



# New Jersey Antique Radio Club News

---

Volume 2

Autumn 1994

Number 2

---



---

## In this issue:

- Radio Products Co.
- Aliens' Radios.
- Radio Makers of NJ
- Zenith Loop
- Collecting Insulators
- Ads & Meet News

The New Jersey Antique Radio Club *News* is published quarterly, on a volunteer basis, by and for members of the New Jersey Antique Radio Club. It is distributed by mail to club members. NJARC can not be responsible for transactions between buyers and sellers advertising in the newsletter.

**Dues and address changes:** Kathleen Flanagan, Secretary, 92 Joysan Terrace, Freehold, NJ 07728, (908) 462-6638. Make check payable to NJARC. Dues: \$10 per year (includes NJARC News); \$15 per year beginning in 1995. A one-dollar donation is collected at each meeting to help offset the cost of the meeting space rental.

**Newsletter Articles, Classified Ads:** David Sica, Newsletter Editor, 1459 St. Georges Avenue, Rahway, NJ 07065 (908) 382-0618.

**Swapmeet:** Marv Beeferman, 2265 Emerald Park Drive, Forked River NJ 08731. (609) 693-9430.

**Official Business:** Tony Flanagan, President, 92 Joysan Terrace, Freehold, NJ 07728, (908) 462-6638

#### **Officers**

**President:** Charles A. "Tony" Flanagan, Jr. (908) 462-6638

**Vice President:** Michael Hammer (908) 255-7865

**Secretary/Treasurer:** Kathleen Flanagan (908) 462-6638

**Technical Coordinator:** Thomas Provost (609) 259-7634

**Sergeant-at-Arms/Steward:** Marv Beeferman (609) 693-9430

**Newsletter Editor:** David Sica (908) 382-0618 (Ludwell Sibley [908] 782-4894, guest editor for this issue)

**Trustees:** Mark Mittleman, Ludwell Sibley

#### **Calendar of Events**

##### **November**

- 5 NJARC Fall Swapmeet/Auction
- 11 NJARC monthly meeting
- 13 DVHRC Swapmeet, Buckingham

##### **December**

- 9 NJARC monthly meeting

##### **January**

- 13 NJARC monthly meeting

#### **MEMBERSHIP BENEFITS**

- Monthly Meetings
- Technical Seminars
- Swap Meets
- NJARC News
- Free Buy/Sell Classified Ads
- Tube Program
- Tube Testing
- Informal Networking with local collectors.

**Monthly Meetings.** Collectors in the New Jersey have an opportunity to get together with other collectors on a regular basis to keep abreast on what's happening in the field.

**Technical Seminars.** Featured presentations at the monthly meetings focus on issues related to collecting antique radios. In past meetings, we've covered topics from operating demonstrations of vintage equipment to restoration safety.

**Swap Meets.** Held 3 times annually, the NJARC Swap Meets have become the most eagerly awaited events of the year. Vendors from near and far gather to offer a rich and varied assortment of radios and related items for sale.

**NJARC News.** The club newsletter keeps members informed about club events, providing notice of upcoming activities, reviews of past events and other club-related information. The newsletter is a forum for member interaction, offering free classified ads to members and non-members alike for the purposes of buying, selling or trading radio-related items.

**Tube Program.** The club offers clean tested and boxed tubes to members at bargain rates. Tubes are available at each meeting, and all proceeds benefit NJARC.

**Tube Testing.** Members can bring tubes to any meeting for free checking on a high-quality tester.

**Video Library.** Meeting presentations are documented on video tape. Members may borrow tapes from the club video library at no cost.

**Networking.** Collectors have an opportunity to get together with those of like interests to share tips, techniques, "war stories" and socializing. NJARC offers the opportunity for collectors from all over the area to share their expertise and their experiences.



## FROM THE BOARD ROOM

### Election Results

The following members were elected at our June meeting to two-year terms of office:

**President:** Tony Flanagan  
**Vice President:** Mike Hammer  
**Secretary-Treasurer:** Kathleen Flanagan  
**Sgt.-at-Arms:** Marv Beeferman  
**Trustee:** Mark Mittleman

The Executive Board met in late September and developed a group of updates to the club's bylaws to, among other things, clarify its status for state tax purposes. It

also devised a proposal to increase membership dues to \$15 per year. Members ratified both the bylaws changes and the dues at the October 14 meeting. Another current proposal is to set up a club capacitor program, to offer new replacement capacitors to members at low prices.

The board has been expanded: the editor and technical advisor are added to the existing membership (president, VP, secretary-treasurer, trustees, and sergeant-at-arms).

## THE PRESIDENT'S BROADCAST

Tony Flanagan

I want to thank the club for re-electing me. It's been quite an experience starting this group and seeing it grow. In beginning a second two-year term, I took a moment to look back on the changes our club has gone through since its formation.

For those of you who may have joined us only recently, we started in July of 1992, when 15 collectors gathered to form what was to become the New Jersey Antique Radio Club. All 15 of these charter members are with the club today. In fact, they continue to be among the most active members, taking responsibility for running many of the club activities.

My wife **Kathleen Flanagan** has served the club throughout this period as Secretary/Treasurer and has been my emotional support during times when running this club seemed to require more energy than I had to devote to it. Kathleen has kept the books and attended to innumerable administrative details, and she's done a great job of it.

**Mike Hammer**, our Vice President, was also elected to a second term. Mike, another charter member, has been invaluable as a sounding board when I need to make important decisions which affect us all.

Outgoing Steward/Sgt.-at-Arms **Don Cruise** has been instrumental in the success this club has enjoyed. Don has worked tire-

lessly at our various club events, and was never shy about strong-arming the one-dollar donation from everyone at our monthly meetings.

Incoming Steward/Sgt.-at-Arms **Marv Beeferman** is another one of those club members who seem to be everywhere, all the time. Marv's enthusiasm for radio collecting spills over to his support for the club.

**Ludwell Sibley** and **Mark Mittleman** continue to serve as Trustees. These experienced and knowledgeable collectors have given much and energy to ensuring that our club operates in a way that will benefit us all.

And last but not least, Newsletter Editor **Dave Sica** continues to do a fine job on publishing our *NJARC News*. This publication is one of the primary member benefits. Although we can't all attend every meeting, every club member receives the newsletter; it's how we keep in touch with each other.

I won't say it's all been a bed of roses these past two years. It's been a lot of work and there've been some frustrations. But overall, it's been a great experience with a great bunch of people. I'm happy to be serving all of you as club president, and am looking forward to another two years of growth and great activities for the club.

Happy Collecting!

*"Historic Radio in New Jersey" - an NJARC Exclusive!*

## **A UNIQUE NEW JERSEY-MADE RADIO: "RADIO PRODUCTS"**

**Alan S. Douglas**

Box 225, Pocasset, MA 02553

Ben Abrams of Emerson liked to think of himself as the originator of compact radios - he even titled his 1943 company promotional profile "Small Radio" - but he was preceded by International's Kadette. But, well before either of them, was a small New Jersey maker, the Radio Products Co. of Newark.

Compact (or, as they were called then, "pee-wee") radios transformed both Emerson and International from nobodies into major manufacturers: International employed 410 workers by 1936, while Emerson in 1934 was ranked by *Fortune* magazine seventh in the industry, ahead of Majestic and Atwater Kent. Yet, by 1934 Radio Products was defunct.

