

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

January 2014

Volume 20 Issue 1



MEETING/ ACTIVITY NOTES

Reported by
Marv Beeferman

The ON-LINE Broadcaster

The New Jersey Broadcaster is now on -line. To date, over 120 of your fellow NJARC members have 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.

Happy New Year and welcome to the 20th Anniversary issue (that's right, volume 20) of the NJARC *Broadcaster*. I haven't quite decided yet on how to celebrate this milestone but I'm open to suggestions.

CALL FOR DUES

With the new year comes our call for dues for 2014. The 2013 end-of-year financial report will be presented at the January meeting and published in the February *Broadcaster*. I'm sure our membership will be quite happy with the results of a tightening of the purse strings by your NJARC Board. But even with this improvement of the bottom line for 2013, the \$25 annual cost (\$30 for a family membership) still remains a bargain in light of the club's benefits:

- Twelve issues of the *Broadcaster*.
- A great and informative web site.
- Meetings broadcast on the web.
- Technical presentations and contests.
- Capacitors, tubes and parts at bargain prices.
- A constantly expanding and improving radio museum.
- Meeting auctions, estate auctions, member-only auctions, "PAL" swapmeets and our yearly InfoAge tailgate.



MEETING NOTICE

The next NJARC meeting will take place on Friday, January 10th at 7:30 PM in InfoAge building 9032A. Directions may be found at the club's website (<http://njarc.org>). This month's program will include our annual DX-pedition, a members-only auction and an end-of-year financial report.

- Repair clinics.
- Our Holiday Party ... and much, much more.

Check the code next to your name on your *Broadcaster* mailing label. Honorary (H) and Lifetime (L) members are exempt from paying dues. For the rest, including family (F) members, 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. Please renew early and avoid the cutoff date of March 31st.



Member Walt Heskes (W2MQ) will discuss his recently completed portable "Eye Tube Tester" project at our Spring homebrew contest rollout.

We're kicking off the 2014 collecting year with a DX-pedition and a members-only auction. The "members" theme implies that you have paid or will pay your 2014 dues at the January meeting. All proceeds go directly to the owner and you're asked to offer quality items ... please, no "junque."

In this month's *Broadcaster*, we'll try to do some catching up with photo spreads of our winter swapmeet and Holiday Party and revisit some of the club's benefits. Other reminders include a repeat of the DX-pedition article and DX Contest Rules (where the fun begins on January 17th).

Our membership secretary, Marsha Simkin, while awaiting a rapid response to the call for 2014 dues, has announced membership totals for 2013: 2 deceased, 2 resigned, 23 drops (for non-payment of 2013 dues), 4 reinstatements and 29 new members for a total of 213, a gain of 6 new members over the 207 from 2012. With most clubs losing members as the "old timers" drift away and antique radio being a hard sell to most youngsters, our club still seems to maintain its vitality. Thanks Marsha for your hard work in keeping our membership statistics up-to-date.

Dave Sica has reported that Paul Buresh has finally gotten around to posting the archives of his "Tube Talk" radio program on the web. Paul is on the air at 1330 AM out of Boston and on the web at www.1330wrca.com/streamer/ every Friday at 10 PM and has featured a few NJARC members. If you missed any of the programs, here's your chance to catch up.

Dave notes that Paul's enthusiasm for this labor of love is commendable and

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

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Dave is pleased to be hosting this site for him free of charge and he's happy that many of our club members have contacted him to let him know how much they enjoy the show.

Dave also recently received information from Bill Liers of the Hudson Valley Antique Radio and Phono Society who recently ran across a gem of a radio reference resource. It's called the Online Radio & TV Library located at <http://americanradiohistory.com> and it houses a treasure trove of documents associated with AM, FM and TV broadcasting history. Included are magazines and periodicals, yearbooks and directories, technical, engineering and audio publications, early radio publications and journals, radio logs and station lists, special and anniversary editions, ratings, research and programming publications, radio station albums and books and numerous other sources.

