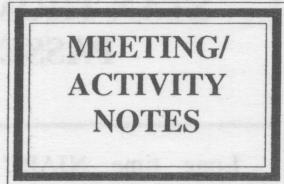


The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

JULY 2003

Volume 9 Issue 7

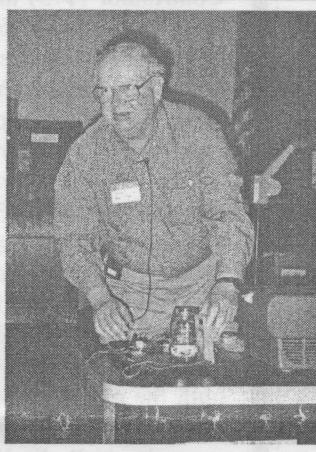


Reported by Marv Beeferman

Thanks to the Simkins for filling in at the last minute to get out the June issue; commitments at work made it impossible for your editor to even do a quick mailing. Hopefully, within the next few months, things will return to normal - the July 4th holiday and contributions by Scott Marshall and Dave Sica allowed things to go a little easier this month.

All things considered, our June 22nd swapmeet was very successful (see photos on page 6). We attracted well over 100 buyers and accommodated over 40 tables (even with three no-shows). We usually fill the Hazlet hall with some 50 tables, but the first pleasant Sunday after a string of rainy weekends might have attracted some stalwart collectors to other interests. A special thanks goes to Marsha and Jerry Simkin and Dave Snellman for taking care of purchasing and selling refreshments and to Al Klase and Richard Lee for handling the walk-around auction. We received a lot of compliments with regard to the orderly way that Marsha had arranged table assignments. Each pre-paid vendor received an envelope with ID badges (including one for a helper) and total payment. Vendors with reservations that did not pre-pay were required to pay before setting up. This saved a significant amount of work of collecting money during the meet.

We've had some excellent presentations at our meetings over the last two months. Nick Senker's "The Chemistry and Development of Batteries" traced the early development of something most of us take for granted and filled us in on their basic chem-



Robert Flory, in his Summer whites, and Nick Senker (he's the civilian) at our last two technical sessions.

Navy training film on laying out and fabricating electronic chassis. Robert also demonstrated the use of some basic metalworking tools seen in the film, some of which were handed down to him from his grandfather who did experimental and developmental work for RCA. This month's program will include a show-and-tell session as described in the *Broadcaster's MEETING NOTICE*.

Our Summer Radio Repair Clinic is scheduled for July 19th at the Sarnoff Library. Mentors are expected at 9 AM and

stry. Nick also described what makes the newer and smaller power houses tick. At the June meeting, Robert Flory dressed in his Summer whites to present a WW II

all others at 10 AM. This clinic will also be open to the general public with groups of three or four scheduled in three shifts. The clinic will also help kick off the library's **Innovarium** concept where NJARC members will present demonstrations and hands-on exhibits:

1. Radio broadcasting and reception by Al Klase and Joe Blanks with special presentations at 11 a.m. and 3 p.m.
2. A radio culture exhibit by Jerry and Marsha Simkin and an early radio exhibit by Marv Beeferman.
3. 45s and phonographs by Phil Vourtsis - shows why RCA switched from records made of slate powder and insect goo to plastic. Bring your own 78s and 45s.
4. Rob Flory will be contacting and listening for some of the 63 WW II ships preserved around the country via a radio made by RCA for the US Navy.
5. Scott Marshall will play and provide an introduction to the world's first electronic music synthesiser - the Theremin.
6. Alex Magoun and Dave Abramson explain TV with 3 channels, no remote, lots of knobs and small screens. Watch yourself on RCA's first color television, an antique from 1954, and Saturday Night Live's ancestor, the Buick Berle Hour, on RCA's 1948 set.

The David Sarnoff Library is working with the New Jersey Principals and Super-

THE JERSEY BROADCASTER is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$15 per year and meetings are held the second Friday of each month.

The Editor or NJARC is not liable for any other use of the contents of this publication.

