

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

February 2016

Volume 22 Issue 2



MEETING/ ACTIVITY NOTES

Reported by
Marv Beeferman

The ON-LINE Broadcaster

The Jersey Broadcaster is now on-line. The majority of your fellow NJARC members have already subscribed, saving the club and your editor a significant amount of money and work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

Thanks to vice president Sal Brisindi for taking over the reins of the January meeting at InfoAge while president Richard Lee fought a bout of the flu. We had a reasonable turnout of radios for our DX-pedition, but the response to a request for BCB DX contest photos was a little disappointing. Hopefully, there were additional members combing the ether for that elusive "dit-dah-dit" of Radio Reloj who were just camera shy or too busy shoveling snow. We'll cover some preliminary comments regarding participation, conditions, successes, etc. in this month's *Broadcaster* and offer the final results in the March issue.



Vice president Sal Brisindi at the helm of our January meeting.



MEETING NOTICE

The next NJARC meeting will take place on Friday, February 12th, at 7:30 PM at Princeton's Bowen Hall (70 Prospect Ave.). Directions may be found at the club's website (<http://njarc.org>). This month's program will include a presentation by Ron Hutchinson on the Vitaphone Company. We'll also continue to collect dues for 2016.

For those NJARC members who have not yet visited the club's Radio Technology Museum (RTM), here's a great opportunity to come and say hello in addition to visiting the site of a 1913 wireless station and the historic 45 room Marconi Hotel. Ocean County Parks and Recreation is sponsoring a bus trip to Camp Evans on Saturday, April 9th which includes a tour of the Marconi Station buildings and their exhibits. Pick-up is at the Beach Complex Parking Lot in Ocean County Park, Lakewood, departure is at 12:00 with return at 6:00, fee is \$14.00 per person and age range is 9 years to adult. But you must register early since there is a maximum of 12 attendees. If interested, you need to fill out a program registration application which is available at the following site: www.oceancounty-parks.org.

For more than four decades, the name Ramsey Kits has been synonymous with some of the neatest kits for the do-it-yourself electronic hobbyists. However, rapid changes in technologies have made it difficult for kit builders. These days, you just don't go out and build yourself a wireless router or a color TV; you buy one at the corner big-box store. Therefore, following predecessors like Heathkit, KnightKit, Eico and others, Ramsey has discontinued its Hobby Kit Group. For the remaining inventory, it has been relocated to Amazon's fulfillment warehouses and may be purchased at Amazon.

Ramsey says that if you purchase from Amazon, you can take advantage of great deals and "low, close-out prices." However, this doesn't seem to be the case as a quick check shows that prices are just about the same as the original catalog prices and you'll be losing tech and warranty support. Hopefully, as time goes by, prices will fall to a reasonable level for some of Ramsey's really cool kits.

With the new year comes our call for 2016 dues. Your Board feels that the \$25 annual cost (\$30 for a family membership) still remains quite a bargain in light of the club's benefits:

- Twelve issues of the NJARC *Broadcaster*.
- An entertaining and informative web site and *Reflector* for the exchange of ideas and information.
- Meetings broadcast on the web.
- Two convenient meeting locations.
- Technical presentations and contests.
- Capacitors, tubes, resistors and parts at bargain prices.
- A schematic resource.
- A constantly expanding and improving radio museum at a unique, historic location.
- Meeting auctions, estate auctions, member-only auctions, "PAL" swapmeets and our yearly InfoAge tailgate.
- Repair clinics.
- Our subsidized Holiday Party...and much, much more!

For members receiving your *Broadcaster* by mail, check the code next to your name on your mailing label. Honorary (H) and Lifetime (L) members are exempt from paying dues. For the rest, including Family (F) memberships, dues will be collected at monthly meetings and club activities or you may send a check made out to "NJARC" to our membership secretary:

**Marsha Simkin
33 Lakeland Drive
Barnegat, NJ 08005**

Payment via PayPal is also available at the club's website but it will cost the club a fee. If you're receiving your *Broadcast-*

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 \$25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University.