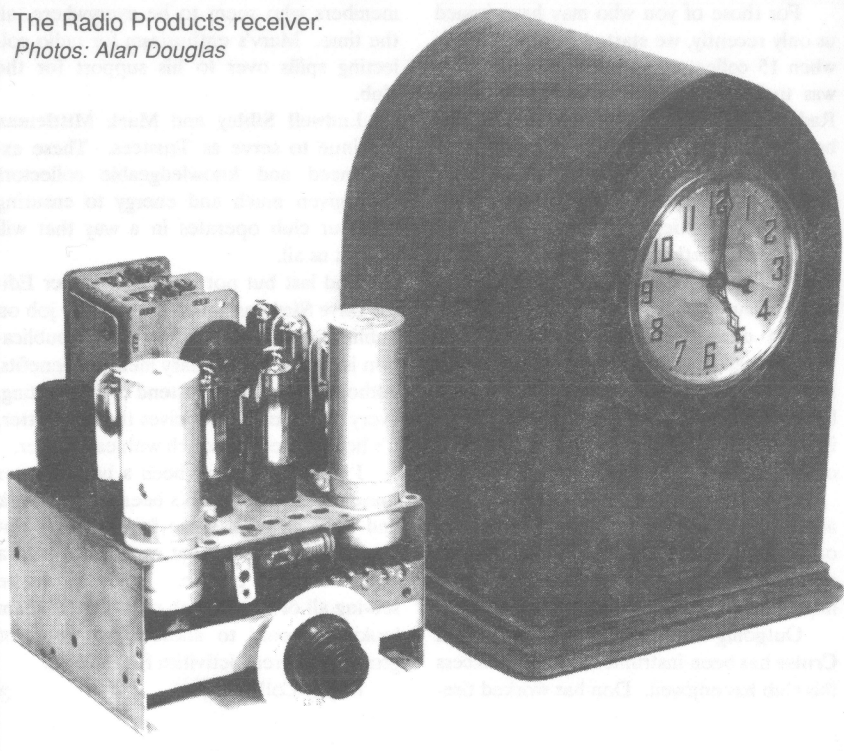
But Emerson and Radio Products were promoting the same idea: a radio small enough to fit into a clock cabinet. While Emerson's set did not actually contain a clock,

it was styled like one, and was made by clockmaker Ingraham, expert in curved veneer cabinets (and producer of Emerson's later cases). Emerson took a more practical approach by following Kadette's lead, using the six-volt automotive tubes 36-37-38-39 in a series string with no power transformer. Radio Products, on the other hand, used standard components but very small tubes.

Work on these small tubes began in mid-1931 when Earl L. Koch, a tube engineer who had worked on the Kellogg AC tubes, devised a triode with an external control electrode. Harry R. Van Deventer, formerly with Westinghouse and Dubilier Condenser, formed the Patent Engineering Corp. to commercialize Koch's idea. Produced by Arde Bulova, who wanted to get into the radio business, Van Deventer packaged a chassis with eight of Koch's tubes (six triodes and two rectifiers) into a standard

The Radio Products receiver.

*Photos: Alan Douglas*





# CONSTRUCTING A PREWAR ZENITH CAGE ANTENNA

Bob Haworth, W2PUA  
112 Tilford Rd., Somerdale, NJ 08083

In the years prior to WW II, Zenith made their table-model radios with a wire-loop type antenna - commonly called a "cage" antenna due to its heavy reliance on wooden struts, supports and pressed-board end plates. I don't know when or with what model this practice started, but it was in full bloom by 1939, lasting until at least 1942 and preceding the flat-type wire loop so prevalent in the '50s.

Over the years the design of the cage was changed only slightly - probably to reduce production cost, since even in that time period it would be expensive to manufacture.

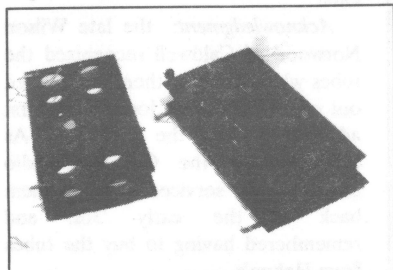
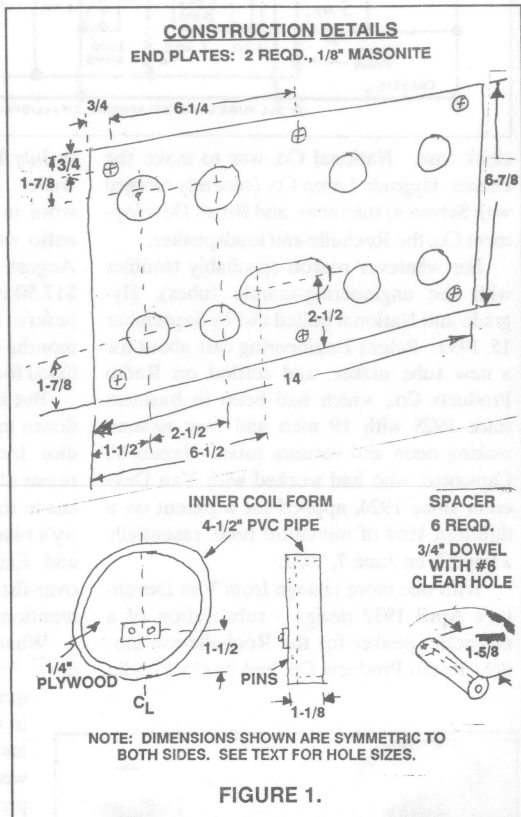
The first photo shows the author's loops as found in a 1940 model 7S529 and a 1942 model 6S632. The similarity is apparent.

My need to construct one of these antennas appeared when I "fell in love" with a 7S529 at a NJARC meet during 1993. I purchased the radio in an aged state, with only one knob present, pushbuttons broken, and no knowledge that the antenna was missing, since I saw it had "A" and "G" posts like scores of other units I have restored.

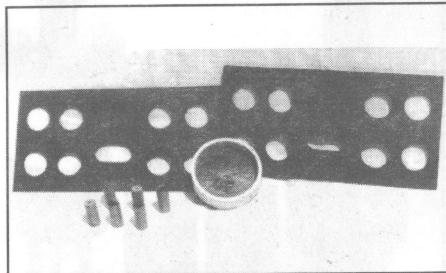
As with many of you, the hunt for parts was on. Unfortunately, after six months of ads and radio shows, no 7S529 parts showed up. After some evaluation,

restoration was started with the ever-present hope that the future would bring the parts. After I recapped the unit and constructed a temporary antenna, the radio was operable. Now the concentrated search for parts began.

Finally, Ron Kudasik of Chambersburg,



Two original Zenith loops.



Parts for the new assembly.

PA, provided the means to complete the set. He sold me a prized 7S529 that was complete but had a defective power transformer. My quest was over. However, after analyzing the situation I felt that restoration of the newer unit should also be undertaken, even if parts were still missing. Thus the need to construct a cage antenna.

The 7S529 is not a simple one-band set, and does not use a simple one-winding loop. There is a primary winding to couple-in the signal from an external antenna if used, or to apply signal from a third "antenna" wire in the line cord on the two short-wave bands. The main winding is tapped as part of the bandswitch circuit.

Construction is relatively simple, requiring only a few tools and a little patience.