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visors Association and the NJARC to develop an interactive learning center that will contain exhibits on David Sarnoff's role in leading the innovation of communications technologies. Also included will be modular displays on the history of the growth and use of those technologies and interactive workstations for classes in everything from history and science to engineering and leadership. NJARC members may help in this effort by joining the Friends of the David Sarnoff Library. In the words of Alex Magoun, the library's Executive Director (and NJARC member):

"Your annual membership will help maintain the Library's staff to organize, preserve and make available the (Sarnoff) collections as they join with other organizations and individuals in making the Library a dynamic center for innovation studies."

Memberships include Student/Senior (\$25), Individual (\$35), Family (\$50), Contributor (\$75) and Business (\$100). Your membership fee is partly tax deductible and includes a quarterly newsletter, discounts on photos and reproductions, free entrance to events and free use and tours of the Library. More information is available at www.davidsarnoff.org or by calling (609) 734-2636.

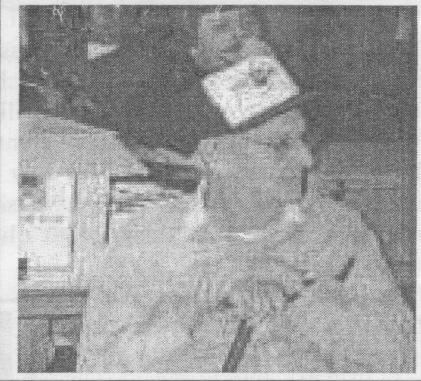
Fred Carl, InfoAge director for Camp Evans, is quite impressed with the progress being made in getting the cottage ready to receive the Broadcaster's Hall of Fame. Work parties have been restoring both the exterior and interior to get the cottage in at least a presentable condition to receive its Radio Hall of Fame artifacts and future guests. Updates on upcoming work days will be posted on the NJARC web site and the Reflector. Even if you can't participate directly, there is a lot that can be done at a distance. The club could really use some nice display cases and units; if you know of any that are available at a reasonable price (free is nice) or have a line on a major store going out of business, contact any one of your club officers. We might be able to make arrangements for pickup.

The next major club event will take place on Sunday, September 14th where the Delaware Valley Radio Association and NJARC will present a combined an-

tiue radio swapmeet, hamfest and computerfest. This is shaping up to be a fun event; all the details are presented in a flyer in this month's issue.

**STAN THOMPSON
PASSES**

Long time NJARC member Stan Thompson passed away on June 9. Born on Halloween in 1917, he was 85 years old.



Originally from Wilkes-Barre Pennsylvania, Stan moved to New Jersey in 1947. Stan lived with his son David in Avenel after his wife Katherine passed away two years ago. For much of his life Stan was an avid collector, but not of radios -- of old bottles! About 10 years ago, however, he became interested in collecting antique radios and had been an enthusiastic old radio fan ever since.

Like many of our members, Stan had a professional background in electronics. He retired from Eastern Airlines over twenty years ago after many years as a navigation equipment maintenance technician, and told wonderful stories about how emergency repairs on cockpit systems took him to the corners of the globe. Previously, he was employed with Hazard Wire Rope Mill of the American Chain and Cable Co. in Wilkes-Barre. He also worked as a forest guide in northern Pennsylvania. He served with the Army Signal Corps during World War II and was a member of the American Legion Post 5 in Rahway.

Among other career moves, Stan had his own radio show for a while in the 1930s and he was the proprietor of a radio

and television repair shop during the fifties. Active with the Boy Scouts, he was a troop leader and received the rank of Gold Palm Eagle. Other interests in which he was accomplished included oil painting, photography, and the guitar. Stan seemed to fit in several lifetimes of experiences into his 85 years!

Due to illness, Stan was unable to attend many meetings for the past two years, however his interest in the club never waned. This past May, for the first time in quite a while, he was feeling well enough to attend what turned out to be his last meeting; the club was honored to have the opportunity to share Stan's company before he left us.

Dave Sica

WHEN THE ORIGINAL COLOR TV SHOWS ONLY BLACK AND WHITE... Who You Gonna Call?

By Scott Marshall

For the 50 year anniversary celebration of the beginning of RCA's compatible color television, David Sarnoff Library Director Alex Magoun asked Thomson/RCA's picture tube plant in Lancaster, PA, if he could borrow their working CT100 set - RCA's first commercial color TV. Originally restored for the centenary of the cathode-ray tube in 1997, it gave a curiously bluish picture to my eyes but certainly showed a range of hues and saturations that suggested a mere tweak of the screen or drive controls could make it right.

