SoundWaves

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VRPS Spring 2020

From the President

As you can see by the modified photo of yours truly, the editor of this fantastic publication has a serious sense of humor. I, like you, am taking this pandemic thing in stride. Serious, yes, but we cannot lose our sense of humor. Hopefully each of you and your families are staying healthy, and that will continue through the duration of this historic medical event.

As you are no doubt aware, the VRPS, in keeping with the CDC guidelines for the gathering of large groups, has canceled all meeting activities at least through April. I hope this "event" will be over by the time we make plans for the May swap meet.

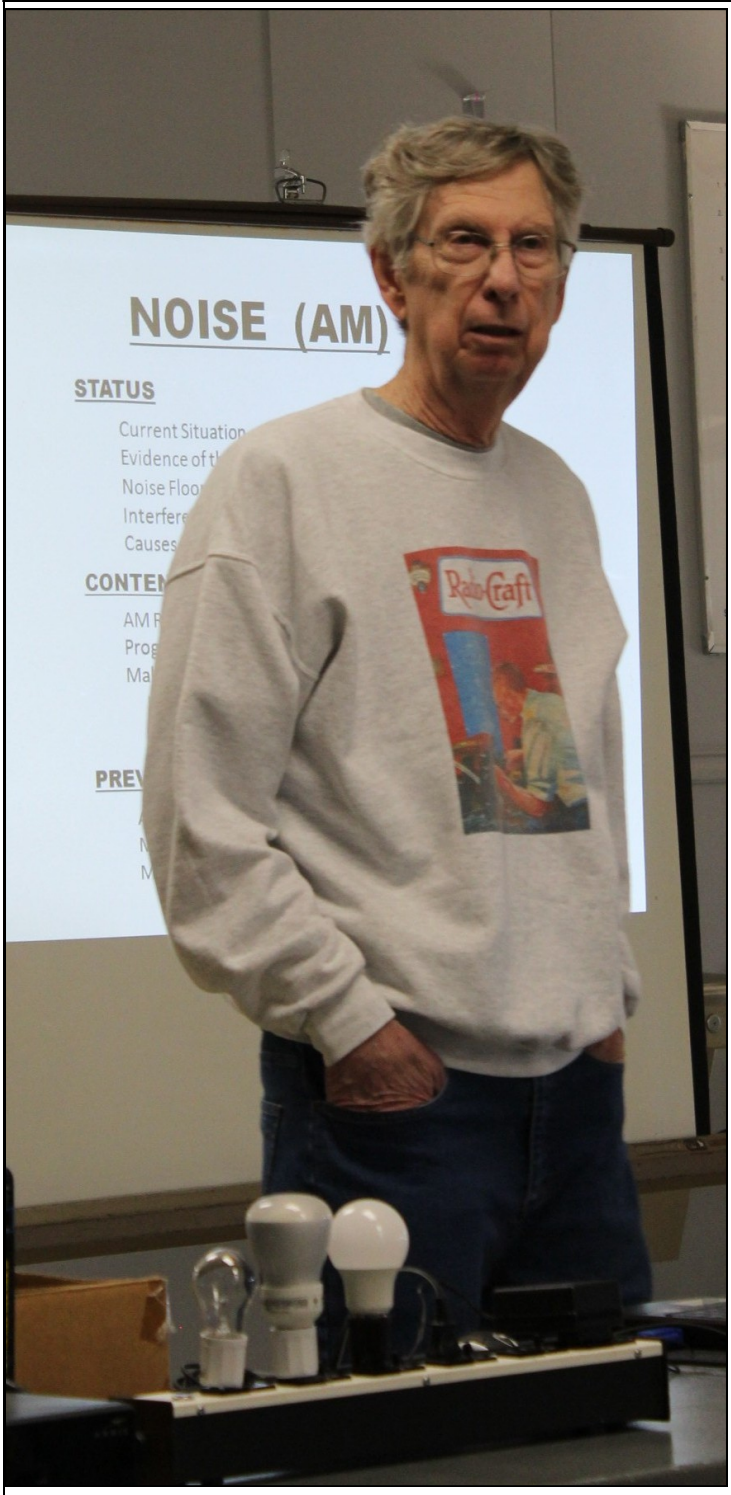
In the meantime, I hope you are making the best use of your "at home" time to restore one or two…or more radios in your collection. I personally use the winter months to repair my collectibles. So, therefore, you can look at the Covid-19 stay-at-home orders as an extension to your winter. I do believe this will all come to an end soon, but the pain is not over …not yet. Make the best of a tough situation, spend time with the family, and enjoy the hobby.

