The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

January 2007 **Volume 13 Issue 1**

MEETING/ ACTIVITY NOTES

Reported by Marv Beeferman

MEETING NOTICE

The next meeting of the NJARC will take place on Friday, January 12th at 7:30 PM at the David Sarnoff Library in Princeton, NJ. Contact President Phil Vourtsis (732-446-2427) or visit us at http://www.njarc.org for directions. This month we're asking members to amaze or amuse their fellow radio enthusiasts with something from their collection, a recent acquisition or a recent restoration. Yes, it's another installment of our ever popular "Show and Tell" meeting which allows our allegedly grown-up members to share their secret pleasures with the same enthusiastic spirit of "Show-and-Tell" that we all remember from grade school.
We'll also be collecting 2007 dues so please have cash or a check at the ready ($20 for single membership/$25 for joint).

THE ON-LINE BROADCASTER

The New Jersey Broadcaster is now on line. To date, 76 of your fellow NJARC members have subscribed, saving the club some $1,370 per year. Interested? Send your e-mail address to:
mbeeferman@cs.com
Be sure to include your full name!

Happy New Year! After a well deserved two month respite from 12 continuous years of the *Broadcaster*, I hope this issue brings you up-to-date with some of our recent club activities. We had another great Holiday Party this year which is summarized in an article by Dave Sica. Technical Coordinator Al Klase provides the rules for our first club competition of 2007, the NJARC Broadcast Band DX contest, and a very exciting new club acquisition is reviewed.

Ray Chase and Al Klase has kept everyone on board with their InfoAge "Museum Musings" on the NJARC Reflector. There has been quite a bit of activity and it would be nice to have a few more pages available in the *Broadcaster to* credit all the great work our volunteers are accomplishing. Perhaps a bulletin devoted just to the museum is in order? In any case, here's a sort summary of what's going on:

- The museum openings on Sunday afternoon have been going well. Traffic has been steadily increasing since recent events such as the National Broadcaster's Hall of Fame (NBHF) induction ceremony, Halloween "Haunted House," USO dance and model train exhibits. One some days, traffic has been a little overwhelming for even two attendants.
- The museum committee has set up one day each week (currently Wednesday) as a work day and several club volunteers have answered the call.
- Dave Sica has videotaped several members giving tours and, following editing, these will serve as a training aid for new guides.



What do these items have in common? See pg. 7

- The team of Klase and Klancer has opened up the wall between the two office rooms on the left side of the museum and have created a wide opening to increase floor space for hands-on exhibits.
- We are working on outside signs for better defining our mission. An outside "Radio Technology Museum" is being considered, with a NBHF sign above the museum and the NJARC logo inside. We are not obligated to continue to use the NBHF name; in reality, more than half the museum contains club and member artifacts, but we don't intend to abandon the rich NBHF legacy.

In digitizing archival video coverage of the NBHF, Dave Sica said that he's gotten a new perspective and better feel for what the originator's (Art Schreiber) intentions were. Dave was surprised at the level of support that was received from those in the broadcasting industry and the level of determination and effort that Schreiber had in creating and maintaining the original museum.

- A security system is now in place.
- A cover and table (donated by Joe Bentrovato) will soon be available to display our rare "Washington Receiver."
- And much, much more…….

MEMBERSHIP RENEWAL

It's that time of the year again and a "1/07" expiration date on your mailing label (honorary members with an "H" are exempt) indicates that 2007 dues are expected no later than March 30th. Please send your $20 check ($25 for joint membership) made out to the NJARC to: Marsha Simkin, 33 Lakeland Drive, Barnegat NJ, 08005.

Upcoming Events:
1/20/07: Repair Clinic, Sarnoff Library
1/28/07: BCB DX Contest ends
2/05/07: BCB DX Contest logs due
3/09/07: Long Island Radio Day
Info: Robert J. Raynor, 516-623-5967

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 $20 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.

THE REWARDS OF RADIO REPAIR

By Ray Chase & Walt Heskes

Our repair sessions sometimes bring unexpected rewards, both material and otherwise. Here are two examples...Ed

Ray Chase

At a Saturday radio repair session last year at the Sarnoff Library, a local woman brought in a small table model Grundig radio for repair. It was a typical 50's set and she said that she received it as a gift when she was a young girl and that it stopped working several years ago. A quick check indicated massive hum and no discernable signals, typical of dried out filter caps. She said she wanted to wait while the radio was looked at and sat down to chitchat with me.