For several months after the event, Alex ran it for visitors who were often quite amazed to see a working set of that age, and with a picture of such definition...until the day the color died.

In an instant, during a demonstration for visitors, the color picture turned into a murky blue-green. Because the screens and drives and convergence were way out of whack, the picture seemed to be vaguely in color. One could make out green and blue shading and edges, but there were no warm colors at all, leading some to conclude that the red electron gun in this virtually irreplaceable picture tube had failed. But ad-

justing the drives and convergence, it was clear that this color TV could only show pictures in Black and White.

Now, there is no use in demonstrating a historic color TV that shows only B&W pictures. When an important event came close, Alex asked me to come by and see what I could do.

I proceeded with great caution on this set because it is such an important historical artifact, is quite rare to find in working condition, and neither I nor the Library were the owners. A slip of a test lead could cause more damage, which would have been a very bad thing to do.

The first step was to attempt a normal picture using the front panel controls, which included the screen and drive settings (bias and amplitude) for each of the primary colors. Normalizing these and setting the convergence resulted in a black-and-white picture, but no settings of the fine-tuning or the color control made any color appear.

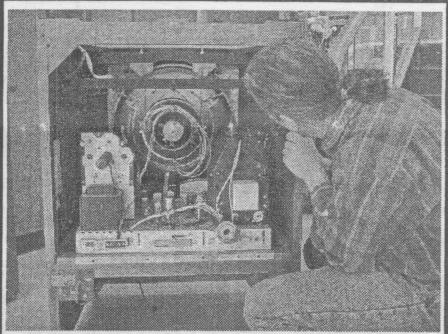
Since there was only one day to do the job, I economized my effort by attempting to diagnose the circuit without pulling the chassis. This was possible because a metal screen under the chassis shelf could be removed and nearly all the circuitry could be accessed, by climbing under the set like an auto mechanic on a dolly. Then, after each reconnection of the scope probe, I had to shimmy out to look at the scope trace. It came out to about five minutes between each test point. This set never had a complete recap. Most of the old paper capacitors were still in the circuit, so skepticism about their condition was well justified.

It appeared that the local chroma oscillator was not synching up to the incoming signal. The correcting voltage read as a sawtooth at horizontal frequency. This would have prevented phase lock and caused Harry Kihn's color killer circuit to prevent any color from reaching the screen. A discussion with color TV veterans at Sarnoff Corporation led to the theory that the chroma oscillator crystal had gone bad. They had a drawer of them and gave me a new one. The replacement had no effect. Testing and swapping all the tubes in the chroma circuit yielded no improvement. By the end of the day, no progress had been made and I abandoned the effort. The set was not demonstrated for the event.

Several days later, I came back for another round of wrestling with the set, but

this time there was no time pressure, and no holds would be barred. The chassis would come out.

Chassis removal on the CT100 was unexpectedly easy. Remove all knobs, plugs to the speaker, CRT, and deflection yoke, pull out the bolts, and out it came. A gigantic chassis, and therefore easy to work on. I also had an advantage I hadn't before - the SAMS PHOTOFACt manual with its resistance measurement charts. Now I could search for anomalies without powering up the set.



Chassis ready for removal - knobs, bolts and connectors removed.

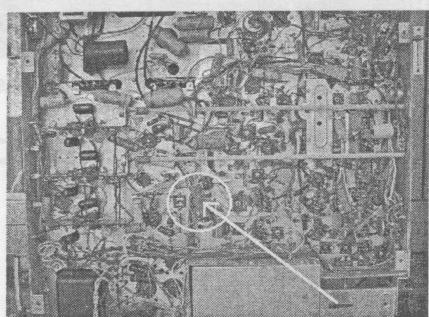


Top panel removes for access to picture tube connections.

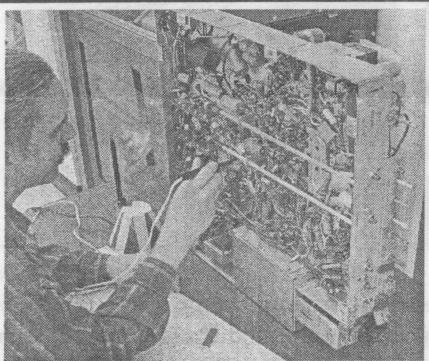
I followed the path of the color signal, starting with the chroma amplifier. My probe was a Radio Shack digital multimeter in a pen-sized package I could hold in my hand and poke at the tube sockets - excellent for such tests. A few resistors DID turn up out of spec (more than 20% off). In sensitive circuits like the chroma oscillator phase-lock loop, this could cause a problem. Sarnoff's parts department is still reasonably stocked in vintage 1/2-watt resistors, many probably from the 1940's. I checked them before installation, since

these tend to drift with age even when unused.