Now, what do we do with the rest of the year? When this ends, the whole country will be rushing really hard to get back to normal. Normal to me looks like summer is on the way. After being cooped up indoors and limited to trips to the grocery and big box stores for two months, we will all be looking for a change. Consider attending one of the other radio conventions. There are several throughout the nation. One that my wife and I always attend is the Radiofest in a Chicago suburb. Radiofest is the 1st weekend of August. This is a large meet with all of trimmings - auction, flea market, display, etc.

The annual Antique Wireless Association radio convention is usually a few weeks after Radiofest. This is another great meet with a tremendous history of about 50 years. I hate for anyone to miss our regular monthly meetings, but I would surely give a pass to someone attending one of these or any other radio meet around this beautiful country.

Good hunting and stay safe.

--Jim



Notes from the January 18, 2020 Meeting

Mike Grimes presented his "slide-show" on the topic of AM radio and its "enemies". He first discussed the chatter about a possible elimination of AM radio or a rule that may require simultaneous, broadcasting of both standard AM and digital AM (some stations already do). As time has gone on, the noise floor has grown from 10 db to 40 db, and the regulations for radiated noise have been largely ignored. There will likely be push-back from groups that are using AM radio for religious, ethnic and foreign-language broadcasting. Mike had put together a number of items to demonstrate that there are many sources creating interference, both magnetic and electrostatic. He demonstrated how a portable transistor radio can be used to detect radiated interference by bringing a radio near a number of his samples. They included CFL and LED light bulbs, a laptop computer and even a flashlight.

These devices require a built-in power supply, which is invariably a "switcher" type, to make it compact. In these devices the provisions for keeping radiated noise down are minimal, at best. There are two main drivers for using the "switcher" design – they reduce cost, weight and size. They eliminate the need for a 60 Hz transformer. But these designs uses high-frequency switching – which creates a large number and variety of harmonics. Other noise sources are natural, such as lightning. Also, power-lines produce corona, electrostatic and magnetic fields. To help us combat these noise sources, Mike talked about AM stations and how to avoid noise more effectively. He showed us the results of a website "Station-Locator". This site lets you perform a search for AM and FM stations within reach of your location's zip-code. You can get information as to station locations, distance, power and maps of their radiation patterns, letting you determine the possibility of your listening to a given station. To improve your chances, Mike pointed out the advantage of a tuned-loop antenna because of its use of the magnetic field of the station. It is much less sensitive to most noise sources and is very directionally sensitive. If you want to hear programming or music on your vintage radio, using only its audio circuits, you can avoid the noise problem.

Mike showed circuit diagrams for a number of ways to inject audio signals directly into a radio, giving examples of different radio circuits and how to connect into them. This generally requires the addition of a jack on the back of the radio. You can use a CD player, FM radio, a cell-phone, laptop computer or any source of audio at about 1 volt

peak-to-peak level. With AC/DC radios it is important to use an isolation transformer to prevent an unsafe shock hazard. Mike's slides showed circuits using a small transformer available from Mouser Electronics. It is a Triad part no. TY-142P. He demonstrated a working setup playing streaming music from his cell-phone. Finally, you can avoid modifying your vintage radio by building or purchasing a low-power AM transmitter to create a signal from almost any audio source. There are plans and complete devices available. Mike showed his Knight Kit version.

