

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

February 2005

Volume 11 Issue 2

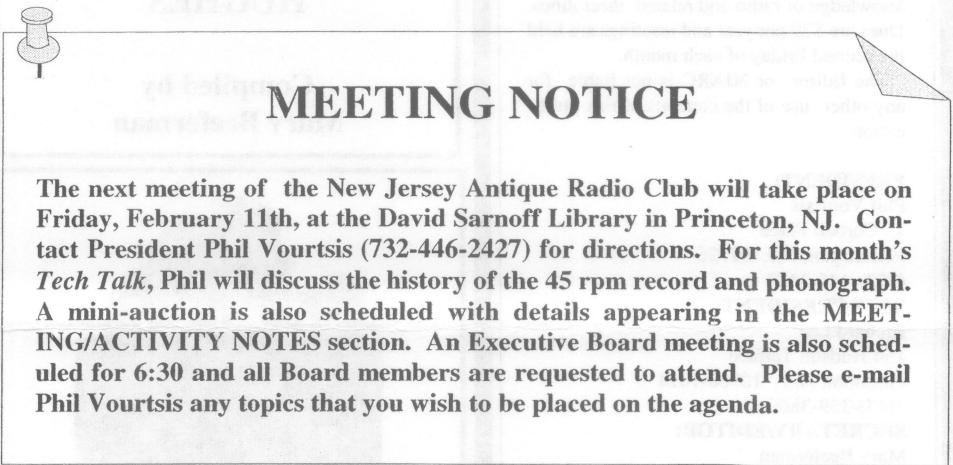


MEETING/ ACTIVITY NOTES

Reported by Mary Beeferman

The January meeting featured our first member auction and it went quite well, with member Ray Chase commenting that "not too much stuff went unsold." Ray brought 41 bid cards and we had 42 bidders so a file card had to substitute. Some nice items showed up: a Hallicrafters SX-99, an RCA 8BX6 portable, a working Webster wire recorder in excellent condition, an interesting Electro-Voice (30-watt "Circlo- tron") A-30 amplifier, a Tektronix 545A scope with a dual trace plug-in, an RCA Strato-World all-band portable, a Majestic horn speaker, a Zenith 500 Royal portable, an Airline 1941 14WG-806P AM/SW radio and a Kenwood TS-830S SSB transceiver. The commission for the club totaled \$153. Thanks to Ray, Sal Brisindi, Al Klase, Richard Lee, Phil Vourtsis and all others who helped the auction run so smoothly.

While on the subject of auctions, we will hold another mini-auction of a van-load of items from the Ferris Instrument Co. of Boonton which Ray Chase and Al Klase helped to secure for the club. Among the offerings will be seven "boat anchor" Hallicrafters communications receivers as follows: two S-27's (one without a cabinet), an S-37, three SX-24 Super Defiants and an SX-28 Super Skyrider w/o cabinet and with parts hanging out. Some of these are very dirty and may have parts missing. You'll also find a National FB-7A (rough shape but salvageable) and a Radio Marine Corp. of America (RCA) AR-8503P pre-selector. Also included are many parts associated with a test equipment manufacturer including tuning capacitors, loop antennas, tube sockets, tube shields (Goat shields), wire and miscellaneous test equipment. There is also

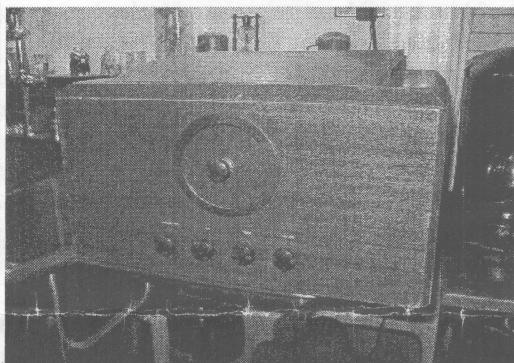


MEETING NOTICE

The next meeting of the New Jersey Antique Radio Club will take place on Friday, February 11th, at the David Sarnoff Library in Princeton, NJ. Contact President Phil Vourtsis (732-446-2427) for directions. For this month's *Tech Talk*, Phil will discuss the history of the 45 rpm record and phonograph. A mini-auction is also scheduled with details appearing in the MEETING/ACTIVITY NOTES section. An Executive Board meeting is also scheduled for 6:30 and all Board members are requested to attend. Please e-mail Phil Vourtsis any topics that you wish to be placed on the agenda.

military electronic spare parts in overseas packs (mystery boxes).

Ray also managed to "rescue" an eight tube early radar "ring oscillator" that he is trying to research and which will go to InfoAge. It is considered quite a historic piece and if the tubes can be scrounged up, it will make a nice display.



Steve Goulart's "mystery TV" - see next month's *Broadcaster* for details.

Al Klase has announced that the NJARC 2005 Broadcast Band DX Contest will be held between February 18th and February 27th. Contest rules and a station guide can be found in this month's *Broadcaster*. Full details can be found at <http://www.njarc.ar88.net/contest.html> including a contest log and construction details for the *Skywaves* Basic BCB Loop Antenna.