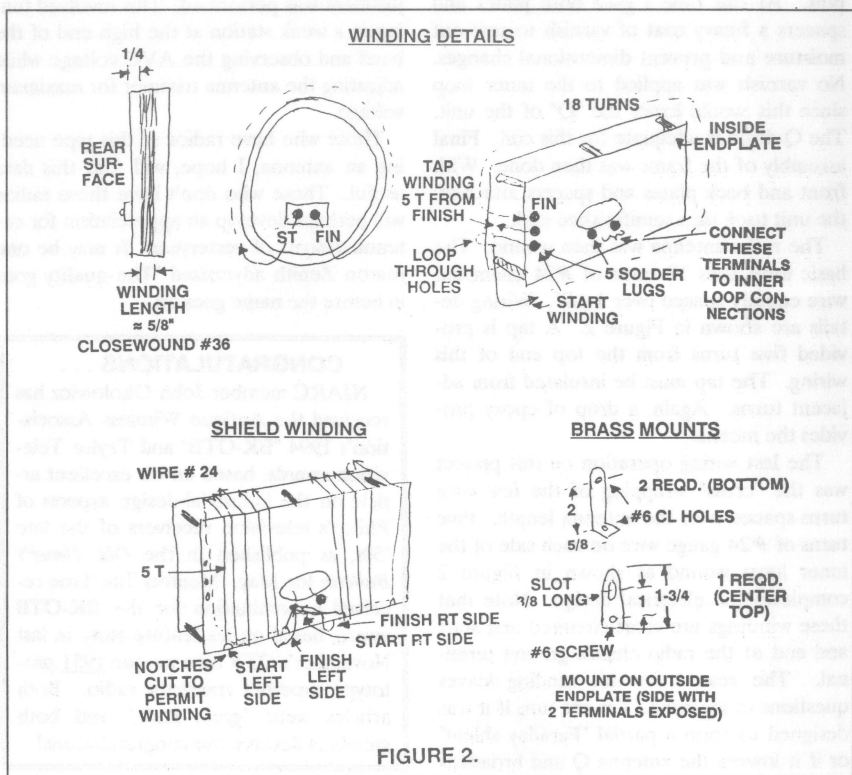
Figure 1 shows the dimensions for the end plates and spacers. The end plates are constructed of 1/8" thick masonite (hard surface one side), while the six spacers are 3/4" diameter wood dowels with a hole drilled through the center. The large holes in the plates are made with a 1-3/4" diameter hole

saw, while the elongated center holes are 1-1/4". These holes permit ventilation of the set when the antenna is in place.

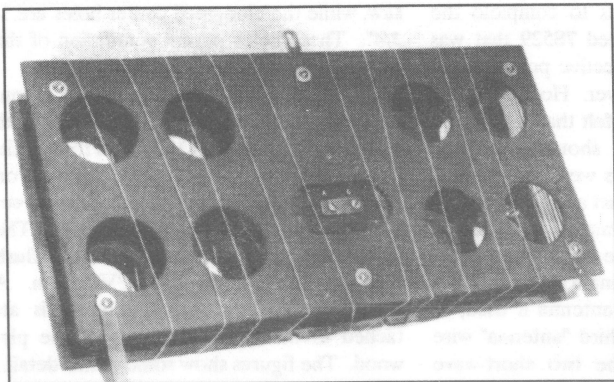
The inner loop is more complex. It is constructed of a short piece of PVC pipe with an outer diameter of 4-1/2". This form is fitted with a piece of 1/4" or 3/8" plywood on the inside and is held in place by epoxy cement and a few small escutcheon pins. The surface of the plywood is mounted flush with the rear surface of the PVC form. A two-terminal screw terminal board is attached to the exterior surface of the plywood. The figures show some of this detail.

The last mechanical assembly requirement before wiring and final assembly is to affix the five solder lugs. These provide connections to the radio chassis. These use a #4 brass screw and nut (with lockwasher) at each lug location.

At this point it is - "Let the winding begin!" The inner loop is wound first with wire that appears to be 36 gauge. I say "appears" because the structure of the factory antenna prevented me from putting a







The completed replica loop.

micrometer on the "thinner than hair" wire. So, working from the measured resistance and dimensions of the loop, I concluded that 135 turns of #36 enameled wire wound for a total winding length (closewound) of approximately 5/8" on the inner form was as close as I could get.

Once wound and sealed in place with Q-dope, the inner loop was attached to the back plate with epoxy and a few escutcheon pins. At this time I gave both plates and spacers a heavy coat of varnish to seal out moisture and prevent dimensional changes. No varnish was applied to the inner loop since this would lower the "Q" of the unit. The Q-dope is adequate for this coil. Final assembly of the frame was then done. With front and back plates and spacers attached, the unit took on a semifinished look.

The main antenna was then wound. The basic loop uses 18 turns of #24 enameled wire equally spaced over 1-1/2". Wiring details are shown in Figure 2. A tap is provided five turns from the top end of this wiring. The tap must be insulated from adjacent turns. Again, a drop of epoxy provides the means.

The last wiring operation on this project was the "cross" wrapping of the few wire turns spaced over the antenna length. Five turns of #24 gauge wire on each side of the inner loop wound as shown in Figure 2 completes the electrical design. Note that these windings are short-circuited and start and end at the radio chassis ground terminal. The reason for this winding leaves questions in my mind. I'm not sure if it was designed to form a partial "Faraday shield"

response or whatever. Perhaps a reader has thoughts on the purpose of this winding.

A few copper straps were then fabricated to enable mounting, together with a jumper strap for the external antenna terminals. On this antenna the cage unit operates best when a jumper is present between the terminals, resulting in a shorting of the inner

loop. When an external antenna is used, the jumper is removed and the antenna connected to the inner loop.

Of interest, I checked the inductance of the two antennas using Bob Dennison's (W2HBE) Tektronix inductance meter. The original measured 170  $\mu$ H while the new unit was 165  $\mu$ H. Pushing a few turns to adjust, now both were 170  $\mu$ H.

Once assembled to the radio, the final adjustment was performed. This involved tuning in a weak station at the high end of the band and observing the AVC voltage while adjusting the antenna trimmer for maximum voltage.

Those who have radios of this type needing an antenna, I hope, will find this data useful. Those who don't have these radios will perhaps develop an appreciation for antenna designs of yesteryear. It may be one reason Zenith advertised "The quality goes in before the name goes on."

### CONGRATULATIONS . . .

NJARC member John Okolowicz has received the Antique Wireless Association's 1994 "BK-OTB" and Taylor Television awards, based on his excellent article on the industrial-design aspects of Philco's television receivers of the late '50s, as published in the *Old Timer's Bulletin* for May. Member Jim Troe received a nomination for the BK-OTB award, based on his feature story in last November's *OTB* on a unique 1951 prototype superhet transistor radio. Both articles were "great stuff," and both members deserve our congratulations!

## EARLY RADIO MAKERS OF NEW JERSEY

Ludwell Sibley

Most radio-collector clubs take great interest in the manufacturers that made sets in their areas. The Niagara Frontier Wireless Society sets up museum displays, runs equipment-display contests, and publishes newsletter articles on Buffalo-area makers; the Indiana Historical Radio Society has done a lot to commemorate Indiana producers; the Antique Radio Collectors of Ohio club has started to document its local radio industry; and so on.

While overshadowed to some degree by New York's booming radio industry, New Jersey shared in the burst of radio production in the '20s, not just via RCA Victor at Camden, but through a host of small, short-lived companies centered on Newark. Of course, there were young radio enthusiasts and repairmen *everywhere* custom-building big superhets and neutrodynes for wealthy individuals who wanted high-performance and otherwise impressive sets.

Here are those local companies and their tradenames, for insight or just enjoyment. Better yet, look at your collection - maybe you have an Perfexdyne or Selectodyne or Dolores De Luxe that would be a good top-

ic for an *NJARC News* article.

The list of manufacturers is based primarily on 1924 and 1925 industry trade directories. Makers that are covered in today's collector literature are pointed out. It is impossible to distinguish fully between *manufacturers* and *distributors* from the early days, so there may be some distributors included.

Besides makers of complete radios, there was a whole infrastructure of parts producers. Examples were the American Transformer Company (AmerTran) and the Diamond Electric Specialties Corp. (maker of B-batteries), both in Newark - not to mention the burgeoning vacuum-tube industry.