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

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er via email and you're not sure about your status, contact Marsha at (609)-660-8160 or mhsimkin@comcast.net. While you're at it, you might want to discuss a lifetime membership. In any case, please renew early and avoid the cutoff date of March 31st.



Marsha Simkin and Edith Chase collect 2016 dues at the January meeting. Have you paid this year's dues?

In addition to our DX-pedition in January, we had a very nice Members-Only Auction with some decent restoration project pieces offered to fill up those cold, slack winter hours. Here's a few photos:

**Upcoming Events**

Feb. 20th: Winter Repair Clinic at InfoAge.

March 11th: Monthly meeting at Princeton; Show & Tell and Hints & Kinks.

March 19th: Spring swapmeet at Parsippany PAL

April 8th: Monthly meeting at InfoAge; Bill Zukowski's microphone collection.

May 7th: Spring Repair Clinic at InfoAge

May 13th-14th: Kutztown

May 20th: Monthly meeting at InfoAge; Radio Scavenger Hunt

June 10th: Monthly meeting at Princeton; capacitor nomenclature, CRT rebuilding, radio power supplies.

July 8th: Monthly meeting at Princeton; agenda TBA.

July 23rd: Summer tailgate swapmeet at InfoAge

Sept. 16-17: Kutztown

FROM THE PRESIDENT'S WORKBENCH

By NJARC President
Richard Lee

Greetings fellow enthusiasts! I've been thinking about including tidbits of radio-related information in our *Jersey Broadcaster* as I find them. Periodically (that's code for not every month), I will tell you about things I've found of interest from the internet, radio and printed media.

I found an article in the October 2015 issue of *CQ* magazine entitled "Parts or Life After Radio Shack." The author, D.E. Koneb, goes on to say how there are still many electronic parts suppliers available to the radio restoration community. Many of these companies

also carry modern test equipment and some kits. Yes, they are online, but some still publish a paper catalog by request. These include Jameco Electronics (www.jameco.com), Allied Electronics (www.alliedelec.com) and Newark Electronics (www.newark.com). Other parts houses with online catalogs include Digikey electronics (www.digikey.com), Mouser Electronics (www.mouser.com), and Surplus Sales of Nebraska (www.surplussales.com) which I wasn't familiar with. Most have a BOM (Bill of Materials) tool where you can order parts in a spreadsheet format.

If I get enough of a response, I'm considering starting a "Most Cluttered Workbench" and "Most Organized Workbench" challenge among the NJARC membership. A prize would be awarded for the winning photos published in the *Broadcaster* (send to mbeeferman@verizon.net) with an April 8th deadline. For starters, I'm using the following photo of my workbench as an example of the "cluttered" category but will not use it as an entry.



Finally, I'm looking forward to see you all at our Winter Repair Clinic at InfoAge on February 20th.