A reading came up that was way off at the I and Q demodulator tubes, and I mean WAY off. These 6BY6's look just like the pentagrid converters in the AA5 radio input stages. The second grid actually doubles as a "leaky" plate, which passes on the chroma signal to a subsequent grid mixing it with the two phases of the local chroma oscillator and demodulating the resulting color information. The second grid of these two tubes were supposed to be connected to B+ through a shared 12.5 K ten watt power resistor, but read infinity to B+. This resistor, which looked perfectly normal with no sign of overheating, was completely open. The effect of this resistor being open would be a perfect B&W picture. The stock room did not have a 10-watt 12.5K resistor, but a pair of 5-watt 25K resistors in parallel made a perfect replacement.



Only about ten million components to test. The defective resistor is as indicated.



Soldering in the new resistors in the I and Q demodulator circuits. The defective resistor is lying on the schematic.

I finished the resistance tests in the chroma signal path, and with complete confidence reinstalled it and turned it on. Eureka! NBC was again a wonderland of

color. After adjusting every front-panel control for the best reproduction I could get without the help of a color-bar signal generator, I buttoned it up and declared it fixed.

There are some remaining issues to visit in the future if we decide to guild this beastly lily. Fine tuning is a bit touchy: turn one way and the sound makes wiggly herringbone patterns over the picture; turn the other and the picture fades to B&W. Convergence could be better. If the screen is driven too hard, high voltage gets wacky and the picture blurs and tears. With the bright lighting in the museum, coupled with the tendency of the set to become more likely to do this as it warms up, it makes this a disturbing symptom that could spoil a demo for visiting VIP's and excited families. It will have to wait for another day.

In the meantime, the color rendition is probably better now than it has been since the set arrived in 2001 from Lancaster, and it has impressed two NJARC meeting groups since it was fixed. Come see it at the next meeting!

May it live long and prosper!

PHILCO'S "SPECIAL" CAPACITOR

Edited by Marv Beeferman

The material for this article is edited from Rider's "How it Works and Complete Index" for Volumes XVI and XVII (1948)...Ed

In many ac-dc receivers, the B-minus bus was kept above ground by the methods illustrated schematically in Fig. 1 (see page 5 for figures). In the case of example C, besides producing a return path from B-minus to ground, the series capacitor and inductance were usually made resonant somewhere around the i. f. of the set. Therefore, this L-C combination presented a ready path to ground for any stray i-f currents that may find their way into the B-minus lead and thus prevented i-f feedback to circuits connected to common B-

minus line.

This inductance-capacitance combination, in most instances, represented a somewhat crude resonant circuit since it did not present the sharp response curve provided by the i-f transformers or i-f traps in the r-f sections. However, its purpose as an i-f trap in the B-minus circuit was adequately served and it appears in many table model ac-dc radios. It generally consists of a capacitor of about 0.2 mfd and around or near it is usually wound some simple connecting wire of enough inductance to make it resonant at the i.f.

One disadvantage of such an arrangement is that the coil of wire may become loose or disconnected from its original location and may be mistaken for a lead elsewhere in the receiver. This is especially likely when the circuit diagram of the receiver does not exactly identify the coil, and it appears only as seen schematically by L in Fig. 1 (C).

To overcome the use of a separate coil and retain the advantageous feature of an i-f wave trap, the Philco Model 48-214, for example, uses what is called a "special capacitor." The unit appears as a normal paper capacitor (Rider's Vol. XVII, page 17-11, 12) but is marked ".2 MFD.400 V.D.C.Special." The capacitor essentially consists of two sheets of tinfoil as in most capacitors. But the fact that the tinfoil itself is a metallic substance and possesses its own self-inductance makes it possible, by special attachment of the pigtails, to use the capacitor as an i-f wave trap.