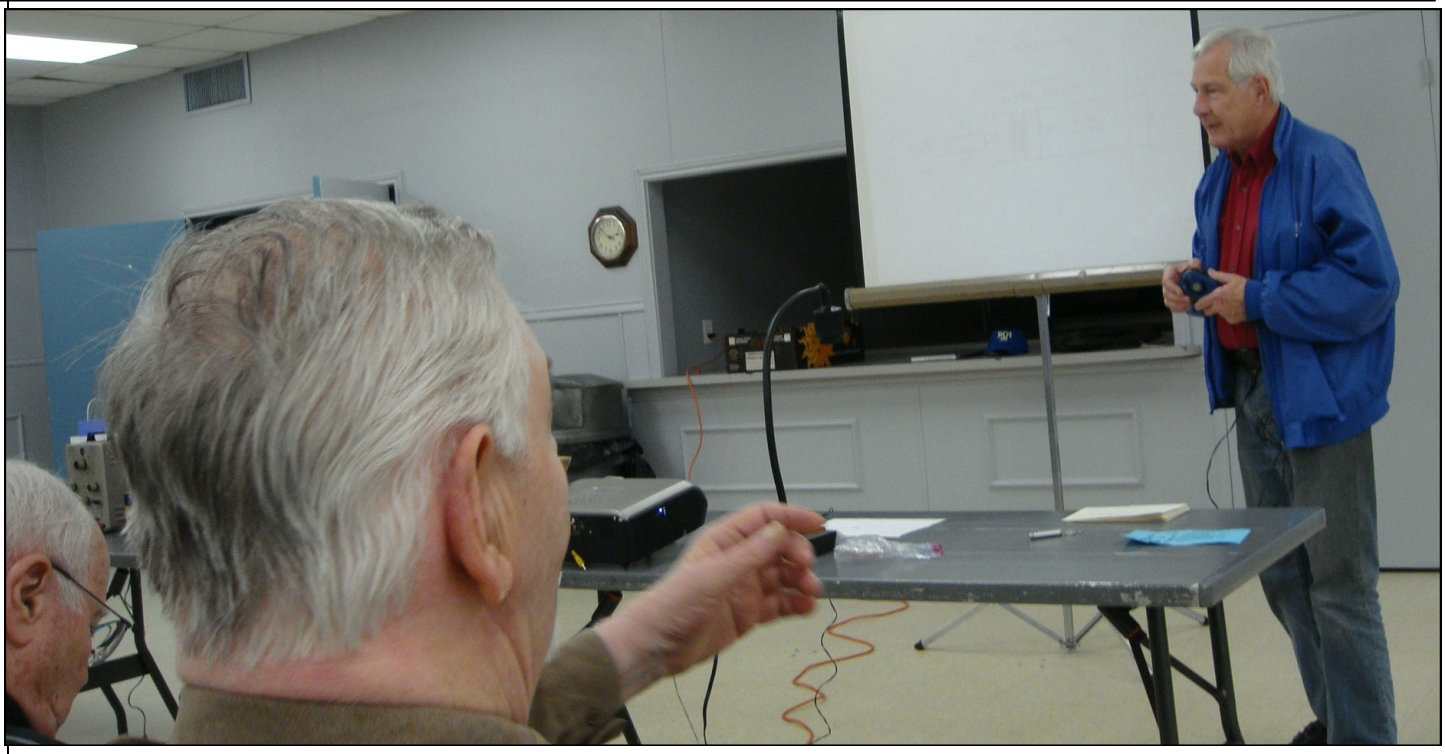
You can review Mike's slide show "AM Radio Noise" on the VRPS club website in the "Technical Info" location.