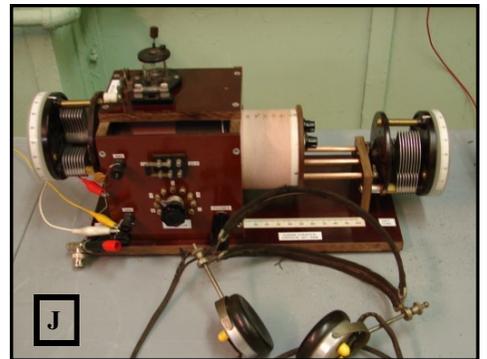
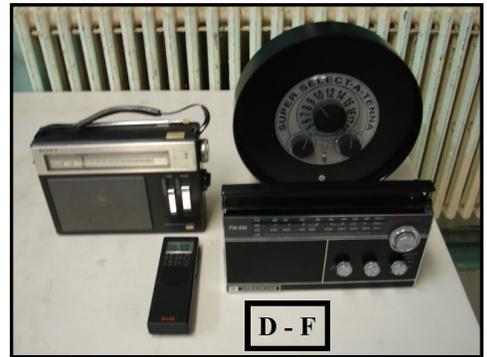
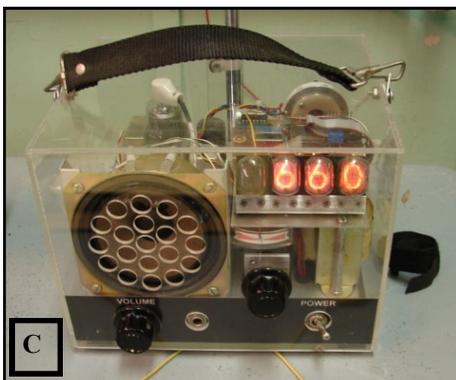
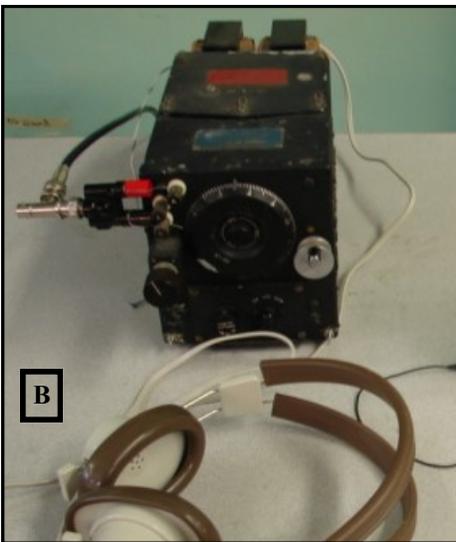
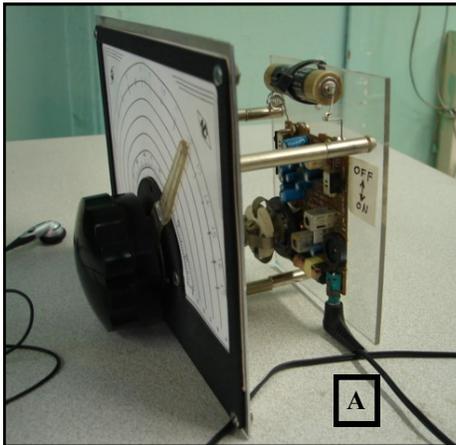
Richard

NJARC 2016 DX CONTEST UPDATE

By
Marv Beeferman

Well, the 2016 BCB DX contest is officially over and we're waiting for Tom Provost to tally the results. We had some interesting examples of potential entries for members to toy with that were set up at our January DX-pedition. Included were:

- Sony ICF-S5W: FM/AM radio (D-F)
- Hammarland HR-10: FM/AM weather sentry (D-F)
- CountyCom GP-5/SSB: AM/FW/LW/MW/SSB (D-F)
- Loose coupler crystal set (J)
- AM radio with digital frequency indicator (C)
- R-24/ARC-5 (B)
- Lightweight radio with homebrew precision dial (A)
- Tecsun PL-310ET (G-I)
- RCA tube portable (G-I)
- Zenith Royal 3000-1 (G-I)



We managed to catch some of our members trying to capture distant DX throughout the evening:





We didn't get many reports on conditions during the contest and the ones that were posted were variable.

Al Klase: Conditions from the strong-local-signals zone in Jersey have not been that great. Friday and Saturday were pretty poor. There's no sign of Caracas on 750, or any of the Cubans. I had heard Cuba's Radio Rebelde parallel on 600 and 670 at the DX-pedition, but no joy here. The log so far tonight (Thursday) using the Drake R8B and a home-brew loop included WHO 1040 Des Moines IA, WSB 750 Atlanta, KXEL 1540 Water Loo IA, WSCR 670 Chicago and KMOX 1120 St. Louis. So things aren't too bad.