The creator of the site says that he has placed security on most (but not all) of the documents to prevent the site from becoming a download resource rather than a virtual library and research center. However, I tried and was able to print out a few pages from the June 1918 "Electrical Experimenter" so you'll have to test the security on the publications you're interested in. In any case, you'll have interesting reading for years to come.

One of the fun items that showed up in our Mystery Grab Bag game during December's holiday party was a "Quaker Oats" crystal set. As legend goes, many a young experimenter would wait until the contents of a Quaker Oats container was completely consumed so that the sturdy cardboard cylinder could serve as a form for the tuning coil. There was probably thousands of variations of the complete crystal set but after doing a little research, I found that there was actually a "standard" model.

According to Marc Ellis in his *Popular Electronics* "Antique Radio" column (January 1994), in the early 1920's, Quaker Oats offered, as a Christmas promotion, a self-contained crystal set. It used the "Quick Oats" canister not only as a coil form but also as a chassis for the crystal detector, binding posts, and tuning mechanism. The offer was local only and anyone desiring a set had to present themselves at the downtown offices of

the Quaker Oats Company with a dollar and proof of purchase seals from two containers. For five dollars, you could buy the complete outfit that included not only the detector but a set of 2400-ohm phones, 100 feet of stranded antenna wire, a couple of insulators and a 50-foot insulated lead-in wire.



Today, you can search the web to find a replica of the original container that can be printed out and pasted over a new one, and plans to build a set that duplicates this early history. Sounds like a great project and interesting conversation piece.

Upcoming Events

February 8-9 (tentative) - Armstrong Day at InfoAge's Marconi Hotel

February 14th - Monthly meeting at Princeton's Bowen Hall; History of RCA by Dr. Alex Magoun (tentative)

February 22nd - Winter Repair Clinic at InfoAge building 9032A

March 14th - Monthly meeting at InfoAge building 9032A; Professor Joe Taylor's Moon Bounce talk (tentative)

March 22nd - Spring swapmeet at Parsippany PAL

April 11th - Monthly meeting at Princeton's Bowen Hall; Al Klase "History of Short Wave"

May 2nd - Monthly meeting at InfoAge building 9032A; homebrew and "basket case" contest judging

May 8 to 10th - Kutztown radio swapmeet

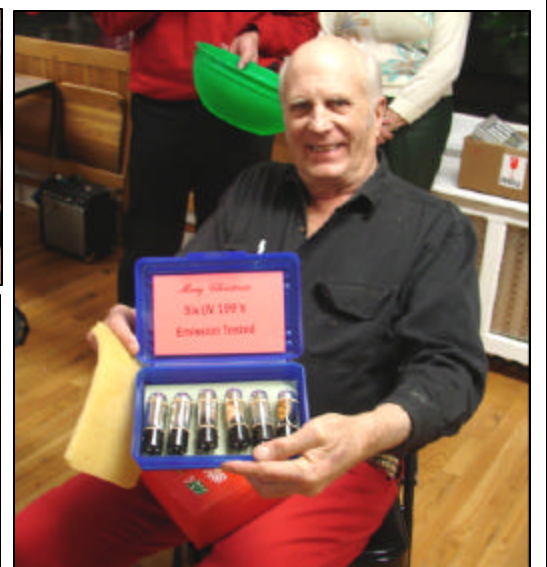
June 13th - Monthly meeting at Princeton's Bowen Hall; Show & Tell

June 21st - Spring Repair Clinic at InfoAge building 9032A

July 11th - Monthly meeting at Princeton's Bowen Hall (program TBA)

July 26th - Annual tailgate swapmeet at InfoAge

HOLIDAY PARTY - DECEMBER, 2013





**ARMSTRONG DAY
AT
INFOAGE**

**Edited by
Marv Beferman**

On the night of January 30th, 1914, Edwin Howard Armstrong, accompanied by Professor Morecroft from Columbia University, demonstrated his regenerative receiver to David Sarnoff and Roy Weagent of The American Marconi Company at the Belmar receiving station, then under construction. In a report to his superiors on February 2nd, Sarnoff noted the following:

"Armstrong's receiver was compared with our standard 101 navy type tuner together with the cerusite and carborundum detectors. Speaking relatively of received signals means of course, very little since the human ear is not to be depended upon, but an idea of the difference may be obtained when it is stated that the signals from Clifdenon Armstrong's receiver could be read with ease with telephones on the table

when signals on our receiver were barely readable with the telephones on the ears..."