Author's Note: A loop antenna works well with a transistor radio because of the ferrite rod antenna inside. For older radios having antenna and ground connections, you can add a single-turn pickup-loop to the loop antenna and connect it to the radio terminals. The website mtmscientific.com discusses the process for making one and shows an example. For AC/DC radios provide good insulation on your pickup loop and its connections, to avoid a shock hazard.

Bill McKeown

Notes from the February 22, 2020 Meeting

Program Director Lindsey Lindsey turned our Tricks of the Trade meeting over to our first presenter, Mike Grimes. Mike , with reference to his January program on AM noise, added more discussion on the topic. He emphasized the importance of safety in making the interface to an AC/DC radio. He demonstrated a Truetone (Belmont) radio that he had modified to include an audio jack at its rear and - installed inside the radio - a signal isolation transformer – a Triad TY-142P (available from Mouser Electronics). He showed the circuit details and how the transformer is connected to boost the voltage level to one providing adequate volume when using a low power audio source (such as an I-phone or ear-bud jack). With a shielded wire connected directly from the transformer to the top and bottom of the volume control, he found that there is no need to use a switch to eliminate program material coming from the earlier stages of the radio. A switch may be needed to allow the radio to be used as a receiver. For stereo sources, the left and right signals can be combined together with two resistors (about 1K each) into the transformer. (The "Noise" Tech Session on the club website shows schematics for the connections.) Mike reminded us that all of the SoundWaves, starting with 2007, have been scanned in and made available on our website. Mike McCarty has created an index to all of the technical articles contained in SoundWaves issues. The index can be accessed on the Club-Newsletters feature on the club website.



Roland Gooch showed a handy combination work light and phonograph turntable strobe light. It's made from a Harbor Freight "freeby" LED light and a 5 volt AC "wall-wart". The batteries are removed & replaced with a diode bridge and current limiting resistor to give about 4.5 volts pulsating DC to the LEDs. Flash rate is 120 Hz, naturally. It works fine for a turntable RPM-checking disk, and is quite bright as a work light.

Tim Henry discussed direct-replacement LED bulbs. He displayed a number of types of so-called direct replacement lamps for older types, such as the no. 47 commonly found in AC/DC radios (sometimes in AC sets). One source for these lamps has a website at titanpinball.com. They offer many configurations of lamp – primarily tailored to pinball machine applications. They offer a 6 volt lamp that can directly replace the no. 47. They have it in both clear glass and frosted glass versions. The frosted version produces a more diffused light, so it is more compatible with illuminating radio dials, and it also has a warmer light-color that is more like an incandescent lamp. Tim demonstrated several types of lamp to the group. There was some discussion about the lamp current being too low to match the no. 47 in AC/DC radios which often use a tap from the 35Z5 tube. A 51 ohm, 2 watt resistor in parallel with the lamp will provide a path for the additional current needed to protect the tube filament.

Dave Seymour showed us a fixture he made to help getting grill cloth stretched evenly and glued to a grill frame of some kind. First you take a board and cut a series of fairly deep slots in a square pattern suitable for the size you need for your cloth. The slots are cut by setting the depth-of-cut adjustment on a table saw or circular saw to about ¼ inch. Stretch the cloth and stuff it evenly into the slots along with a suitable insulated wire, rubber webbing or something that will keep the cloth tight, depending on the width of the slots that you have made. Then apply a thick glue to the cloth, making sure it doesn't wick into the grill opening areas; place the cardboard or wood frame in place; cover the assembly with waxed paper and put a weighted board over it. Allow it to dry. (The waxed paper makes sure that the weighted board is not glued to your frame). Mike McCarty offered that a spray-adhesive works, also. You can cut many sets of slots in your fixture, so that you can use it again for other grill cloth projects. Dave showed us a box that can be used to reduce line voltage to a level more compatible with what early radios were designed for (100 vs. 120 volts). He had installed a 12.6 volt filament transformer in the box, with an outlet and line cord provided. The transformer is connected to buck the line voltage by connecting it out-of-phase in series with the hot side of the line cord. He also displayed a "universal" power supply with 22-1/2, 45 and 90 volts output.