I cut out the original caps and, in trying to install replacements, commented that in the tight quarters in this chassis it would be advantageous to have the small hands of a woman. She showed me her hands; they were larger than average since she was a physical therapist and did a lot of massage therapy in her work. I commented that I was having problems with my left shoulder; an occupational result of having to flip through hundreds of thousands of postcards with my left hand over the past 20 years. She volunteered that if I would lie down on the table she would give me a massage therapy treatment. I thanked her but thought that it would not be appropriate at the time.

Anyway, I replaced the offending caps, squeezed them into the available space and the radio played fine with no further work. She paid for the cost of parts and when I refused personal payment, she took my card and said that she would make something for me. She went on her way and by the end of the day I had forgotten all about her comment.

This past November, I received a phone call from her asking if my address was still correct since she wanted to send me something. I indicated that the address on my card was correct and wondered what would come. A few days later the mailman brought a package containing a nice hand knitted scarf, just in time for Christmas and cold weather (if it ever comes). I guess that she keeps her fingers nimble for her massage work by knitting items. A nice gift and a nice thought.

Walt Heskes

The following is a message from Barbara Donelik whose Silvertone 4673 was brought back to life after our recent clinic:

"I can't thank you enough for all your work! I've been enjoying searching the bands to see what I can find. So far, I've heard Radio Marti, Taiwan, Spain and Venezuela as well as other places I can't identify but which broadcast in French, German and some Slavic language. You and the radio club have brought this old radio to life!"

This rig had been purchased new back in '38 by her parents. It is the story of a radio that survived long after its useful life had ended but was saved from the landfill by a loving owner who happened to see the NJARC notice in the Star Ledger the morning of the clinic and seized the opportunity to let us work our magic.

Technically, this vintage superhet needed total recapping and more. The speaker field coil was open as was the primary coil of the audio transformer. The 6X5 rectifier was shorted and the 6U5 eye tube was far too dim to be of any use. We replaced the speaker with a PM type and the field coil with a 50 watt, 500 ohm bleeder resistor. We replaced the innards of the 6X5 with a pair of 1N4003 diodes across the tube base pins, maintaining the radio's original appearance. The 6U5 was replaced with a bright, new 6E5.

A tune-up restored required sensitivity and selectivity to the AM and two short-wave bands. The rig survived a 2-hour bench test before we lubricated the tuning dial shaft which had stiffened up after a few minutes of use.

We returned the rig to Barbara and her husband a week after the clinic. Incredibly, a nice B&W photo of the exact same radio appeared in that month's issue of *Antique Radio Classified*.

ANOTHER FUN EVENING AT THE NJARC HOLIDAY PARTY

Reported by Dave Sica

Unfortunately, a vacation scheduled well in advance conflicted with your editor attending this year's holiday party. From member reports, it was a great evening. Thanks to Dave Sica, Phil Vourtsis, Richard Lee and Bill Zukowski for filling in with a write-up and pictures...Ed.

NJARC's 2006 holiday party was once again another fun-filled event whose success depended on the hard work of many volunteers and the generous offer of use of the David Sarnoff Library facilities by Director Alex Magoun.

The social hour before dinner, organized by the D'Amico's, provided an opportunity for members to gather in the comfortable setting of the David Sarnoff Library for snacks and conversation. As we moved into the auditorium for the main course, a fine selection of Italian buffet items, provided by our resident Irishman Sal Brisindi, offered a variety to please every palate. The nearly sold-out event filled the large room and conversation was lively. "DJ" Darren Hoffman, using only vintage turntables and vacuum tube Dynaco preamps and amplifiers, provided entertainment. Assistant Phil Vourtsis provided a selection of holiday music from his collection of 45-rpm records on one of his meticulously restored 45 players.

Marsha Simkin was spotted enjoying things tremendously, this being the first holiday bash in which she participated as an attendee rather than an organizer. After dinner, the notorious Mystery Grab Bag provided an opportunity for members to dig deep into their libidos to momentarily draw on emotions that have been suppressed throughout the year - retaliation, revenge and reprisal. The euphemism is sometimes termed sniping. Bob Bennett "thought" he was leaving with a nice RCA portable while Richard Lee sniped an early homebrew from a very unhappy John Acacia. Bob Masterson had his eyes on a "Skywaves" crystal set originally held by Frank Johnson, but Frank didn't go home with it...Gerry Groaer did (along with the 50/50 winnings!).