Every paper capacitor that uses tinfoil or some similar metallic substance for the effective capacitor plates represents a series inductive-capacitive circuit which is resonant at some frequency determined by the values of each component. Referencing Figure 2, coil L1 represents the inductance of the outside foil, capacitor C represents the effective capacitance between the two foil plates and coil L2 represents the inductance of the inside foil. Now, if we can fix the total value of inductance and keep the capacitance constant, we have a ready means of making the circuit resonant to a desired frequency.

This is exactly what is accomplished by the Philco "special" capacitor. Note the design shown in Figure 3 where the pigtail connection to the outside foil has been moved down 2/3 the length of the foil. Under this division, inductance La equals 1/3 of the total inductance of L1 and Lb

equals 2/3 of the total inductance. By tracing the circuit path, L_a and L_b can be represented schematically by two coils in parallel. This tap has been specifically chosen so that the parallel combination of L_a and L_b will offer a lower inductance than L_1 . By this method of lowering the inductance, the resonant frequency of the series circuit is increased.

The capacitance C has not changed because no matter where the pigtails are connected along either foil, the factors determining capacitance (foil area and distance and insulator's dielectric constant) has not changed. The inductance of the inside foil has not changed since its pigtails have not been relocated.

Since two inductors in parallel are like two resistors in parallel:

$$\frac{1}{3}L_1 \times \frac{2}{3}L_1 \text{ divided by:}$$

$$\frac{1}{3}L_1 + \frac{2}{3}L_1 \text{ equals:}$$

$$\frac{2}{9}L_1$$

This tells us that when the pigtail tap on the outside foil is situated such that L_b is equal to twice L_a , the total inductance offered by the outside foil to the series circuit is equal to 2/9 of its total self-inductance. The total value of the inductance of the "special" capacitor in conjunction with its 0.2 mfd capacitance is designed so that it will be broadly resonant at 455 kHz. At this frequency, the total value of series inductance

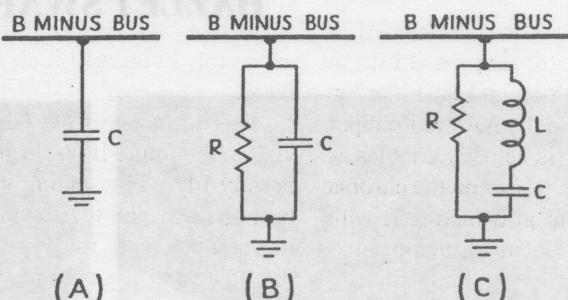


FIG. 1.—Three methods of keeping most of the units of ac-dc receivers above ground: (A) use of a capacitor, about 0.2. μ f, (B) addition of a high-valued resistor to shunt a similar capacitor, (C) use of a resistor shunted by a series network of a capacitor and coil.