There was a severe shakeout in radio manufacturing in the mid- and late '20s, in which most small makers (and some not so small) vanished. The Depression sped the process. By 1940 the RCA Manufacturing Company was essentially the only local survivor in terms of entertainment radios, although New York - based Emerson had a receiver plant in Jersey City. Only a few others entered the business later - IT&T's subsidiary Federal Telephone & Radio comes to mind as a postwar radio maker.

### TUBE RADIOS

#### Asbury Park

Ernest Marlow Co., 613 Bangs Ave. - "Marlodyne" (see Bob Haworth's article on this set in the Summer 1993 *NJARC News*.)

Mu-Rad Laboratories, Inc., 800 Fifth Ave. (1922-28)\* (Mu-Rad used 800 or 801 5th Ave. when advertising in *Radio News*, 803 or "Dept. B" in *Radio Broadcast*, 806 in *Radio*, 809 in *Popular Radio*, and "Dept. R" in *Radio Retailing* - probably to measure responses to ads.)

Radiocompak Co., A. P. Trust Bldg.

Radio Service Laboratories, Inc., 1007 11th Ave. (1921-23) (later Gilfillan)\*

#### Bloomfield

Moore Mfg. Co., 169 Bloomfield Ave. - "Perfexdyne"

#### Boonton

Boonton Radio Corp., 724 Fanny Rd.

ExIntone Corp.

Radio Frequency Laboratories, Inc. - "R F L"

#### Camden

RCA Manufacturing Co., Inc., Front & Cooper Sts. (after 1930)\*

#### Clifton

Hygrade Sylvania Corp., Electronics Div., 64 Lakeview Ave. (maker of model RAG and RAH receivers for U. S. Navy, 1933)

#### East Orange

Harrison Cole Co., Grove St. Sta. - "Regal" Q-T Radio Products Co. - "Little Giant"

#### Elizabeth

Radio-Fone-O-Graf Co., 27 S. Broad St.

#### Irvington

Republic Radio Mfg. Corp. (1932)

#### Jersey City

Armley Radio Corp., 68 Fleet St. - "Karryadio"

De Forest Radio Co. (also De Forest Radio Tel. & Tel. Co. and RadioCraft Co.), 139 Franklin St. (1922-30) - "Radiophone"

R. E. Thompson Mfg. Co., 66-68 and 70 York St. (1920-27) - "Magnaphone"

## Keyport

Robinson Specialty Co., 13 Walnut St. - "Q-R"

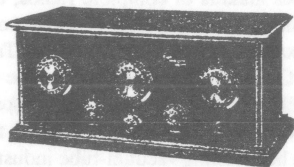
## Newark

Blizotis Radio Co., 308 Halsey St.

Eagle Radio Co., 16 Boyden Pl. (1922-27) - "Eaglet"



## EAGLE BALANCED NEUTRODYNE RECEIVER



### *The Popular 5-Tube Circuit*

The New Model B Eagle Balanced Neutrodyne Receiver is beautifully designed and built to a standard. Distinctive features will be found in this Receiver, never before offered in a radio set. Mechanically and electrically we believe it to be the finest set in America. Handled only by reputable dealers. Write for our selling plan.

EAGLE RADIO CO., Boyden Place, Newark, N. J.

Licensed by Independent Radio Mfgs. under Hazeltine Patents 1,453,060 Inc., March 27, 1923, and 1,489,228, April 4, 1924. Other Patents Pending.

Essex Mfg. Co., 117 Mulberry St.

Farrand Mfg. Co., 28 S. Sixth St. - "Godley"

Federal Telephone & Radio Co., 591 Broad St. (1946-47)

Garod Corp., 124 Adams St. (originally 120 Pacific St.)\*

Gehman & Weinert, 42 Walnut St. (same address as Eureka Tube Mfg. Co.)

Fred M. Goerdes Co., 81 Mt. Prospect Ave. - "Dolores De Luxe" (an elegant plate-glass 3-dialer)

Gold Seal Electric Co. (1931) (made a scanning-disc TV set!)

International Radio Co., 9 Clinton St.

Kolster Radio Corp. (ex-Kolster-Brandes) (1924-30)\*

Metro Electrical Co. - "Little Giant"

Radio Products Co. (1932)

Radio-Rite Service Laboratories, 57 Halsey St. - "Selectodyne"

John C. Ruckelhaus, 41 Commercial St. - "Rutic"

Splitdorf-Bethlehem Electrical Co., 392 High St. (later Splitdorf Radio Corp. at 98 Warren St., then Edison-Splitdorf) (1924-31)\*

## Plainfield

10 Carloyd Electric & Radio Co. (originally in

NYC) - "Malone-Lemmon"

## Trenton

Waugh Electric Mfg. Co, 25 N. Montgomery St. - "Echo"

## Upper Montclair

Adams-Morgan Co., 4 Alvin Ave. (later 16 Alvin Place) (1914-26) - "Paragon"\*

## Have You Seen the New PARAGON SIX-TUBE SET

THE best Paragon yet! Hand-somest in cabinet design. Longest in speaker range. Clearest in tone. Easiest to tune. Separate hook-up for dry and storage batteries. Write for information.

ADAMS MORGAN CO., Inc.  
4 Alvin Ave., Upper Montclair, N. J.

## West Orange

Marti Electric Radio Co. (1926-28; later in East Orange))

Thomas Edison, Inc. (1929-31)\*

## West New York

Wheelock Mfg. Co. - "Mayflower 5," "Air-tune"

\* Covered in Alan Douglas' Radio Manufacturers of the 1920s.

## RADIO KITS

(Superhets, Neutrodynes, etc.)

## East Orange

U-Ni-Dial Radio Co., 35 Greenwood Ave. - "McLaughlin"

## Newark

Imperial Electric Mfg. Co., 58 Columbia St. - "Polydyne," "Puradyne"

Kenneth Harkness Radio Corp., 727 Frel-inghuysen Ave.

Paramount Radio Corp., 23 Central Ave.

Shamrock Mfg. Co., 314 Market St. - "Shamrock-Harkness"

Splitdorf-Bethlehem Electrical Co. (address as above)

## Princeton

Nassau Radio Corp., 80 Nassau St.

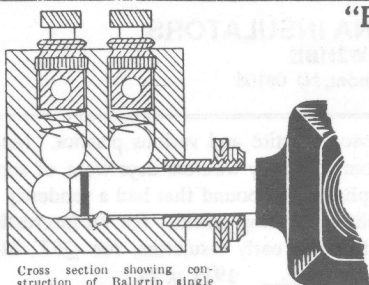
## Trenton

Bertrand F. Miller Co., High & Canal Sts.

## CRYSTAL SETS

There were many crystal-set makers in the Pittsburgh area, stimulated by the early success of KDKA, but few in eastern Pennsylvania or New Jersey. Besides listings in industry trade directories, the following mak-





Cross section showing construction of Ballgrip single circuit jack.

## "Ballgrip" Jacks—Sockets—Binding Posts

Positive, wiping contact with sterling silver points; compact and low-loss construction.

Same features incorporated in the new socket with a positive, biting contact. Made of genuine Bakelite—the ideal socket for low-loss circuits.

Send for descriptive folders.

**QUALITY MOLDED PRODUCTS, Inc.**

Jersey City, N. J.



Ballgrip Binding Post—actual size.

ers are cited in Maurice Sievers' Crystal Clear.