Following dinner, the crowd settled in to play the "Name That Old Television Show Theme Song" contest. The game was organized and conducted by Dave Sica who blasted snippets of vintage TV show theme songs at the crowd at a fast and furious pace. Well over a hundred brief sound clips were played, some dating back to near the beginning of broadcast television. The lucky winner of NJARC's first annual "Golden Couch Potato Award" was Janet Hunter with some 75 themes correctly identified. This total eclipsed by far second and third place in the forties and fifties categories. Dave was suitably impressed, having confided that even with the names of the shows in front of him, he would have been hard pressed to correctly identify more than a handful! Congratulations to our winner, who received a handsome embroidered NJARC shirt as her prize.










The 2007 NJARC BCB DX Contest

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 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 receiving location, Friday, January 19, 2007 through 12:00 Noon, Sunday, January 28th, 2007.

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 receivers (homebrew also) -1 to 2 tubes plus power supply
C - 1920's Battery sets (homebrew also) -batteries or modern power supply is OK
D - Other tube radios sold for home entertainment.
E - Amateur, commercial, and military tube-type communications receivers.
F - Transistor radios introduced before 1970.
G - Special award for 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, phone number, category, and description of receiver and antenna. Please include you 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 1160 KHz 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.

A sample log (pdf/excel) is available from the NJARC web site at http://www.njarc.org. Just click on "2007 NJARC BCB DX CONTEST" in the "Calendar of Upcoming Events" section. Here you will also find a station list and distance table. You may reproduce it or generate a similar one of your own.

Logs must be postmarked not later than midnight, February 5, 2007.

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.

NEW RULE: A contestant may claim only one Cuban time station, 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

Questions/Sample Log: Al Klase - 908-782-4829, Tom Provost - 609-243-2508

CRYSTAL SET MOBILE

By Al Klase (N3FRQ)

Back in the 1990's, there was a Yahoo Internet "club" devoted to crystal radio development called "The Ferrite Core." One of the perennial topics of conversation was the difference between operating a crystal set near high-power stations as opposed to a more rural setting. Someone, who had read Aesop's Fables, likened this to "The City Mouse and the Country Mouse." The country mouse needed a sensitive radio hooked to a large antenna, but could faintly hear distant stations without a lot of interference. The city mouse's crystal set could drive a loudspeaker using only the bed springs for an antenna, but he couldn't hear much beyond the city limits.

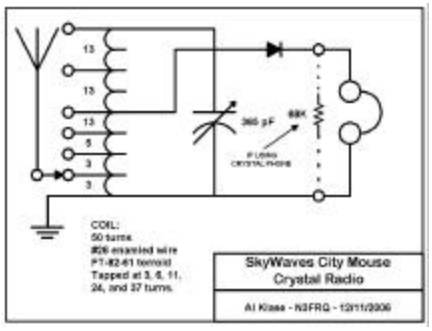
I've spent most of my life as a country mouse, but recently I've been frequently finding myself in Jersey City. Indeed, crystal set operation is very different there. Short antennas work pretty well, and even my nearly-deaf rocket radio picks up multiple stations. It's even possible to operate a properly designed set with the antenna terminal connected to ground with the headphone cord and listener serving as the actual antenna.

I decided to apply what I learned down town to a couple of radios I was building as Christmas presents. The circuit is very similar to the NJARC Pretty-Good Crystal Set, but the coil is wound on a ferrite toroid to save space, and there are additional antenna taps on the "high end" of the coil to better accommodate short antennas.

I recently found myself in Maywood, near Hackensack, with some time to kill while Peggy rehearsed before a Sunday-afternoon concert. I took the city mouse for a walk in a nearby park. With 20 feet of wire 5-feet in the air, and the ground wire clipped to a metal park bench, I could comfortably choose from five or six stations. I could still hear the Jets game on WABC with just the ground connect to the antenna terminal.

Still having some time to waste, I picked up a four-foot stick as I returned to the car. I grounded the set to the ignition key, and extended the antenna wire out the sunroof with the stick. Sure enough, the Jets were still ahead. I wound the rest of the wire around the stick as a loading coil.