After noting the strength of signals from the Poulsen stations at Frisco and Honolulu, Sarnoff went on to report:

"In conclusion, I would state that the results obtained with Mr. Armstrong's receiver are sufficiently convincing to warrant our most careful investigation of his patents and circuits, etc., for I believe that his device has tremendous advantages, and unless there are other systems of equal merits which are unknown to me, I am of the opinion that he has the most remarkable receiving system in existence."

2014 marks the 101st anniversary of this event. In celebration, the New Jersey Antique Radio Club's Radio Technology Museum (RTM) will host an observance of the occasion at InfoAge on February 8th and 9th from 1 to 5 PM. There will be a display and demonstration of vintage regenerative radio receivers with a formal presentation by NJARC's technical coordinator Al Klase at 3 PM. The other InfoAge museums will be open as well and admission is free (with a \$5

donation to InfoAge suggested).

Working receivers on display will include a mock-up of Armstrong's original circuit receiving a simulated spark radio-telegraph transmission and a WWI era naval receiver. This receiver, a Wireless Specialty Apparatus IP-501, can be operated both as a crystal set (passive receiver) similar to the Marconi 101 and an Armstrong regenerative set using a vacuum tube to provide amplification, and will give us a feel for the regenerative receivers involved in the 1914 demonstration.

Al notes that: "If we're lucky, I'll have a "virtual-ether" set up with not only a spark signal but a simulation of the two CW stations, the German station in Nauen and the Poulsen stations in San Francisco. The latter was reputed to sound like an inebriated flute player on the Armstrong set."

Armstrong is arguably the greatest radio inventor since Marconi. His regenerative receiver was followed in 1918 by the superheterodyne, the basis for nearly all modern radio receivers. During the 1930's, Armstrong developed high-fidelity FM broadcasting. His FM technologies eventually found their way into two-way mobile radio and radar.



The Operations building under construction in 1913-14. The Armstrong demonstration is believed to have occurred in the construction shack visible in this photo. The building still stands but is in need of restoration.



Fig. 173—Type 101 Receiving Tuner (American Marconi Company).

Armstrong's experimental regenerative receiver was compared to the American Marconi Type 101. This was a sophisticated crystal set, and probably one of the best receivers then in use.



It is not known what the original regenerative receiver looked like when Armstrong made his initial discovery, but Al Klase has tried to duplicate it, at least technically, as close as possible.



The IP-501 was the U.S. Navy's first receiver with a vacuum tube inside the cabinet. This set will be used as a stand-in for the Marconi 101 above.

IS THIS THE "ALL AMERICAN 7"?

By
John Reinicke

The following article appeared in the Winter 2013 issue (Volume 28, Number 4) of the "Michigan Antique Radio Chronicle." It struck me immediately with regard to its insight into our obsession with the latest new development, no matter how much or how little it ultimately affects our lives. As Billy Joel noted, "it's still rock and roll to me!"

In the history of radio, there have been a few enduring circuits. The "All American Five" is a five tube super heterodyne circuit utilizing five tubes. This circuit produced adequate performance for just about everyone and appeared in the early 30's. The "All American Five" schematic remained virtually unchanged through several generations of tubes right up to the end of tube type radios in the 70's.

Just after the close of WWII, when manufacturers could go back to civilian production, Zenith decided to design an AM-FM set that would feature good sound quality and adequate performance with a minimum tube count. This set would utilize multi-function tubes to reduce the tube count and that included the 19T8 (4 elements) and the 12AT7

(two elements). The set used series filaments and a selenium rectifier. AM tuning was a dual section variable capacitor and the FM tuning used a pair of variable inductors. The set would feature improved audio circuits and a good speaker for quality audio.

The first set was introduced in 1946 and the schematic and tube complement remained virtually unchanged through package design iterations. The base components such as the IF cans remained unchanged into the 60's. The late 60's would see the components change, but the schematic remained. The set even retained the inductive tuning on FM. This 7 tube schematic remained in the Zenith lineup until the end of tube radio production in the 70's.