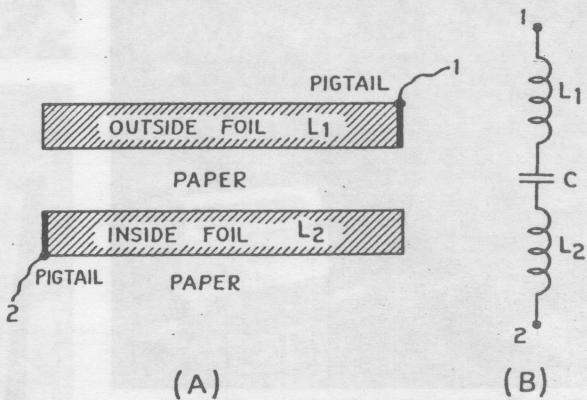
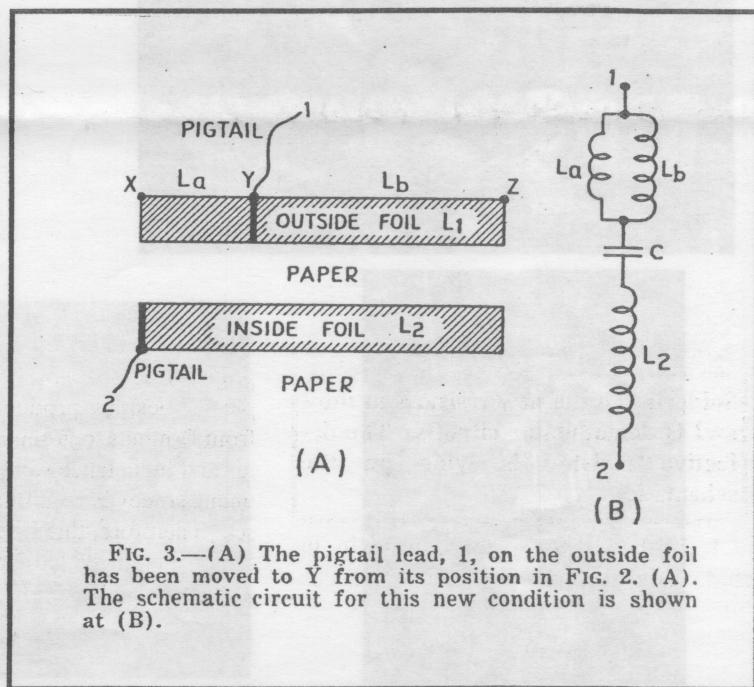
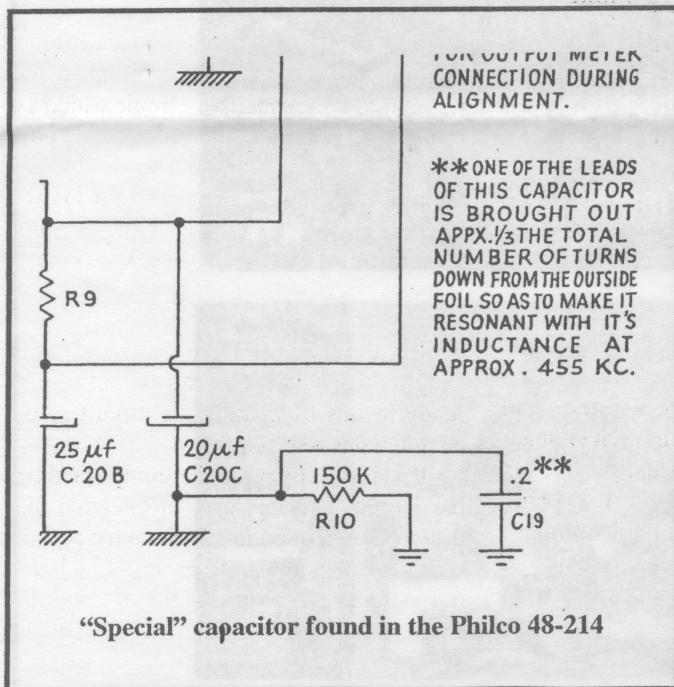
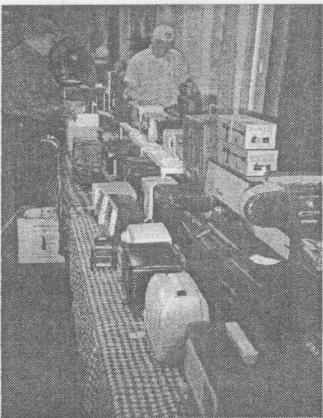
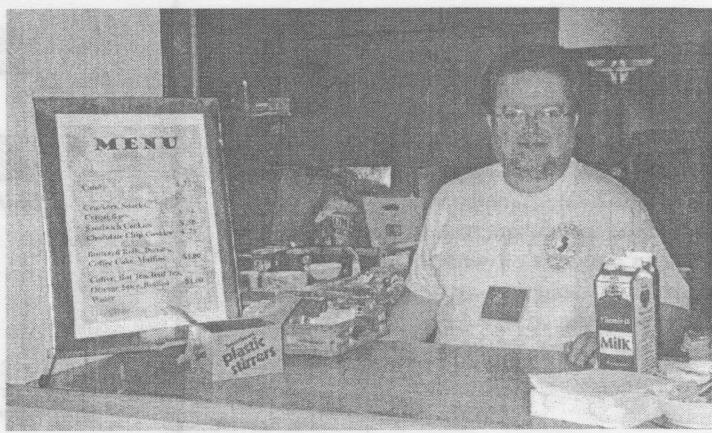
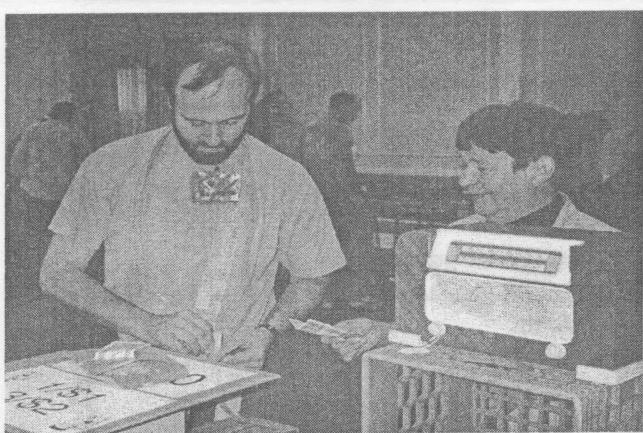
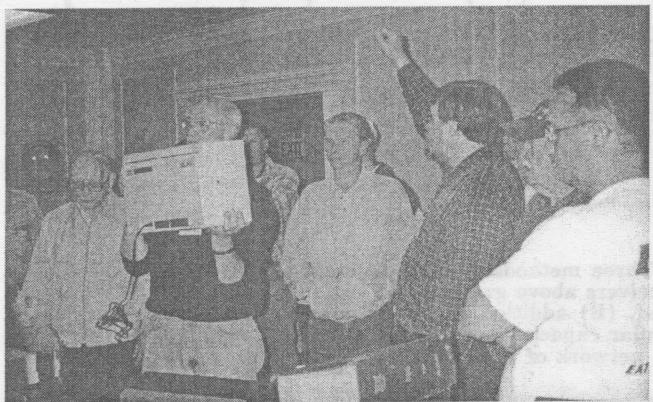