### Bloomfield

Lightrite Co., 167 Bloomfield (also Moore Mfg. Co., later of Nutley) - "Flivver"

### Jersey City

Pal Radio Co. (related to Metro Electrical Co. of Newark) - "Metro"

### Newark

Beaver Machine & Tool Co., 625 Third St. (office in NYC) - "Baby Grand"

Metro Electrical Co., 67 Goble St. - "Little Gem"

## SPEAKERS AND HEADSETS

### Asbury Park

Ernest Marlow Co., address as above - "Marlotone"

Mu-Rad Laboratories - address as above

(related to O'Neil Mfg. Co.) - "Audiophone"+

### Jersey City

De Forest Radio Co., address as above +

Pal Radio Co. - "Metro"+

R. E. Thompson Mfg. Co., 66-68 and 70 York St. (1920-27) - "Magnaphone"+

### Kearny

Western Electric Co., 100 Central Ave. +

### Keyport

Robinson Specialty Co., address as above - "Q-R"

### Newark

D. W. May, 325 Central Ave. - "Velvetone"

Farrand Mfg. Co., address as above

Milo Mfg. Co., 784 Broad St. +

Mozart-Grand Co., 235 Elizabeth St. +

Mydar Radio Co., 19 Campbell St. - "Accuratune"

Inter-Ocean Radio Corp., 205 Tenth St. - "Woodehorn," + "Operola"

Splitdorf-Bethlehem Electrical Co., address as above - "Splitdorfone" +

Standard Metal Mfg. Co., 237 Chestnut St. - "Cygnets," + "Gem" +

United Radio Corp. - "Black Beauty," "Peerless"

### Upper Montclair

Graef & Trecartin, 10 Alvin Pl. - "Graefone"

+ Listed in Floyd Paul's Radio Horn Speaker Encyclopedia.

REFERENCES NOT CITED ABOVE  
The Radio Trade Directory (New York: McGraw-Hill, Nov. 1924 and Aug. 1925).

M. E. McMahon, Radio Collector's Guide 1921-1932, rev. ed. (Palos Verdes, CA: Vintage Radio, 1981)

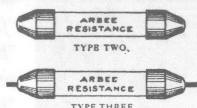
New Jersey State Dept. of Labor, The Industrial Directory of New Jersey, 1940-41, 1940.

## Use ARBEE Resistances and Grid Leaks

Guaranteed, noiseless, accurate. No variations. Elements are melted into the glass. No paper, no carbon, no conducting varnish or other deteriorating elements.

Write for Literature

Arbee Mfg. Co. 68 Springfield Ave.  
Newark, N. J.



## The Crystal Detector with a National Reputation Fully Protected by Patents

THE only crystal detector that has won such universal approval. Eliminates usual crystal detector difficulties. Most efficient adjustment found and fixed at the factory. Crystal protected from dust and moisture by glass enclosure. Re-adjustment seldom required—and then made in a moment. No complicated adjustments to get out of order. Needs no attention. Simplifies and improves the operation of your set. Unconditionally guaranteed.

Write for Booklet

RANDEL WIRELESS CO.

9 CENTRAL AVE., NEWARK, N. J.

PACKED  
IN INDIVIDUAL  
CARTONS

At your  
dealer's or  
sent direct  
on receipt of price  
and dealer's name.

## COLLECTING ANTENNA INSULATORS

Bob Dennison, W2HBE  
82 Virginia Ave., Westmont, NJ 08108

About ten years ago, I found an old antenna insulator and decided it would be fun to collect them. Through an ad, I met Jim Singleton, K2IRO, who gave me many of his duplicates. This encouraged me to continue - I now have 129 different antenna insulators and 37 lightning arrestors.

I prefer glass and pyrex insulators. The rarest and most interesting ones are made of colored glass. I've been told that most of these were made in Mexico. The more common tints are lavender, pale green and light blue. But collectors have found red, black and other colors in saturated hues.

If you are lucky, you may find an insulator still in the box that it was sold in. Corwico insulators came in an attractive orange-and-blue box bearing an image of the insulator. The large Corning pyrex insulators also came in attractive boxes. It is always exciting to find insulators having unusual shapes or cross-sections. Also be on the lookout for insulators bearing the name or logo of the maker or of the place where it was made.

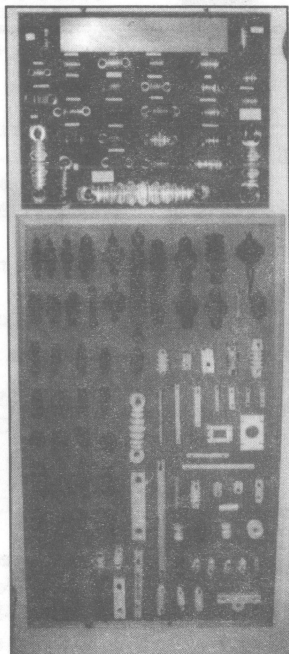
Antenna insulators have been made from glass, pyrex, porcelain, hard-rubber, "elec-

trose," steatite and various plastics. Many from the early wireless days were of some asphaltic compound that had a tendency to split or develop cracks. For an interesting article on early insulators, see *QST*, May 1923, p. 24.

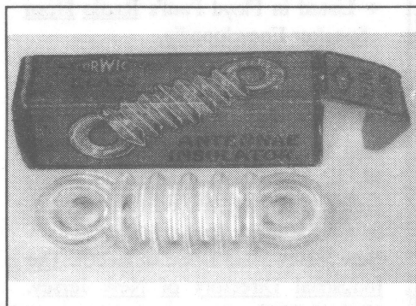
Just recently, a club has been organized to help insulator collectors meet and swap materials and information. Write to Dan Howard, 2940 SE 118th Ave., Portland, OR 97266-1602.

The *QST* article ("Some Tests of Amateur Antenna Insulators," by authors including heavyweights John Reinartz and Robert S. Kruse) gives photos of 22 insulator types. As a sort of "Consumer Reports" feature, it gives the results of high-voltage RF tests on insulators, with some impressive wording: "got white hot," "flashes at 26,000 volts," "brushing . . . burns out entire insulator in 7 seconds," "broke down," "heated inside and blew out in 30 seconds," "burned within a few seconds," "exploded with a loud

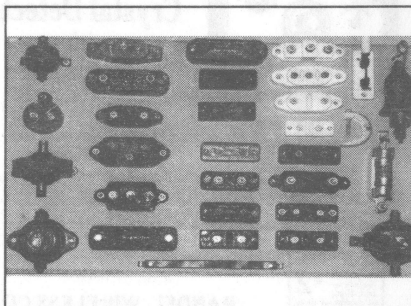
report," "melted in two," "charred," "burns out entire insulator in 7 seconds" - and then there were the good ones with "no breakdown, flashover or heating during 5 minutes." - Ed.



Insulators carefully displayed.



"New in the box" insulator.



Old-time lightning arrestors.

## REARVIEW MIRROR

"A glance backward through time"

*The following item, reprinted from "Sylvania News" of Jan.-Feb. 1942, illustrates a little known aspect of "radio life" at the start of WW II. At least one question has turned up in the radio-collector press about a multiband '30s radio in which the short-wave bands had been wired-out, an odd disabling of what was probably a perfectly good radio. The information below explains what probably happened. Given the large number of German and Italian nationals living in eastern New Jersey at the time, it is surprising that more such modified radios have not turned up.*

*Besides controls on radios and cameras, home diathermy machines owned by enemy aliens had to be registered with the authorities and were in fact confiscated "for the duration." The typical 100-watt diathermy was potentially a CW radio transmitter having transatlantic range, hence the regulation. - LAS.*

### NEW OPPORTUNITY FOR SERVICE JOBS

**Serves National Interest. Keeps Foreigners in Contact with United States Broadcasts.**

By O. H. Caldwell, Editor, *Radio Retailing Today*

The Attorney General of the United States, Francis Biddle, has just issued a circular letter to local and state police authorities, ordering that all enemy aliens in the United States turn in to the nearest police station all short-wave sets and cameras in their possession.