Dave Snellman: From my location in Pennsylvania, conditions so far have ranged from good to very poor. Sunday evening and Monday were rather good. Logged some good DX.

Ed Suhaka: I have been listening around with a museum souvenir shop type crystal set that I got at a yard sale for 75 cents. All I could get was WOR and the foreign language station that is so close to me that I can almost hear them without a radio.

As for your editor, I started listening with a variety of battery sets during the first few days of the contest until I found two that seemed to be able to pull in enough stations to make them competitive. But it wasn't before the period of January 17th to January 21st that conditions really picked up and some good distant stations started to come in strong enough for easy identification. More on this later.

Thanks to those members who took the trouble to send in a photo and describe their rig.

Phil Vourtsis: The radio I used this year was a Braun model TS2 AM/FM/SW receiver. The cabinet and grill were in bad shape so it was given to me for nothing. It has a rotatable loop antenna controlled by a knob on the front panel. Looks like it is from the late 1950s. Great reception now that it is recapped and restored.

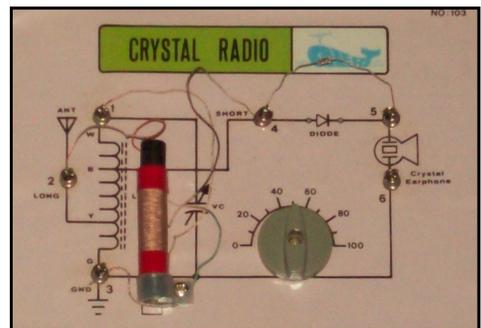
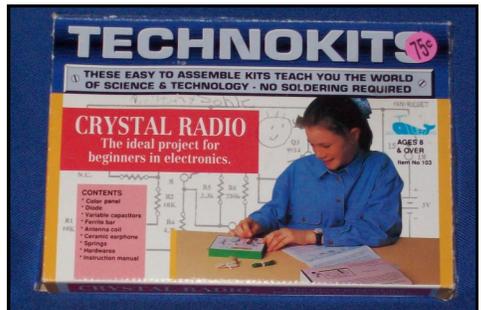


Ed Suhaka: My entry is for Category A, Crystal Radios. The crystal radio that I used was not a homemade radio but a commercial set - sort of. Some time ago, I attended a yard sale and purchased for 75 cents a crystal radio kit. It is one of the type meant for youngsters typically sold at museum souvenir shops or toy stores. It was correctly assembled when I got it and included a crystal earphone and a length of antenna wire. It is assembled with springs that make contact so no soldering. It consists of a plastic transistor radio variable cap, a ferrite coil and a crystal diode.

In actual use as supplied, the radio simply does not work. The length of

wire included in the kit is hardly adequate for a crystal radio. (The antenna I used for the contest was 42 feet of seamless rain gutter at about 15 feet up, also not the best antenna.) Even more disappointing was the supplied crystal earphone. The earphone was useless. The strongest station, less than a mile from my location, produced only distorted buzzing sound. At night, tuning in old reliable WOR, the earphone was just capable of barely audible noise. (The earphones I used for the contest was a pair of military HS-16A type manufactured in 1953 by the Wm. J. Murdock Co.)

It is sad to think of the child who gets one of these sets and after great anticipation ends up disappointed with something that looks nice but does not work as promised. Sad also is the possibility that a young one's interest and curiosity in radio never takes hold.



Marvin Beeferman: My first entry, in Category B (Primitive Tube Receiver), was a 1924 DeForest Crosley 50 that was obtained from the Richard Hurff estate. The radio was manufactured in Toronto, Canada. (Crosley bought the DeForest Radio Corp. Ltd. Of Canada in 1924 and began an association with the DeForest Radio Co. of Jersey City in 1927. Crosley used this association with DeForest, which controlled a large patent pool, to gain more favorable terms in its purchase of a license to the RCA patent pool.)