Dave then demonstrated an useful way to use a Heathkit condenser tester, besides its normal use to check

capacitors. He demonstrated measuring the turns-ratio of a transformer (2.4/1 for his sample). Another application was suggested by Mike McCarty – checking the insulation between power transformer windings for safety reasons.

Larry Lindsey showed "tricks-of-the-trade" examples for making use of various objects and materials: Save those strong microwave oven magnets so they can be used to hold down many tools and objects; shrink tubing is good for holding a chuck key on a line cord; beautiful radio speaker grills can be had using CNC ; (available as a service by some sources); rust can be completely removed with a DC power supply or battery charger (plus some baking soda and a couple of electrodes). He also mentioned that we can re-pressurize spray paint cans with a small nozzle and air compressor.

Bill McKeown

2020 VRPS Convention Theme -- 100 YEARS of Broadcasting.

Contest Categories are:

1. Crystal Receivers Pre 1940
2. One Tube Radios Pre 1928 (No Crystal Detectors)
3. AC Table Receivers Pre WWII
4. AC/DC Tube Radios Pre 1960
5. Transistor Radios Pre 1965
6. Phonographs and Related Accessories Pre 1940
7. Radios from Western Radio in Kearney Nebraska
8. Tube Type Ham Radio or Military Equipment Pre 1960
9. Novelty Radios-Tube or Transistor
10. Radio Related Ads, Ephemera, and Accessories
11. Television Receivers Pre 1970
12. Table Top Art Deco Radios (Includes Catalin, Chrome Front, Others)
13. Battery Radios Pre 1928
14. Foreign Radios
15. Homebrew Radios Pre 1930
16. Kit Radios Pre 1930
17. Contest Theme- 100 Years of Broadcasting (Any Items Pertaining to History of Broadcasting)
18. Open Category (Radio Related Items Not Belonging In Other Categories)