Any radio set in the hands of an enemy alien, which is capable of receiving radio signals other than those of the standard broadcast band, must by this order be immediately surrendered to the police, "unless the set is so altered or modified" that such signals cannot be received. Police are further instructed by the Attorney General to use every consideration to make this regulation impose as little hardship or inconvenience on well-intentioned aliens as possible.

The Department of Justice order thus seems to open the way for radio servicemen to render a useful service of eliminating shortwave reception from aliens' sets - and get paid for it. In this way, the alien may keep his set for regular broadcast listening to U. S. stations, while the police authorities are spared the storage of hundreds of radio sets which they are poorly equipped to handle.

Radio men who perform this service of altering aliens' receivers, should make sure that the changes they make are completely effective, so that under no circumstances can short-wave reception be restored without the addition of new parts. Vital circuits or parts should be completely removed and retained by the serviceman with his com-

plete record of the job.

In addition, the serviceman undertaking such alteration work on short-wave sets of enemy aliens, should keep a log book or record of all sets so altered. In this log book he should enter:

- Name and address of owner of set (verifying identification carefully). Date alteration was made. Number of persons in owner's family or household.
- Name and model of set altered. Year. Circuit employed.
- What changes made to make set comply with regulations.
- Does serviceman suspect alien owner of possessing or using another short-wave set which has not been altered.

Such a record of facts in connection with the alteration is necessary if the serviceman is afterwards approached by government agents and asked to make a statement concerning the work he performed and the circumstances surrounding the alteration.

With over a million enemy aliens now in the United States, and with nearly two-thirds of all home radios equipped for short-wave reception, it is apparent that a tremendous number of radio receivers are involved under the Attorney General's order.

By setting himself up to make alterations completely and effectively, meanwhile keeping a complete record of all such work done, the radio craftsman will be doing a job in the public interest and helping both the alien and the police.

## **RADIOACTIVITY '94**

**Kathleen Flanagan**

The Mid-Atlantic Antique Radio Club held its first annual two-day meet on June 17-18 at the Holiday Inn in Timonium, Maryland. This meet was well worth the trip. They had a two-day trader's market with 60 to 70 dealers. There were also several seminars held. Of particular interest was the one given by Sam Cannan, "Tough Problems in Radio Repair."

Approximately 15 members of our club attended this meet. MAARC members support our meets, and it's nice to return the favor. Next year's show will be three days. If you're looking for a good show to attend near us, this is it.

## **EXTRAVAGANZA '94**

**Kathleen Flanagan**

Tony and I attended the Michigan meet this year on our vacation. Last year we had gone to Elgin. Of the two meets, I have to say that we enjoyed Michigan better. The people were very friendly, the hotel was nice and the show was set up and run very well. There was a hospitality tent set up the entire meet with free coffee, orange juice, donuts and cookies.

The club sponsored a radio contest with 12 categories. We entered two radios and a picture we have of the Ingraham Case Shop from 1931. We were thrilled on finding out we had won first place in the Open Category for the picture; first in the Wooden Table Radios Category with our Emerson Strad, and third in the Mantel-Tombstone Category with our wooden Ingraham Mantle Clock Radio.

## **NFWA - AMHERST MEET**

**Ludwell Sibley**

The Niagara Frontier Wireless Association held its annual swapmeet in mid-August, at the Amherst Museum outside Buffalo. This turned out to be a relaxed, enjoyable event in a rustic setting. Flea-market spaces were on a broad expanse of lawn on the museum grounds. The usual hustle to get set up and start scrounging

was absent: as announced in advance, the gates didn't open until 8:30. The weather was initially threatening, and then made good on its threat: the same storm system that got Woodstock took on NFWA. As a result, attendance was 33 vendors and about 75 collectors. Even so, the ambience was fairly jolly, with club members holding an auction and cooking hot dogs in a roofed picnic area. An indoor talk covered Tesla coils, and the club's exhibit inside the museum (written up in *A. R. C.* and the *OTB*) was fun to tour. I'd recommend this as a pleasant change from more pressured meets. Transit Road, the main route from the New York State Thruway to the Museum, is "motel row," so it's easy to go up the night before.

## **NEW PUBLICATION TARGETS RADIO COLLECTORS**

A few months ago, a new monthly publication was founded to fill a special need in the radio collecting community. *The Radio Collector*, an 8-page newsletter-style journal for relative newcomers to the hobby, made its debut with the January 1994 issue.

Marc Ellis, editor and publisher of *The Radio Collector*, is also antique-radio columnist for *Popular Electronics*. In his work with the *PE* column over the past seven years, Marc discovered that a large percentage of current collector/restorers are eager to obtain basic information on radio history, theory and restoration.

He also found that the most publications are club journals which, as is appropriate, cater to collectors varying widely in experience and sophistication. Seeing a definite need for an independent publication specifically for the newcomer, Mr. Ellis created *The Radio Collector* with the goal of providing basic information in an organized, systematic manner.

Every issue of the new journal includes a feature article covering some fundamental aspect of radio collecting, as well as monthly columns on vintage-radio restoration, history and reference materials. *The Radio Collector* also offers free classified ads for subscribers, free publicity for radio club functions, and an open forum for the discussion of questions and answers.

In the first months of publication, it has become clear that *The Radio Collector* is attracting not only new collectors but also more seasoned ones. The veterans enjoy sharing their knowledge, and helpful comments appear regularly on R. C.'s pages.

Subscriptions to *The Radio Collector* should be sent to P. O. Box 1306, Evanston IL 60204-1306. Annual rates are \$20 (U. S.); \$21.50 (Canada - U. S. funds); \$35 (via air to other countries - U. S. funds).

*The Radio Collector* comes with a no-questions-asked money-back guarantee. Subscribers who cancel prior to the mailing of their second issue will receive a full refund and may keep the first issue as a gift. Pro-rated refunds will be sent to those who cancel at any later time. - R. C.

### SIBLEY DOES DELAWARE (VALLEY)

Dave Sica

Ludwell Sibley, NJARC's indefatigable Tube Chaplain and prolific contributing editor to *NJARC News*, has taken on additional responsibilities as the editor of the *DVHRC Oscillator*, the newsletter of the Delaware Valley Historic Radio Club.

Former editor of the *AWA Old Timer's Bulletin* and the *AWA Review*, Ludwell's inimitable writing style and strong commitment to the antique-radio community are both well known to most of us.

As Lud continues activities with NJARC, we wish him success in this new venture. We also look forward to closer ties it will surely forge between the clubs.

### CLASSIFIED ADS

**WANTED:** Working Army field telephone set. Schematics needed for Eico model 322 signal generator, RCA 96T2 2-band receiver and Emerson 560A portable radio. Photocopies OK. Marty Friedman, 48 Green Acres Ave., East Brunswick NJ 08816, (908) 238-1047. Can pick up at club meetings.

**WANTED:** Data chart roll for Hickok type 533AS  $\text{g}_m$  tube tester (URGENT!). A chassis, data or any information on an Emerson AX239 radio. All types of RCA memorabilia. Old, old, old RCA test equipment

from the '30s. Cable-operated car radios - parts, literature, boxes, antennas, controls. Any condition. Can pick up at club meetings. Bryan Hodgson, (609) 424-0312 (home), 722-2886 (work).

**FOR SALE:** "RADIO USA" 16 inch tall microphone AM-FM AC-DC radio, transistor, metal construction. Special NJARC price, \$20. 10-band transistor, the "WORLD IN YOUR POCKET," the smallest short-wave AM/FM radio ever made, \$25 (reg. \$80). Only six left. "Racing Car" radio. Red Toyota or Dodge Shadow, AM/FM with clock built into sun roof. Excellent and rare, \$15. Richard Brill, PO Box 5361, Old Bridge, NJ 08857, (908) 679-8026; fax (908) 579-8523.