The Model 50 is a 1-tube regen that was originally sold to use a WD12; I used a 201A. I powered the set with an ARBE-III power supply at a plate voltage of 45 volts (the set calls for 22 volts).

If you've never operated a primitive regen receiver, you'll be amazed at its capabilities when hooked-up to a good antenna! Mine was about 30 feet, run from my house's second story to a nearby tree. You also need to be able to do some serious listening between 12:00 and 3:00 AM. All the standard DX stations were easy to find - WLW, CFZM, WSB, WJR, WHAS, KOA, CHML WTAM, etc. Unfortunately, the radio was not selective enough to pull in Radio Reloj at 570.

I wonder how well this radio would have performed with a 100 foot antenna (which I'm intending to install this Spring)? While on the subject, I can't stress the importance of a good antenna and feed (coax). If you live in an area that will accommodate a longer and higher antenna, try this before investing money in active antennas, filters and preamps. Also, go to Al Klase's web site to learn more about good feeds. You'll be rewarded with a vast improvement in sensitivity and selectivity.



Your editor at his DeForest Crosley 50. For clarity, antenna, power supply and earphone connections are not shown.

My second entry was an AC Dayton Model XL-5 in Category C (1920's Battery Sets). I had purchased this radio from member Mark Mittleman at a recent Parsippany swapmeet. Mark prides himself in living by the adage that "all the radios in my collection work." The XL-5 was no different; it fired right up with my ARBE-III power supply when most of the time you'll find that 20's radios have open audio transformers.

The XL-5 is a five-tube, three dial TRF set manufactured in 1924. It uses 01A's for two R.F. stages, a detector, and two audio stages. Additional controls are marked Amplifier, Volume, Clarity and Detector. Power requirements are 6, 22.5 and 90 volts. It has an I.F. frequency of 465 KHz.

One might expect that the XL-5 would be a better performer than the DeForest

Crosley 50, but this did not turn out to be the case. Although locals were loud and clear, distant stations were somewhat noisy and the ability to select stations with three dials get a little tricky. You can't depend on a linear relationship between stations and dial numbering. If you want to establish a good log, you need to do a little upfront work to get a general idea of station locations before you decide on a listening period. However, I was able to get a clear "dit-dah-dit" on 570 (just below WMCA) for Radio Reloj. I was also able to bring in CMBC (Arroyo Arena, CU) on 670 by recording the station and getting an interpretation of the propaganda from a friend. I, myself was able to hear significant use of the word "Americano" which you wouldn't find on most Spanish stations. (This second Cuban station will not be counted.)



I'm looking forward to additional stories at our February meeting and perhaps you still have time to send me a few more photos of entries. You can send them to mbeeferman@verizon.net.

THE "MARVEL" RADIO RECEIVER AND THE ROAD TO THE NEUTRODYNE

By
Marv Beeferman

One of my favorite documentary television series and its associated book was the BBC's production *Connections* that aired in the USA in 1979. It took an interdisciplinary approach to the history of science and invention and demonstrated how various discoveries, scientific achievements and historical events were built from one another in an interconnected way to bring about particular aspects of modern technology. Although not a major impetus to significant

changes in radio technology, crystal receivers such as Freed-Eisemann's "Marvel" did play a role, as radio historian Alan Douglas put it, as beginning "a series of events that dramatically changed the whole radio industry."

In 1917, David Roth Freed became an Expert Radio Aide at the Washington Navy Yard's Radio Test Shop (where Alan Hazeltine was a consultant). He left in 1918 and joined the Wireless Improvement Company as a design engineer and assistant chief engineer. In 1921, Freed left to organize the Radio Manufacturing Company.

Freed's first product was a crystal set named the "Marvel," and it sold extremely well - so well, that, within a few months, he needed capital to expand. In January 1922, he and his brother Arthur's employer, Alexander Eisemann, incorporated the Freed-Eisemann Radio Corporation. Marvel sales continued to boom for several months more.