After an enjoyable concert (Four Seasons and a Brandenburg Concerto w/ harpsichord), I listened to the crystal set all the way home, down the turnpike through the Meadow Lands, past all the towers. I think most were on night-time power by now, as none were obnoxiously loud. I need to try that again, in broad daylight, with a speaker.



The "ugly stick"

WINNING WARS WITH WIRES AND CRYSTALS

Edited by Marv Beeferman

Starting with 490 B.C., when Pheidippides ran 26 miles to tell the Athenians of the Spartan victory over the Persians in the battle of Marathon, swift transmission of information has been a key element in warfare. A pair of recent books, which may be of special interest to NJARC members, show how superiority in communications played a key role in deciding the two greatest wars in our nation's history.

In "Mr. Lincoln's T-Mails: The Untold Story of How Abraham Lincoln Used the Telegraph to Win the Civil War" (Collins, 227 pages, $24.95), author Tom Wheeler examines some 1,000 surviving telegrams sent by President Lincoln. Wheeler shows how Lincoln took advantage of the still-developing technology to give orders when regular mail would have been too slow and to react to developments within hours. During the Second Battle of Bull Run, for example, the President peppered Col. Herman Haupt with messages like, "What became of our forces which held the bridge till twenty minutes ago, as you say?"

The Confederacy had no such capacity for delivering up-to-the-minute news. During the war, the Union, already criss-crossed by telegraph wires, built more than 15,000 miles of new lines, while the Confederacy built a mere 500 miles. Using this communication advantage, Lincoln could coordinate the movements of armies separated by hundreds of miles, coax stubborn generals, and collect and forward the latest tactical and strategic information.

Eighty years later, during World War II, the importance of effective communication was already a given. In "Crystal Clear: The Struggle for Reliable Communications Technology in World War II (IEEE Press/Wiley-Interscience, 230 pages, $54.95), author Richard J. Thompson, Jr. concentrates on the problem of supplying the troops with enough equipment. One aspect of this problem was the effort to procure, manufacture, and distribute radio set crystals.

Before World War II, radio crystals had been essentially a handicraft industry,

with each manufacturer using its own equipment, often improvised, and guarding its trade secrets. Within two years after Pearl Harbor, the government had managed to greatly increase the procurement of raw quartz and had made enormous strides in yield and quality control. The major source of raw quartz was Brazil, where peasants mined the rock with picks and shovels. By 1944, the supply was great enough to allow a wholesale change of crystals just before D-Day. This foiled the Germans, who had learned only to monitor the older frequencies used by the allies.

Raw WW II quartz crystals.

However, a major problem the armed forces encountered with their crystals was aging. This was characterized by a loss of activity and an increase in frequency, especially under tropical conditions. By 1943, reports began to filter in of extensive crystal failures both in service and in storage depots. When reports became more persistent, the Signal Corps Engineering Laboratories (SCEL) at Fort Monmouth were requested to investigate the situation. Many theories were advanced to explain the phenomenon and all needed to be examined experimentally. As a stopgap measure, the services established in-theater regrinding and polishing teams that rehabilitated worn-out crystals. The tools used were often improvised, such as toothbrushes and grinding paste borrowed from motor pools. Aging was especially severe for the CR-1 unit used by the Air Force that operated at higher frequencies and required closer tolerances. As a result, orders were issued by Wright Field that all quartz plates must be able to withstand the test of scrubbing with soap and water and a toothbrush. Soon, each Signal Corps Inspector and each crystal finisher was equipped with a toothbrush and a dish of soapy water.

Meanwhile, manufacturers were producing crystal units at the rate of a million per month; nearly all of which were destined to be useless.

Before the end of 1943, it had become apparent that the most important factor in the aging process was that the surface of the quartz was damaged in the process of lapping the crystal to frequency. Particles of quartz, partially loosened by abrasion, were further loosened by the effects of water vapor, eventually breaking away completely. The presence of these loose fragments on the surface of the blank reduced crystal activity by damping and the loss of the fragments caused an increase in frequency because of the reduction of mass.

By the end of 1943, it had been shown that quartz blanks which had been etched to frequency (instead of being hand lapped) exhibited only very small changes of frequency and activity even when subjected to the humidity of tropical conditions.

