now. The rates will be \$86.00 (plus tax) for single/double rooms or \$106.00 (plus tax) for suites.

These rates are good for reservations made by October 27, 2011. State that you are a member of VRPS to get the special rates. Call (972) 329-3100 02 1-800-HAMPTON (426-7866) or use the direct link on the VRPS web site (www.vrps.org). My request for pictures of members at their bench for the "Notes from the Bench" column has brought results. See the pic of Mike McCarty on page 2. We need more-email them to me at randy-jeannine@sbcglobal.net. One more thing! The annual dues are \$20.00- some folks are still sending in \$17.50- and always expire on November 1 of the current year.

Until next time, happy trails to you and keep on truckin' and collectin'.

The Problem with the 1924 Zenith Super Portable Radio

By Gilbert M. Hedge, HVRA Historian



Restored 1924 Zenith Super Portable Radio

Zenith introduced the Super Portable (Companion) radio in early 1924, it sold for \$224. It was entirely self-contained in a traveling case “smaller than the average suitcase” and included tubes, batteries, horn speaker and built in antenna. The controls were located outside so that it could be played in a closed or open configuration, making it truly portable. Zenith advertised the Super Portable radio as being able to take it on camping trips, to the beach or enjoying it in the home. Zenith advertising has always maintained that the 1924 Super Portable radio was the “world’s first portable radio.”

There was a problem with this radio that resulted in fairly low production numbers. There is some confusion on exactly how many were produced and most were evidently either returned to the manufacturer by the purchaser or they were recalled by Zenith. One report was that there were 1,000 produced and 600 of them were returned. Another report was that 6,000 were produced and they all came back at least twice. There was even a story (Zenith folk lore) that Zenith President Eugene McDonald publicized the destruction of the returned radios by destroying them in a huge bonfire. Because of these reports and the fact that there are not very many in existence indicates that the problem was obviously a very serious one. There is no information available that indicates what the problem was – does it not play well, do the batteries run down quickly, did it just quit playing, etc. What was the problem?

I was fortunate enough to have obtained a 1924 Zenith Super Portable radio, in good condition, that was complete; it even had original Zenith UV-99 tubes. So, I decided to restore it including re-producing the ‘A’, ‘B’ and ‘C’ batteries. The only serious problem that was found during restoration was the first and second ACME – 2 RF transformers were open. There was a note inside the first transformer that stated “Repaired both #2 coils 3-28-1940.” Substitute transformers were used, but they didn’t work very well. Five used Acme transformers were purchased and they were all open. The only option left was to rewind them using 30 gauge lacquer coated wire as a substitute for the original 40 gauge cloth covered wire. All other parts in the radio remain original except for the D battery which required an adapter, since the original D battery had a negative case.



Acme R-3, Acme R-2 and Acme R-2 RF Transformers



Re-wound Acme R-2 Transformer

With that problem solved the radio began to work and I decided to perform some tests in order to try to determine if the batteries were the problem and also see how long they would last. I assumed that the batteries could be the problem because of a statement in an article about this radio that read "... they only lasted a few minutes."

All tests were recorded in Table 1 – Test Activity Log. The tests were conducted by recording the 'A' voltage, the 'B' voltage and the start time. The radio was then turned on and frequently monitored, occasionally changing stations. When the playing was stopped the end time was recorded along with the 'A' voltage and the 'B' voltage again. This was continued until the batteries were exhausted.

The 1930 Trav-Ler Model D Portable radio was used as a baseline for how long the 'A' batteries should last and Trav-Ler suggests that the 'A' batteries should last for 75 hours. The Zenith has played for over 80 hours on the same set of batteries. The Zenith portable actually performed better than the Trav-Ler portable because the Zenith had 6 - 99 tubes and the Trav-Ler only had 5 - 99 tubes and it was also six years younger; was the Zenith Super Portable radio ahead of its time? No adjustments were made for using the D cells, 9 volt, and AAA batteries in the re-produced 'A', 'B' and 'C' batteries. The test data confirms that battery consumption of the Zenith Super Portable radio was not a problem.

The performance of the Super Portable radio over the test period was very satisfactory. The volume (horn speaker) was always acceptable and could be heard across the room. The tuning required a little patience as the single knob tuning is a little misleading since the rheostat knobs have a great deal of effect on the volume of the station being tuned. If the rheostats are turned to low the station can not be heard and if they are turned to high a hissing noise is heard (feedback). With a little tinkering many stations, both strong and weak, could be heard. The antenna is located in the lid of the case and most of the tests were performed with the case in the open position; however some were performed in the closed position. The radio seemed to perform slightly better in the open position. The radio was also tested with head phones that resulted in excellent performance as expected. During the testing there were never any problems or performance issues that would suggest that the radio should be returned to the manufacturer.