FIG. 2.—Unwound, the tinfoil plates of a typical capacitor appear as in (A). The circuit representing the capacitor appears in (B).



HAZLET SWAPMEET



NEW JERSEY ANTIQUE RADIO CLUB
DELAWARE VALLEY RADIO
ASSOCIATION



ANTIQUITY RADIO SWAPMEET
HAMFEST/COMPUTERFEST
FLEAMARKET

SUNDAY, SEPTEMBER 14, 8:00 AM*

NATIONAL GUARD ARMORY, LAWRENCEVILLE NJ

*Open to sellers at 6:00 AM

Tailgate: \$10.00 (includes 1 admission).

Indoor next to wall (w/electricity): \$20.00 (includes 1 admission). Indoor vendors will need to supply their own table not to exceed 10 feet in length.

Extra indoor space: \$10.00

- Admission: \$6.00 (free for children under 12 years old) - free parking
- Refreshments available
- ARRL
- Talk-in on 146.67 W2ZQ
- Door prizes
- Special attractions: John Dilk's (editor of the Old Radio column in QST) Mobile Radio Museum - Jim Millner (WB2REM) talks about ECHOLINK boards.

ADVANCE REGISTRATION: Mail your check to DVRA, PO Box 7024, West Trenton, NJ 06628 or NJARC, Marv Beeferman, 2265 Emeralda Park Drive, Forked River, NJ 08731

CONTACTS: Glenn Costello, N2RPM, abbot0903@hotmail.com, (609) 822-2240

Marv Beeferman, mbeeferman@cs.com, (609) 693-9430

Phil Vourtsis, pvourtsis@att.com, (732) 446-2427

HOW TO GET THERE? IT'S EASY - YOU DON'T EVEN
NEED A MAP!

Take exit 7 (Route 206 South/Rider University) off I-95. Drive about 1.5 miles and make a right at Eggert Crossing Road - the Armory is on the left.

151 Eggert Crossing Road
Lawrenceville, NJ

CONNECTIONS



Free exposure for buyers and sellers! Unless requested otherwise, each ad will run for two months in both the *Jersey Broadcaster* and the *Delaware Valley Oscillator*. All buying and selling transactions are the responsibility of the parties involved.

FOR SALE

Check out NJARC's capacitor program for those most commonly needed replacements. Contact John Ruccolo at any club meeting or call him at home (609)-426-4568 to find out what's available. All proceeds go to the club.

Nice working consoles. All cabinets are nice and clean! Atwater Kent Model 74 lowboy - \$200. Grunow model 1151 - \$200. RCA 810-K (good eye tube) - \$225. Zenith 8S-463, black dial, good eye tube, wave magnet - \$250. Contact Joe Murphy at (856)-228-0585

The NJARC tube program offers clean, tested, boxed tubes at very reasonable prices with availability at any club meeting (no dealers, please...not for resale). Proceeds go to the club. Of course, donations of radio-type tubes in any condition are welcome. See Gary D'Amico at the next meeting.