I obtained my Marvel set from the Richard Hurff estate auction. It didn't look like much (although I knew it was early) and this was reflected in the reasonable price. Little did I know that asking prices on the auction/ebay markets have ranged between \$300 to \$400. The radio is simple; a ball-and-socket Galena detector, multi-tapped primary/secondary coil wound on a hard cardboard form and phone condenser. The enclosure was advertised as a "handsomely finished mission oak cabinet" and the range is advertised as 180 to 2,600 meters.

The radio was originally sold by the Marvel Radio Manufacturing Company, Inc. and later under the Freed-Eisemann Radio Corporation name. The Model 101 (without phones or antenna equipment but with an extra Galena crystal) sold for \$10. The Model 105 was the same receiver but included 150 feet of antenna wire, five porcelain insulators, a 1,000 ohm single headphone, an antenna switch, a ground clamp, and code and abbreviations chart and sold for \$15.





An early version of the Marvel. Note the fixed crystal, simple tap switch (original?) and tag.



Simple internals of the Marvel crystal set courtesy of radiomuseum.org. The coil form, based on its color, may not be original.



Metropolitan Opera soprano Claudio Muzio and her "radio-controlled dog" listen in on a Marvel.

A Complete **MARVEL** Receiving Set for \$15⁰⁰

You need not spend a large sum for a COMPLETE RADIOPHONE RECEIVING OUTFIT. Why spend your money for parts with which to assemble your own Receiving Set? You can buy a MARVEL RADIOPHONE RECEIVING OUTFIT for only \$15.00. This OUTFIT will receive radiophone, speech, and music within a radius of fifty miles of the large broadcasting stations. You can also receive wireless telegraph messages from large stations hundreds of miles away.

The OUTFIT comes complete in every detail. No additional parts are required—as simple to operate as a phonograph. Can be set up in twenty minutes. Full instructions with every OUTFIT.

The "MARVEL"—the most talked about OUTFIT in Radio

The "MARVEL" RADIOPHONE RECEIVING OUTFIT is the lowest priced, complete, guaranteed, crystal-receiving OUTFIT on the market, with a wave length range of 150 to 2600 meters. The OUTFIT is thoroughly practical and dependable. It can be quickly and easily set up for use. No source of power—no batteries—no license—no special knowledge necessary for setting up and operating.

The "MARVEL" RADIOPHONE RECEIVING OUTFIT, model 105 (patents applied for), consists of a "MARVEL" RADIO RECEIVER, model 101 (patents applied for)—a highly efficient radio receiver, completely enclosed in a handsomely finished mission oak cabinet—150 feet copper antenna wire, 35 feet insulated wire, 4 porcelain insulators, 1000 ohm telephone with leather-covered head band and telephone cord, one extra "MARVEL" tested galena Radio-crystal, antenna switch, ground clamp, code chart, abbreviation chart and complete instructions for setting up and operating. Nothing else required! Results guaranteed! \$15.00

Model 110, same as above but with a 2,000 ohm telephone double headset \$18.00

Buy from your Radio, Electrical or Sporting Goods Dealer, or Department Store. If they have not as yet received their supply, we will ship to you direct, on receipt of Parcel Post or Express Money Order.

Absolutely guaranteed to equal or surpass in performance any outfit selling at double the price—a statement our engineers can prove by actual test.

FREED-EISEMANN RADIO CORPORATION
FORMERLY RADIO MANUFACTURING COMPANY
Offices and Sales Department, 255 FOURTH AVE., NEW YORK CITY, U. S. A.

In the early months of 1922, Freed-Eisemann did quite well with its Marvel radio, with proceeds being supplemented by the sale of jacks and plugs, crystals, tube sockets, rheostats, condensers, etc. However, in late 1922, a huge bust followed the boom when radios stopped selling and scores of small companies went under. But makers of crystal sets like Freed-Eisemann's Marvel had even a more pressing problem.