Initially, considerable opposition existed to the idea of etching and valuable time was lost investigating other approaches. This was due to a reluctance to specify a manufacturing process which might require rewriting specifications (i. e., depending on test results rather than manufacturing processes for quality control) and renegotiating contracts. However, industry eventually rose to meet the challenge, producing very satisfactory crystals at a lower cost than those that had been lapped.

Ironically, the crystal aging problem might have been avoided had better communications existed. The phenomenon had been noted as early as October, 1940 at RCA. The work of H. E. LeRoy and V. E. Trouant led to a company confidential memorandum dated April 14, 1941 in which they said:
"Etching...reduced the number of failures." And that "Etching will be incorporated in the processing as soon as details can be worked out and operators trained." Unfortunately, this work was unknown outside the RCA Laboratories until after the war.

It appears that the crystal aging problem resulted from three basic but understandable mistakes. The first was to depend too heavily on an immature technology, the second was to disperse an industry so widely that it could not be properly supervised, and the third was failure to follow up with an adequate reliability test program. But fortunately, as had been true with Civil War telegraphy, the opposition in World War II could not solve the problems of inferior equipment in many aspects of their communications technology as well as the allies could. For the United States, the result was again the same: more efficient allocation of troops and resources, better strategic and tactical information, and a swifter end to a bloody conflict.

References:

1. Invention & Technology, Winter 2007, Vol. 22, No. 3, "Winning Wars with Wires and Without"
2. "The 1944 Crystal Conferences," - notes by Ken Burch (http://www.ieee-uffc.org/freqcontrol/44conferences/2ccwwii.htm
3. Virgil E. Bottom, "A History of the Quartz Crystal Industry in the USA," Proceedings of the 35th Annual Frequency Control Symposium, pp. 3-12, 1981 (http;www.ieee-uffc.org/fc_history/bottom.html

NJARC ACQUIRES RCA BTA-250L TRANSMITTER FOR INFOAGE

As many members now know through postings on the NJARC "Reflector," the club has acquired an RCA BTA-250L AM transmitter, including a console and replacement tubes. We hope to some day use these components as the basis for a simulated AM broadcast station at Info-Age. Getting at least the tubes to glow will be simple; the transmitter gets power from a 105-115 VAC, single phase supply.

Here's some specs to wet the appetite of those who might consider taking this project to the next level ("WNJARC coming to you from atop the famed Marconi Hotel"):

- Power Output: 250 watts
- Frequency Range: 540 to 1600 kc
- Frequency Stability: +/- 10 cycles
- Modulation: High level, Class B

(Continued on Page 8)

CONNECTIONS

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

Are you aware that NJARC now has a resistor program which includes many commonly needed replacements? Contact Walt Heskes at any club meeting for details.

FOR SALE

YOUR "FOR SALE" AD HERE!

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

WANTED

YOUR WANT AD HERE!

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

(BTA-250L continued)

- AF Input (100% modulation): +16 dbm
- AF Response: Deviation not more than +/-1.5% db between 30 and 10,00 cycles.
- Distortion: <3% RMS (50-7500 cycles).
- Hum and Noise: 60 db below 100% modulation.
- RF Harmonics: < 0.05%
- Average Power: 1625 watts

The transmitter was moved to InfoAge from station WMID AM (1340) in Atlantic City by the work crew of Sal Brisindi, John Ruccolo, Steve Goulart, Ray Facinelli and Ray Chase with assistance from Chief Engineer Tom McNally. This was accomplished without smashing any fingers or toes, although there were sore backs the next day.

The move was aided by the removal of four heavy transformers and, with some judicious planning, the transmitter was maneuvered out of the station and onto Sal's flatbed. Ray Chase noted that "while removing the heavy iron reduced the weight by about 400 pounds, that big, heavy steel cabinet was tough to handle (no hand holds)." The unit needs a lot of cleaning, some flaked painting repair and replacement of a jury rigged circuit breaker.

Many thanks to the owners and workers at WMID for donating this equipment to InfoAge and to the club members who donated many hours of hard work. Information regarding WMID can be found at http://hawkins.pair.com/atcitynj.shtml.

Left: The BTA-250L was used as the backup transmitter for WMID-AM 1340 (Atlantic City) - automatically came on if main transmitter failed.