In an era when my cell phone is very

obsolete in less than two years, and software is updated almost monthly, I find it very interesting that Zenith could manufacture a set with the same components from 1946 to the late 60's - a run of 20 years. I don't know, but I suspect the tooling was paid for by 1950, so 'ya reckon they made money?



A Model H723Z2 (chassis 7H04Z2) Zenith radio from 1952.

NJARC 2014 DX-PEDITION

In support of our 2014 Broadcast Band (BCB) DX contest, Technical Coordinator Al Klase will host our extremely popular "DX-pedition" at InfoAge on January 10th as part of the monthly meeting.

The basic concept of the DX-pedition is to gather together a working collection of radios representing the various eras of receiver design in an environment that will allow each NJARC member an opportunity to operate each set. Hopefully, inspiration will be provided for greater participation in the BCB DX contest to be held from January 17 to January 26 (see page 8).

We're going to take advantage of the great facilities and hopefully quiet listening environment available to us at InfoAge. The primary theme will be broadcast band DX and battery-operated sets, but antenna facilities will also support short-wave and long-wave operation as well.

We'll attempt to maintain log books for each receiver so that both stations heard and user comments may be recorded. These might be published, with pictures, on the NJARC website and *Broadcaster* for further reference. We also might try to shoot some video of each set in operation and post them on our website.

If you plan to attend the January meeting, please come with sets in good working condition that you don't mind having other club members operate. If you could bring a length of coax that can be connected to your radio, with a BNC connector on one end, it might be helpful. We'll try to supply additional cables and adapters, but your help would be appreciated.

We'll try to coordinate the different types of radios that show up so we don't end up with mostly All-American Fives. Contact Al Klase at (908)-892-5465 or ark@ar88.net with the type of radio you plan to bring. It would be nice to have representative receivers from the following categories:

1. Crystal sets
2. Battery sets: Regen, TRF-regen, TRF, Superhet
3. 1930's and 40's AC sets: TRF, Superhet
4. Other entertainment sets
5. Communication receivers: TRF-Autodyne, single conversion, multiple conversion
6. Transistor radios

Various antennas will be provided and you're welcome to bring your own tuned loops for the broadcast band. We might consider playing into the wee hours if enough interest exists.

HOW MANY JARS IN YOUR RADIO?

Or More Esoteric Facts About Capacitors

By
Ray Chase

We go back into the "Broadcaster" archives from March 2007 to bring you this article by Ray Chase...Ed

For those of you who subscribe to the Tube Collectors Association reflector, you know that it is peopled by many knowledgeable engineers, physicists and other "boffins" (definition supplied on request) who are ready and willing to debate almost any technical subject. Recent discussions of the relative merits

of the International SI based measurement systems over the CGS, English or other conventions have presented some revealing and interesting comments and discussions.

In relating some prior ancient and odd units of measurement such as gills, ells, grains, minims and halves, the subject of using JARS as a unit of capacitance finally came up. This was serendipitous as Al Klase and I were at the Ft. Monmouth museum a short time ago and observed a WW I era European style tube amplifier (possibly used by Major Armstrong himself) that had a paper schematic in its lid on which the capacitors were labeled in JARS.

Now I have heard of the use of JARS to denote capacitance values, but had not seen any examples. Al was also aware of the term JARS and also wondered how capacitance could be defined in centimeters, which he also had heard of. Well, from the panel of experts on the Tube Collectors Forum, I'm here to reveal all to you.

JARS go back to the primordial days of electricity when the only capacitors were Leyden jars. Incidentally, I'll use the term capacitors synonymously with condensers, which was the terminology used in the "early days." Leyden jars would be connected in series or parallel as needed and most early spark transmitters used banks of Leyden jars to store energy for the spark.

Actually, one forum commentator recalled that some British Navy textbooks continued the use of the term JARS almost up until WW II; those Brits are pretty stubborn. The value of a JAR is equal to $1/9 \times 10$ to the minus 8 farads or about 1.1 nanofarads. Therefore, 1 uF would equal about 900 JARS. Also, a JAR = 1,000 cm.