Greenleaf Whittier Pickard was a researcher in the early days of wireless and considered a United States radio pioneer. He was responsible for the development of the crystal detector and in 1906 was granted a patent for this innovation. Pickard's detector was revolutionary in that he found that a fine pointed wire known as a "cat's whisker," in delicate contact with a mineral, produced an excellent semiconductor effect.

It 1907, Pickard was part of a group that formed the Wireless Specialty Apparatus Company (WSA). The company started with the manufacture of Silicon and Pericon detectors and receivers like the IP76 in 1908. Ultimately, there were no less than 21 Pickard patents, property of WSA, which covered, among others, circuit arrangements for crystal sets, crystal members, means for mounting of crystals and contacts and mechanisms to permit the user's selection of contact points of the contacting conductor on the crystals. (The patents also covered antenna loop arrangements.)

For the Wireless Specialty Apparatus Company, its only toehold in the "radio group" of RCA, GE, AT&T and Westinghouse was its patent position in crys-

tal technology. Therefore, beginning in May, 1922, WSA began issuing warnings in magazines such as *Radio* and *Radio News* outlining its patent status and claiming that any other company making or selling crystal detectors was liable for a patent infringement suit and an accounting for damages. The warning noted:

"The Wireless Specialty Apparatus Company purposes to prosecute, vigorously, all infringers of its patents, and therefore, those manufacturers, distributors, jobbers and dealers who have not been authorized as yet are warned to cease the manufacture or the sale or distribution of crystal detectors, renewals therefore, or crystal detector radiophone receiving sets or any other radio devices which infringe these patents."

"Unauthorized distributing or selling, wholly independent of manufacturing, is just as much an infringement as the manufacturing itself, and any seller is separately liable to suits for accounting for damages or profits in addition to injunction."

WSA's patent warning had the effect of scaring off Freed-Eisemann's dealers and, in parallel with a bust in radio sales, the company found itself on shaky financial footing. In August, 1922 Freed-Eisemann's advertising manager was quoted as follows:

"We have had in our employ here 138 operatives. Conditions are so bad that we have reduced the working crew to 26...I don't know what is going to happen in radio; there is no action around here. We can't even sell our Marvel cheap sets."

WARNING

to Patent Infringers

Various types of crystal detectors, renewals therefor, and crystal detector radiophone receiving sets now being offered for sale employ the inventions of one or several of the following United States patents (commonly referred to as the Pickard patents), the property of the Wireless Specialty Apparatus Company.

836,531	904,222	924,827
886,154	912,613	1,104,073
888,191	912,726	1,137,714
13,798 (reissue of 877,451)	963,173	1,225,852
933,263	1,104,065	1,257,526
1,213,250	1,118,228	1,136,044
1,136,045	1,136,046	1,136,047

Freed-Eisemann, with the company's existence on the line, decided to fight back and went to court to enjoin Wireless Specialty from publishing their patent infringement notices and sue for damages. To aid in these suits, the company gathered together a group of other New York crystal set makers in what was called the Independent Radio Manufacturers (IRM). They retained the prominent law firm of Pennie, Davis, Marvin and Edmonds (PDME). In an editorial in the September issue of *Radio Broadcast*, the suit was called "one of the most serious situations in radio."

In June 1922, the IRM began sending letters to many radio magazines stating their case. The IRM noted that:

- The validity and scope of the patents listed in WSA's patent warnings "have not been determined by adjudication in the courts" and are open to question.
- Because of the above fact, it is improper to create a false impression to the detriment of crystal manufacturers by representing to jobbers and dealers that the common type of crystal, crystal detector and crystal sets are patent infringements.
- Such warning advertising should not be published.
- Certain magazines have refused to accept such advertising, and
- Advertising by manufacturers of crystals, detectors and crystal sets is of questionable value in publications which carry the WSA warnings.