**WANTED:** Copies to buy or borrow and copy, *NJARC News* Vol. 1; No. 1. Precision Tube Master (Precision Apparatus Co.) users manual model 10-12 tube/battery tester - 1952(?) vintage and associated tube test manual. Tom Fallon, (908) 545-0417.

**FOR SALE:** Brunswick Panatope model 288 phonograph with multiband radio. Also, Majestic model 92 walnut highboy ca. 1929. Best offer. Russ DiRico, 206 Beechwood Ct., Mt. Laurel NJ 08054, (609) 235-3773.

**WANTED:** Predicta parts. Looking for picture-tube shroud back cover, tuning knobs, stand. Thanks, Dave Sica, 1549 St. Georges Ave., Rahway, NJ 07065-2718, (908) 392-0618.

**WANTED:** Radio Boys books: Lost Atlantis, With the Border Patrol, Soldiers of Fortune, and Air Patrol (all by Breckinridge). First Wireless, On the Pacific, and To the Rescue (by Chapman), Under the Seas and Flying Service (by Duffield); Cronies and Loyalty (by Aaron & Whipple). Have dupes to trade. Mike Koste, (215) 646-6488. See you at Buckingham 11-13.

**WANTED:** 15GP22 color picture tube for RCA CT-100. Dave Abramson, (610) 827-9757.

**FOR SALE:** Aeriola Senior receiver, model 319564, exc. cond., made by Westinghouse for RCA, less tube, \$185 or best offer. Leave message at (717) 776-3248. Holbert Myers, near Carlisle, PA.



## SOME OLD-TIME REPAIR HINTS

We radio restorers contend with many of the problems that old-time radio-TV repairmen faced. Here is a collection of hints, edited down from '50s issues of the *Sylvania News*, which printed inputs from repair people. Many of their ideas have use today. - LAS

### BANDSWITCH FIX

Noisy or intermittent band-changing switches may operate properly after applying to the contacts a solution of vaseline and Bon Ami. The soft abrasive disintegrates in a short time and thus does not wear away the contacts. The vaseline acts as a lubricant and aids in getting the Bon Ami into the active parts of the switch. Thinning the solution with benzene also helps in reaching inaccessible contacts, as the solution can then be made to run down a pencil or wire to the proper spot. (Nov. 1952)

### SOLDERING IRON TIPS

Tips of soldering irons eventually become corroded from the heat and are often impossible to remove when a replacement is necessary. In order to avoid this, graphite powder dusted onto the threaded portion of the tip and on the threads of the soldering iron chamber will permit the tip to be removed easily at any time. (Feb. 1953)

### PROTECTING PHONO CARTRIDGES

Remove the soft rubber liner from a defective vibrator. When servicing record players, slip this liner over the cartridge. This will prevent injury to pickup or needle from banging around during examination or repair. It can also be used when delivering set to owner. (April 1953)

### TESTING FOR SHORTS

An indispensable gadget for finding the cause of burned-out fuses in TV sets [*etc.*] can be made by soldering a 1/2- to 2-ampere automobile light bulb across a burned-out fuse and inserting same into the fuse clips. Intermittent shorts can be located by watching bulb while jarring suspected components. (Dec. 1953)

### RIVETS ON GROUND STRAPS

These do not always make a low-resistance contact to the chassis, thus causing intermittent reception and oscillation. This is especially true where wafer sockets are used with a center shield and ground strap.

When working on a Silvertone portable radio with this condition, I checked the

resistance between the center shield and ground on each socket. Three sockets out of five had 15 to 20 ohms resistance as the set was jarred or chassis twisted.

To cure this trouble, solder a short lead between the center socket shield and chassis. (March 1954)

### CONTROL REPAIR

With the wide variety of panel controls employed in modern sets, the serviceman is often forced to hold a set until an exact-replacement control can be obtained. Sometimes, however, a temporary repair can be made to restore service. Rough operation is often caused by fatigue of the area directly under the sliding contact. The contact should be bent slightly so that it rides on the unworn surface. Such a repair, *although temporary* [*italics in original!*], has proven very satisfactory. (Feb. 1956)

### DIAL CABLE TIP

When replacing a dial cable, the sections of cable may be held in place by a paste made of rosin and carbon tetrachloride [*in 1994, trichloroethylene!*]. This prevents cable slippage while the rest is strung. After the cable is completely in place and tightened, remove enough of the rosin with carbon tetrachloride to allow the cable to move freely. The small amount of rosin left will help the cable grip the pulleys. (April 1956)

### INTERMITTENT RADIO RECEPTION

The radio would play for a few seconds when first turned on and then become weak. Solution: first check the AVC voltage. If voltage goes from a minus value to positive after a few seconds, and leakage cannot be traced by testing for a short, the trouble may be leakage across the trimmers in the first IF transformer. Remove the shield can and scrape mica clean. Corrosion on the mica may allow plate-supply voltage leakage to the following grid. (April 1956)

### QUIETING NOISY ELECTRIC CLOCKS

Servicemen may be confronted with noisy clock motors when repairing clock-radios. Many times this difficulty is due simply

to lack of lubricant. The following method is offered as a cure for sealed units.

Remove the sealed motor from the frame and mount it above a 60-watt lamp bulb. Place a few drops of oil around the gear on the motor unit. When the heat drives out the air from the motor, as indicated by small bubbles, remove the bulb. Cooling will draw in the oil. Several tries will quiet the most grinding ones and will make them run smoothly. (July-Aug. 1956)

#### **HOLE CLEANER**

#### **FOR PRINTED CIRCUIT BOARDS**

A common wooden toothpick is a good tool for use in repairing printed circuits. Wetting the toothpick in cold water and inserting it in a hole filled with molten solder gives a nice cool, clean hole. (Jan. 1959)

#### **DRILL SLEEVE**

The sudden lurch inward, experienced when drilling holes in a chassis, can damage component parts. This can be prevented by using a drill-sleeve about 1/2 inch shorter than the drill itself.

Copper and/or brass tubing of various sizes, generally used for this purpose, is available from hobby as well as electrical supply houses. (Feb. 1959)

#### **KNOB SPRINGS**

How many times have you lost a knob spring and gone scurrying around to find one, with little success?

Here is a solution. You will find the iron core laminations of discarded output transformers, when cut down to the correct size, will make excellent springs or wedges for any type of knob. (March 1959)

#### **VIBRATORS**

Upon inserting a new vibrator into an auto receiver, it may fail to operate, especially if it has been lying around for a while. This is due to tungsten oxide coating forming on the contacts.