Now how the heck does a centimeter relate to capacitance? Well, early physicists determined that 1 cm equals the capacitance of a 1 cm diameter sphere in free space. In the electrostatic system, a charged body has unit capacity if its potential is one ESU of potential when it is given a charge of one ESU. The unit is called the centimeter.

The Leyden jar is certainly the original capacitor and Pieter van Musschenbroek of Leiden, Holland invented it around 1725. In Dutch, it would be a Leidsche flesch" or a bottle from Leiden.

WINTER SWAPMEET



The 2014 NJARC BCB DX Contest - Jan 17 to Jan 26

In the 1920's and 1930's, some radio listeners would compete with each other for the reception of the most distant stations using the same receivers that we now restore and cherish. We can recapture some of the excitement that the early DX'ers experienced in our own contest.

Official Contest Rules

THE OBJECT: To use vintage radios receivers to receive broadcast-band signals from the greatest possible distance. Performance will be judged by the total mileage for your ten best loggings during a 24-hour session. You will be competing against competitors using similar receivers.

ELIGIBILITY: The contest is open only to members in good standing of the New Jersey Antique Radio Club.

CONTEST PERIOD: The contest period will be from 12:00 Noon, local time at the receiving location, Friday, January 17, 2014 through 12:00 Noon, Sunday, January 26, 2014.

SESSIONS: Contestants may submit logs for any two 24-consecutive-hour sessions (noon to noon) during the contest period. You may use only one receiver during a session. That means you may not "bird dog" the simple radio with a more complex radio. You may submit logs for two different receivers. They need not be in the same category.

FREQUENCIES: The Broadcast Band, as defined for the contest, will be from 530 to 1600 kilocycles. No stations on the new extended band, 1610 to 1710 kilocycles, will be counted since many early radios did not cover those frequencies.

RECEIVER CATEGORIES:

- A - Crystal radios
- B - Primitive tube or transistor receivers (homebrew also) - 1 to 2 tubes or transistors, plus power supply.
- C - 1920's Battery sets (homebrew also) -batteries or modern power supply are OK.
- D - Other tube radios sold for home entertainment.
- E - Amateur, commercial, and military tube-type communications receivers.
- F - Any radio of your choosing.
- G - "Light-Weight": Any radio weighing less than one pound (454 grams).

SPECIAL AWARDS will be given for the best performances by first-time contestants.

ANTENNAS: Anything you like.

LOGS: Submit a log for each of your contest sessions (maximum of two). Each log header should include contestant's name, address, e-mail address if applicable, phone number, category, and description of receiver and antenna. Please include your listening address if it is different from you mailing address.

Make a log entry for each station you claim to have heard. Stations must be positively identified. (This is being done on the honor system, and is a somewhat variable concept. If you hear Boston weather on what you know is 1030KC, then go ahead and log WBZ. However, just because you heard a signal on 1160KHz doesn't mean you heard KSL in Salt Lake City.) The contest committee reserves the right to disallow what it feels are outrageous claims. Each entry should include time, frequency, call letters, location, and optional comments. Although we're only judging your ten most distant loggings, submit as complete a log as possible. The committee may make special awards for most stations, most interesting log, etc. as it sees fit.

Logs must be postmarked not later than midnight Monday, February 3, 2014. Logs may be submitted as email attachments.

SCORING: Distances to stations will be calculated by the committee and will be based on great circle distances from Freehold, New Jersey for listening posts within a 100-mile radius of Freehold. We will calculate mileage for other entries based on actual listening location. In all cases, please indicate your ten best loggings to make our job easier.

Special Rule #1: A contestant may claim only one of the Cuban time stations, Radio Reloj, regardless of how many are actually heard. All will be scored as 1279 miles (Havana).

Submit logs to: Tom Provost, 19 Ivanhoe Dr., Robbinsville, NJ 08691, tprovost@pppl.gov
Questions: Al Klase - 908-892-5465 - ark@ar88.net, Tom Provost - 609-243-2508