In an editorial in the September issue of *Radio Broadcast*, the suit was called "one of the most serious situations in ra-

dio." However, it did recognize a major problem of the time:

"Many companies have been able to manufacture and sell units which infringed patents which they honestly did not know existed. This condition has been the result of the unprecedented demand for radio equipment and the effort being made by large manufacturers who held the patents to supply the demand. Due to the temporary let-up in radio during July and August, these patent holders have been able to devote their attention to this part of their business and it is advisable for any company contemplating the manufacture of any type of radio equipment to have as its first requisite a thorough assurance that the devices they are to make are not patent infringing."

Through its PDME lawyer, Walter C. Russ, the IRM group learned of an invention of Hazeltine which was then being processed through the Patent Office by another young PDME member, Willis H. Taylor, Jr. If Hazeltine's new circuit, a way of stabilizing a tuned radio-frequency amplifier, could be made to work commercially, then the new IRM members could abandon crystal sets, avoid the regenerative circuit now controlled by Westinghouse, and take up the new "Neutrodyne" (as Taylor called it).

Meanwhile, in September 1922, the New York Supreme Court granted the injunction asked by Freed-Eisemann against the WSA company. The contention that WSA's advertisements constituted unfair business competition was sustained. The balance of the suit, in which

\$150,000 in damages was asked, remained pending.

The final outcome of the WSA suit could not be traced, but for Freed-Eisemann, it didn't seem to matter. Hazeltine and his assistant John F. Dreyer Jr., occupied a lab at the Stevens Institute of Technology. Freed built a prototype from Hazeltine's notes, took it to the lab, and after some attention from Dreyer, it worked beautifully.

Hazeltine's innovation was to add a circuit to each radio amplifier stage which fed back a small amount of energy from the plate circuit to the grid circuit with opposite phase to "neutralize" the feedback through the tube's interelectrode capacitance which was causing parasitic oscillations. This effectively prevented the high-pitched squeals that had plagued early radio sets.

Three IRM members lost no time getting into production. Frank Andrea was first, with a reflexed four-tube design. Freed-Eisemann's model was demonstrated by Hazeltine at the regular Radio Club of America meeting on March 2, 1923 where it created quite a stir. Garod was advertising its reflexed model a month later, and was in production in September.

Freed-Eisemann did rather well with its Neutrodyne model NR5. Sales in 1923 were four times the previous year and profits 100 times higher.

So what is the significance of the Marvel crystal set - Neutrodyne "connection?" In the early 1920s, RCA held a virtual monopoly over commercial radio receiver production due to its ownership of the rights to the Armstrong regenerative and superheterodyne circuits. The Neutrodyne, spurred by WSA's crystal radio patent fight, ended this control and allowed competition. Compared to the technically superior superheterodyne, the Neutrodyne was cheaper to build. As basically a TRF receiver, it was also considered easier for non-technical owners to use than the early superhets. By 1927, some ten million of these receivers had been sold to North American consumers.

References:

1. Alan Douglas, *Radio Manufacturers of the 1920's, Vol. 2.*
2. Maurice L. Sievers, *Crystal Clear* (1991)
3. *Radio News*, July 1922, February 1922
4. *Radio Age*, July 1922
5. *Radio Broadcast*, September 1922
6. *Radio*, March 1922, August 1922



New Jersey Antique Radio Club's

Spring Swap Meet



Parsippany PAL Building

33 Baldwin Road

Parsippany, NJ 07054

**Just off Route 46,
Adjacent to Smith Field**



Saturday March 19th, 2016



Refreshments Available

(70) 8 Foot Tables

\$25.00 for members

\$30.00 for non-members

Reserve Additional Tables \$20.00

At the Door \$25.00

Open to the Public

8am to 12 noon

Vendor setup at 7:15 AM

\$5.00 ENTRANCE FEE

CLUB DONATION

For Directions

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