The contacts may be restored (cleaned) by applying 110 volts AC to the vibrating reed through a 40-watt light lamp for at least half a minute; six or seven minutes will do no harm. ((Sept. 1959)

#### **SPEAKER CONE ALIGNMENT**

Off-center speaker cones can be repaired easily by removing the felt dust protector from the face side. With a screwdriver, pry gently on the side that is rubbing against the coil form. For more delicate

speakers, we suggest bending the frame slightly. After centering, reconnect the dust collector with a good dope cement. (Sept. 1959)

#### **VARIABLE LINE VOLTAGE SOURCE**

In order to check a 3-way portable receiver's ability to operate at reduced line voltage, a variable line-voltage source is needed. Not having a Variac, I installed a 110-volt outlet on the panel of my tube tester and connected it to the filament selector switch. By means of the switch and line-adjustment pot, the line voltage to the portable receiver can be varied to a point where the portable cuts-out. (Be sure that the set does not exceed the filament transformer rating of your tester.) I have found that if the portable can operate with a line voltage of 95 V, it is unlikely to cut-out in the customer's home. (Sept. 1959)

*This idea is a sleeper: here's a zero-cost way to get an isolation transformer for working on AC-DC sets, as well as a variable AC source. No need to modify the tester: just make up an adapter on a tube base, with a round chassis-mounting (snap-ring) AC socket on top. Since the tester was made to feed at least 90 mA indefinitely to tubes like the 117L7, and more current at lower voltages, it's likely to run an AC-DC set for a couple of hours at a stretch without overheating. - LAS*

#### **PLASTIC TAPE - TUBE EXTRACTOR**

The "outside" of plastic tape will not slip on glass. I use it, between finger tips, to pull tubes from crowded quarters where you can get hold of only the uppermost portion of the glass bulb. (Sept.-Oct. 1960)

#### **SOLDERING IRON OR STEEL COMPONENTS**

When you run into trouble soldering to galvanized iron, cast iron or steel components, remove the hair bristles from the tin-handled brush commonly used to spread liquid acid flux. Replace the bristles with a bundle of fine copper wires cut from a piece of stranded cord. Connect the tin handle to the positive side of a 2- or 3-volt battery source, and the negative terminal to the work. Then use this "copper" brush to apply the liquid flux. This coats the metal with a plating of copper, to which the solder then adheres quickly, firmly, and easily. (Sept.-Oct. 1960)

## HIGHTSTOWN MEET AND AUCTION, MAY 28

NJARC and the Antique Wireless Association got good results with the joint Hightstown on May 28. It was expanded to add a hospitality suite the night before. NJARC coordinator Marv Beeferman and president Tony Flanagan organized the event.

The weather was excellent, bringing 77 vendors and 200 cars of visitor-buyers. The club tube program had sales exceeding 75 tubes. Pete Grave brought his ex-book-mobile, converted into a traveling antique-radio showroom.

After a lunch at the Town House Motel, Ludwell Sibley gave a slide talk on the AWA Museum at Bloomfield, NY. The place of New Jersey as a hub of early electronic research and development is evident in many of the museum displays.

Also after lunch was the indoor auction of catalog lots and bring-in items. The 205 catalogued items reflected two estates (mainly '20s receivers and vintage comm gear), a group of tube audio equipment, and other material. Detailed results appeared in *Antique Radio Classified* for July, thanks in part to Ray Chase's note-taking. Some major pieces were a Federal 110 (\$375), Tuska 228 (260), very early National SW-3 (250), Dyna Stereo 70 amp (160), RCA AR-

1300 (250), Dictogrand R-3 horn (220), RME-69 (160), and Hallicrafters SX-11 (160). Drawn in part by advance copies of the catalog, 84 bidders from 10 states took part. Walt Buffinton, a seasoned auctioneer who later ran the main auction at AWA's Rochester event, moved sales along briskly, while AWA treasurer Dexter Deeley took care of finances. Total revenue was just above \$9500. Bidding was crisp; prices on the comm gear tracked those in the 1993 Rochester auction, but alert bidders got bargains too, like a Navy GF-11 set for \$5.

The front cover shows scenes from the event: Marsha Simkin beaming in the sunshine outside, with Sibley and Buffinton handling the auction goods inside.

## IN MEMORIAM

NJARC member George Hennicke.

## A NOTE ON EDWARD HEROLD

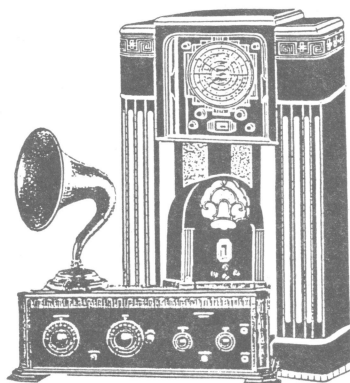
Dave Sica suggests that the *News* mention, before more time elapses, the death late last year of Edward Herold, an important figure at RCA during its best years.

A long-time resident of Princeton, he had been vice president for research. He worked for RCA from 1930 to 1972, less a term as research VP at Varian Associates. His "expert" status made him the author of the "Electron Tube" section in the 1967 *Encyclopedia Britannica*. He had a portfolio of 47 patents - starting with the basic designs that yielded the Type 48 and 6K8 tubes.

He had received numerous awards, including an honorary Ph. D. from Polytechnic University in 1961. He was named a Fellow of the Institute of Radio Engineers in 1948 for work in tube development, and received the IEEE Founder's Medal in 1976 for leading color-TV research. His article on tube development at RCA in the '30s in the 1992 *AWA Review*, and related articles in the *Old Timer's Bulletin*, earned him the 1993 Tyne Award for tube history - sadly, posthumously by a couple of months.

I had the pleasure of preparing his last writings for publication, and have rarely had crisper, more thoughtful material to work with. - LAS

## Delaware Valley Historic Radio Club ANTIQUe RADIO SWAPMEET



Sunday, Nov. 13, 8 AM - 1 PM  
Tyro Grange Hall  
Rtes. 413 & 202, Buckingham, PA  
For information, call (215) 646-6488.



"Early Radio in New Jersey" - an NJARC Exclusive!

## A GLIMPSE INTO DAVEN

A long-lived member of New Jersey's early radio-electronics industry was the Daven Company (earlier, Daven Radio Corporation) of 141-158 Summit St. in Newark. Experienced broadcast technicians will remember oiling the Daven "pots" (precision audio attenuators) on studio consoles. From an earlier time, radio collectors appreciate Daven's odd straight-sided MU-series tubes and ("unobtainable") spherical AC types, molded bakelite resistance-coupled amplifier unit, and scanning-disc television components of the '20s.

Here is a bit of Daven history, excerpted from a letter of July 17, 1953, from Lewis Newman, company president, to tube historian Joseph Fetsch of the New York Naval Shipyard. Letter by courtesy of tube collector-author Jerry Vanicek. - LAS

The Daven Company started in business in 1919, practically at radio's inception.

The MU-6 and MU-20 were designed, developed and manufactured by The Daven Company in the early 1920s. These tubes were made in the Daven plant. However, from 1927, the company gave up the manufacture of vacuum tubes and they were made by outside sources.

In addition to tubes, components such as "Glastor" grid leaks, condensers, resistors and resistance-coupled amplifiers were manufactured and marketed by The Daven Company. TV receivers were made by a subsidiary known as Port Manufacturing Company and distributed by Daven.

During the year 1923 The Daven Company developed (but overlooked to patent) the precision wire-wound resistors which are also known as pi-winding resistors. Basically they were the same as those now used in large quantities. The only exception was impregnation, but the winding method remains the same.

Daven became a division of General Mills (!) in the late '50s and moved to Livingston, still making precision resistors and attenuators; then in the late '60s was sold to the McGraw-Edison Co. and moved to New Hampshire.



**Y**OU as a Radio Fan know what that means—a complete line of tubes tested and perfected in our laboratories, not a half-baked product tried on the fans.

The new Daven AC Tubes will not hum, are non-microphonic, and give the same superb tone which has always featured Daven Products. If you have used Daven Products you know what you can expect—the new Daven AC Tubes are up to the Daven standard of perfection in every way. One outstanding refinement is the use of a specially coated PLATINUM filament which is instrumental in eliminating tube noises and prolongs life. A cheaper filament could be used and give average performance—but Daven performance demands Platinum. Four Prongs—fit any standard socket.

*Modernize your Receiver with Daven AC Tubes—the proper AC Tube for every socket.*

**FREE** Catalog containing full description of these and other new Daven Products on request.

*"The Sine of A Grid"*

**DAVEN RADIO CORPORATION**  
TRADE MARK "Resistor Specialists" REGISTERED

142 Summit St.

Newark, N. J.



New Jersey  
Antique Radio Club  
92 Joysan Terrace  
Freehold NJ 07728