As a result of the restoration, the testing and being able to play this particular radio for many hours, I was only able to identify one catastrophic problem that would have caused this radio

Day	Start A Volts	End A Volts	Start B Volts	End B Volts	Start Play Time	End Play Time	Total Time
						Cumulative Play Time	
1	4.61	4.2	91	85.2	3:00 PM	9:00 PM	6
2	4.38	4.2	87.2	84.7	3:00 PM	5:00 PM	2
2	4.27	4.1	85.4	82.9	5:40 PM	10:00 PM	5.3
4	4.34	4.03	85.9	81.9	8:30 AM	1:20 PM	4.9
4	4.17	3.97	83.3	80.9	3:45 PM	9:05 PM	5.3
5	4.2	3.96	83.2	80.6	3:40 PM	7:20 PM	3.6
6	4.17	3.96	82.8	80.4	7:45 PM	9:45 PM	2
7	4.12	3.89	82.1	79.6	7:25 AM	11:35 AM	4.2
7	4.04	3.88	81.2	79.3	2:45 PM	5:30 PM	3.3
7	3.99	3.86	80.6	79	7:30 PM	9:30 PM	2
8	4.04	3.8	81	77.9	8:30 PM	4:15 PM	7.7
15	4.06	3.9	81.3	79.1	7:45 AM	8:45 PM	1
15	3.99	3.64	80.1	74.9	10:00 AM	9:00 PM	11
16	3.88	3.6	77.1	73.5	7:00 AM	1:30 PM	5.5
16	3.72	3.49	74.8	71.9	3:00 PM	9:00 PM	6
18	3.76	3.31	73.9	70.1	3:45 PM	9:45 PM	6
19	3.6	3.32	72	69.9	6:15 AM	7:30 AM	1.3
19	3.52	3.23	71.30	69.10	9:15 AM	11:15 AM	2
19	3.49	2.74	70.90	67.30	2:35 PM	8:00 PM	4.6

Table 1 – Test Activity Log

to be returned to the manufacturer. That problem was the failure of the Acme transformers. It would be interesting to speculate as to what was wrong with these transformers; design, materials (wire, solder, flux), workmanship, etc.

Since only one radio was tested it isn't really fair to blame all those returns on the Acme transformers; however until more objective evidence is obtained the results stand. It may be interesting if other Zenith Super Portable radio owners could check the Acme transformers or even perform similar testing.

The 1924 Zenith Super Portable radio was one of the first truly portable radios manufactured for the general public. When it was introduced it would have been considered high-tech, incorporating the new low voltage UV-199 tubes, single dial tuning, and being fully self-contained. Based on the performance of this radio I believe the Zenith Super Portable radio might have been a real success story for Zenith if engineering had not made the decision to use the Acme transformers, which resulted in its failure, early death and obscurity.

MONTHLY MEETING PROGRAMS

JULY 16, 2011 Senter East Bldg.

Annual Repair Clinic Session. Bring your problem radios in for help from our experts. 9:00 am to 2 pm. This will take the place of our regular meeting.

AUGUST 20, 2011 Senter East Park; Irving, TX

Swap Meet/tailgate sale, parking lot. 8am to Noon.

SEPTEMBER 17, 2011 (Senter East Bldg)

There are several approaches to receiving and detecting radio signals. This program, presented by Mike McCarty, will present the most common generic types for contrast and comparison such as: Simple detection/rectification, TRF, reflex, regenerative, and superheterodyne. Working examples will be welcome for demonstration.

OCTOBER 15, 2011 (Garden and Arts Bldg)

From the time radio and TV became common place, effort was made to enhance "convenience" and simplify operation. From reduction of the "three dialer" to chair-side to remote controls, designers envisioned ways to allow the user control with the least amount of effort. This program will review and demonstrate early attempts at providing radio and TV remote control. Please bring your own examples to share and show.

NOVEMBER 18-20, 2011 (Hampton Inn, Mesquite, TX)

Annual VRPS Convention: Auctions, Contest, Flea Market, Banquet.

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.

Call me anytime or send me an email. Mike Grimes 972-898-7251 (cell), or K5MLG@verizon.net.

NOTE: Programs will be held at various locations in Irving, Texas. Make note of the location as they change from time to time. Senter East, 228 Chamberlain St.; Garden and Arts, 906 S. Senter Rd; and Heritage Park, 217 S. Main St.; will be the locations. Refer to the WEB site. Programs start t 2pm. unless otherwise noted. Call us on the cell tellie if you get lost: 972-898-7251 or 972-742-8085.

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