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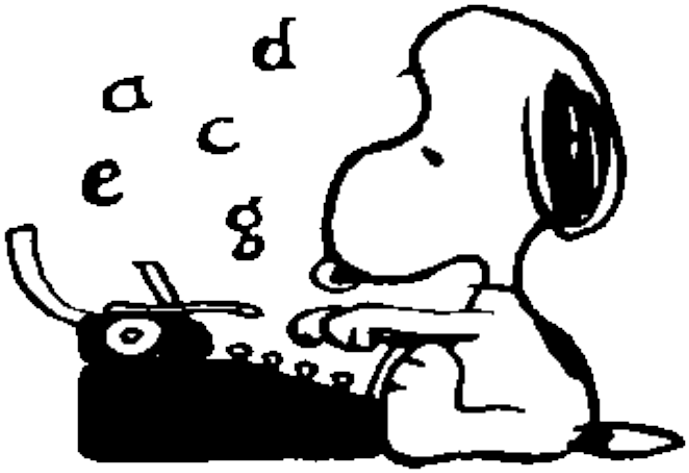
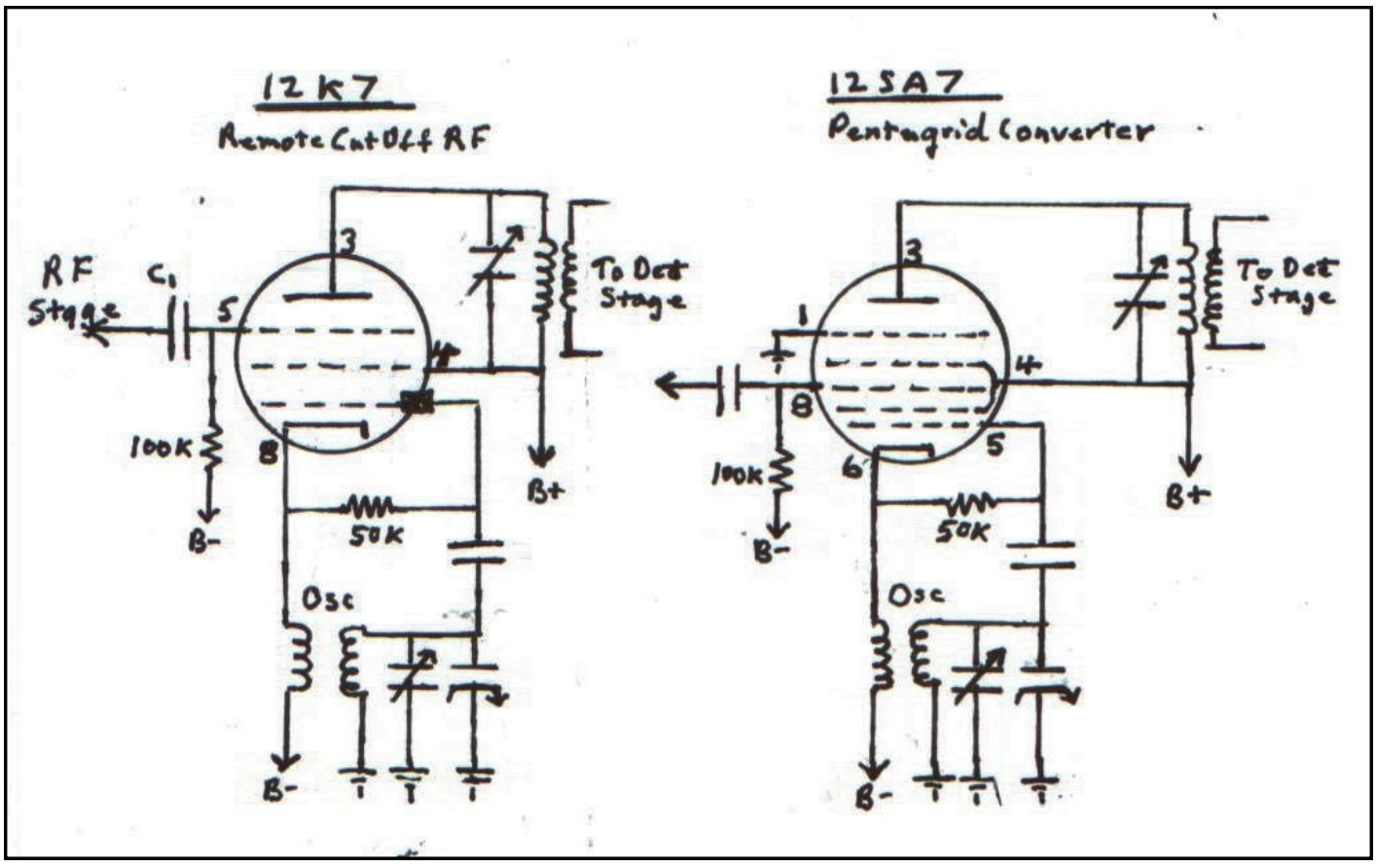


Mother of Invention
by Mike Grimes

It was a dark and stormy night with nothing worthwhile on TV; I began looking for my next project. Having been given a radio by my sister, I felt compelled to see if it could reasonably be restored. It is a rather plain Truetone (Western Auto) AC/DC model D1011 brown bakelite with six push buttons.

Examination showed the radio to be in pretty good shape: no cracks or minor scratches in the cabinet; the chassis had some minor corrosion, but was very dirty. Prior minor repair was evident.

After removing the tubes and doing some major cleaning, I set about making a routine check of the major components (speaker, transformers, etc.), all of which were OK. Preliminary tests indicated a need to replace many of the "dog bone" resistors and about nine paper caps plus electrolytics, about one night's work. With confidence I could put it back in operating condition in quick order, I proceeded to do the recap work. Resistors followed, testing one at a time. All of the resistors appeared to be out of spec and were systematically replaced. As is my method, I like to identify parts' locations and values on the schematic before replacement. All was going well as I closed in on the finishing work when the chassis wiring did not match the schematic. Bummer! (I hate it when that happens.)