Scott 1938 Philharmonic receiver (factory rebuilt in 1946). 12" speaker in custom wood case. Main tuner has 22-23 tubes w/dial & 6 knobs and escutcheons. Power amplifier has 6 tubes. Components NOT in a cabinet. Chrome in good condition including tube covers. Asking \$500, pick up only. Located in western Suffolk Co., LI, NY., pwindesh@suffolk.lib.ny.us

Seven complete volumes (volumes 2 to volume 8) of the *Jersey Broadcaster*...except issue 12 (in Vol 2) and issue 11 (in Vol 5) which are missing. Includes misc. issues of Vol 1, issue 1 and issue 3. Also includes 6 issues of *New Jersey Antique Radio Club News*, Vol 1, #2 and #4/Vol 2, #1 and #2/Vol 3, #1 and Vol 4, #1. Best offer (by April 30) over \$20.00. Contact Harry Kundrat at (908)-665-1873.

Crosley "Playtime" grandfather clock radio (without chassis); original clock and speaker - \$150. Philco 39-116 chassis, clean, needs grill cloth, with remote control - \$175. Howard W. Herring, Ringoes NJ, 08551, 908-782-5530.

Bob Pilcher notified the club that a friend of his came across an AK 55-C in a Kiel cabinet in excellent to near mint shape. He thought someone in the club might be interested for a price of at least \$250. Contact Bob Pilcher at RPilc99206@aol.com.

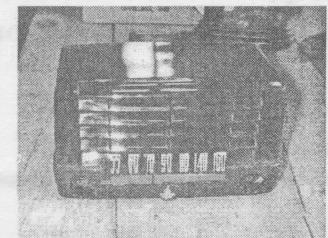
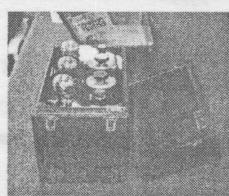
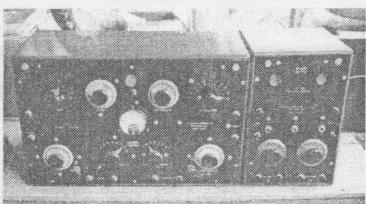
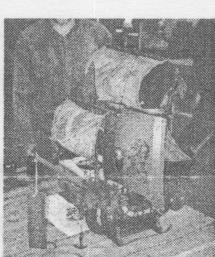
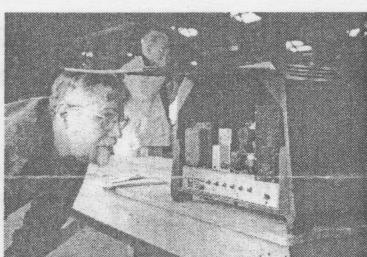
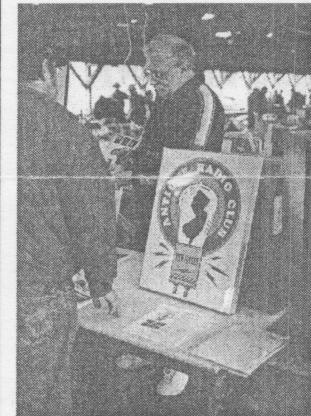
RCA Victor console, model V205 (1941) radio/phono, Premier tabletop wood model, 4283 radio/phono. Joan, 732-521-1963.

WANTED

EICO 324 signal generator and RF probe. Tony Galella, (201)-823-0116, tgalella@att.net.

Magnavox Sportsman model AW-24, all wave, 7 transistor, 2-band portable, in good condition and working. Joe Bentrovato, 84 E. Munson Ave., Dover, NJ 07801. (973) 361-7392 JBentrovat@msn.com

"Radio in the Home" magazine, December 1925. Other issues also considered. Also looking for Sparton radio ads from 1928-1929 Liberty magazines. John Okolowicz, 624 Cedar Hill Rd., Ambler, PA 19002, john@grillecloth.com



Many NJARC members were in attendance at the DVHRA's Kutztown swapmeet and auction and had a great time. Here are a few shots of some of the activity and what attracted my attention.