This was in the oscillator section associated with the converter tube. The problem surrounded the 12SA7 pentagrid converter tube. The pins' wiring and components did not match the schematic. This did not make sense. I searched for possible reasons. I thought that perhaps I had read the tube layout wrong, but the tube numbers were stamped on the chassis. 12SA7 was correct. Let's look at the uninstalled tubes. All were accounted for except for the 12SA7. There was a 12K7. The 12K7 is an RF remote cut off amplifier with a grid cap, which could not be the correct tube. However, a grid cap lead dangled above the tube socket. Upon close examination, the conclusion became clear. Adding a grid cap lead, someone had substituted a 12K7 for the converter tube, 12SA7. Tracing the wiring verified the changes (see diagram previous page).

The cathode (K, pin 8) was conserved on the 12K7 but the control grid (G1, grid cap) was connected as the oscillator grid. The entire oscillator circuit was conserved with no change except with respect to the pins of the 12K7 (see diagram). The "converter tube" 12K7 was now capacitance coupled to the preceding RF stage through capacitor C1 to the suppressor grid (G3, pin 5). The plate (P, pin 3) was connected to the IF transformer primary as was the screen grid (G2, pin 4). Very clever, but would it work?

I finished with the recap/resistor work and tubed up the radio as found. Powering up the radio, I found that it did indeed perform well; only the sensitivity seemed compromised! I think I will keep it "as is" and preserve its history with a note to the next technician who ventures into the radio.

So, you never know what you will find restoring vintage radios! Now, why was this substitution made by the repair technician? Curious, I speculated with a theory and I looked up the manufacture date of this Truetone which turned out to be circa 1939. OK, just before WWII. Perhaps the "repair" had been done during WWII. Repair of home radios was not a priority and parts were scarce during the war. Perhaps the repair took place during WWII and the technician used what was available, a 12K7, when a 12SA7 was not available. He modified the wiring, added a grid cap and "voila <add grave accent>", a working radio. Necessity is truly the "Mother of Invention". Some time back in the "Sound Waves", Mike McCarty recalled a conversation with a repair technician. He had a surplus of a single type of tube that was used to replace any defective tube, no matter which tube was bad. This was during WWII.

Side Note: While looking up the Truetone D1011 in Nostalgiaair.org, the incorrect schematic was referred, Page 14-3. This was not for the D1011. I looked up the D1011 in the Rider's Master Index (hard copy) and it referred to page 14-4. This is the correct schematic. I tried several approaches to Nostalgiaair but could not get the correct page. This shows the value of having a set of Rider's and Master Index on hand and that Nostalgiaair is not infallible, but still handy.

The California Historical Radio Society has an interesting page on 100 Years of Radio. Here's a link to the page: https://www.californiahistoricalradio.com/radio-history/100years/ The page also has a link to a five-part series The Emmy-Nominated 1985 PBS Series, "Radio Collector".

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SoundWaves

MONTHLY MEETING PROGRAMS 2020

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.

- **APRIL 18TH - CANCELLED**
- **MAY 9TH - SENTER EAST -8 AM -- NOON -- TAILGATE SWAP MEET (NOTE: 1ST SATURDAY)**
- **JUNE 20TH-- SENTER EAST - 1 PM SOCIAL 2 PM -- SHOW & TELL**

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 anytime or send an email:
Larry Lindsey email: pipilindsey@tx.rr.com telephone: 817-312-8761..

Membership dues of $20 are due November 1st every year. Renewals may be sent to the post office address given at the top of this page: **VRPS, INC., P.O. BOX 165345, IRVING, TX 75016**