Also included in this month's *Broadcaster* are details of our upcoming Hazelet Swapmeet on March 13th and some photos

from our recent repair clinic at the Sarnoff Library. The turnout for the clinic was great which was held in conjunction with a library open house that included lectures, exhibits and a professional Theremin player.

Membership Secretary Marsha Simkin reports that we are at the 50% point for full membership renewal (which presently stands at 218). I recently received a copy of the Vintage Radio and Phonograph Society's newsletter *Soundwaves*. In an open letter to the membership, which is based in Irving, Texas, the club president was encouraged to talk about rising costs. The club faces a 26% increase in convention costs and a substantial rise in rental expenses for their spring auction. Increasing expenses has forced the club to publish its newsletter once a quarter in order to save money.

The NJARC also faces many of the same pressures, but we have managed to keep our programs and newsletter at the same high standards while still maintaining our yearly dues at \$20. Hopefully, it will remain at this level for many years to come because of the hard work of some very enthusiastic members. But you can help to - by paying your dues early and cutting down on the work involved in extra mailings and follow-ups. A "1/05" date on your address label (as of 2/2/05) is your invitation to send a \$20 check to Marsha Simkin at 33 Lakeland Drive, Barnegat NJ, 08005. Let's see a 100% renewal by March 30th!

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.

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**RADIO HISTORY'S
NEAR MISS...
DAVID EDWARD
HUGHES**

**Compiled by
Marv Beeferman**



The story of David Edward Hughes is a story of one of those very rare instances in which a man with a limited scientific background happened to stumble across a scientific principle of great significance. The tragedy of the story is that the experts of his day did not recognize Hughes' experiments for what they were - a valid demonstration of electromagnetic waves. Had they been a little less discouraging regarding a subject in which they were not authorities, the early history of radio communication might have taken a very different turn.

Hughes was born in London in 1831, and died there in 1900. He spent the early part of his life in the United States, becoming Professor of Music at St. Joseph's College in Bardstown, KY and also holding the Chair of Natural Philosophy at the college. Although a professor of music, he clearly enjoyed inventing and had a flare for new technology. He took out a patent in 1855 for a type-printing telegraphy instrument that went into extensive use in America and Europe. He also built a microphone formed of a carbon rod resting in the grooves of two carbon blocks, wired in series with a battery and telephone. This was the forerunner of the carbon microphone, which was to come into widespread use with the telephone. In Dunlap's 1944 "Radio's 100 Men of Science," Hughes is given the title of the "Pioneer of the Microphone."

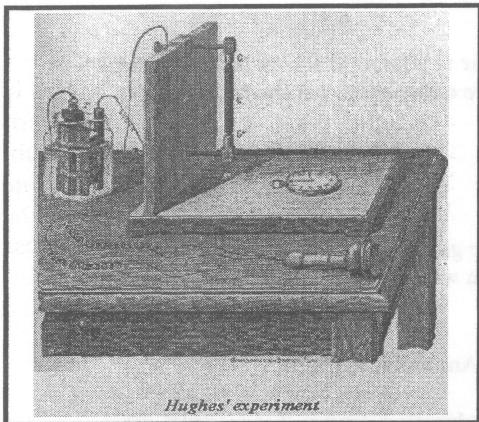
Although Hughes' wireless experi-

ments took place in 1878-1880, no account of the experiments was published in any form until well after Hertz's experiments. In 1892, Sir William Crookes published a far-sighted article called "Some Possibilities of Electricity," in which he speculated on the future uses of wireless waves. His article talked about the possibility of world-wide communications, the penetration of wireless waves through fog and buildings, and about tuning to specific radio wavelengths and the need for the confidentiality of messages carried by wireless waves. In this article, he pointed out that "*This is no mere dream...*", and he alluded to events witnessed several years earlier, when he had "*assisted at experiments where messages were transmitted from one part of a house to another without an intervening wire...*"

In his researches for his 1899 book "A History of Wireless Telegraphy," J. J. Fahie followed up on Crooke's report, Crooke referred him to Hughes, who had carried out these experiments. In correspondence with Fahie in 1899, Hughes described his 1879 researches. While experimenting with a microphone, he had found that a loose contact or microphone contact was responsible for generating a sound in a telephone receiver, even though this receiving circuit was disconnected and several feet from the source. Hughes investigated further, searching for the "*best form of a receiver for those invisible electric waves, which evidently permeated great distances, and through all apparent obstacles, such as walls, etc.*"

Hughes then set about making all sorts of equipment to further pursue his investigations. Most ingenious, perhaps, was a clockwork transmitter that interrupted the circuit as it ticked, allowing him to walk around with his telephone, now aided by a specially built receiver, to test how far each version of his equipment would send a signal.

At first, Hughes transmitted signals from one room to another in his house on Great Portland Street in London. But since the greatest range there was about 60 feet, Hughes took to the streets of London with his telephone, intently listening for the clicking produced by the tick-tock of his clockwork transmitter. He noticed that the sounds seemed to slightly increase for a distance of 60 yards and then gradually diminish, until they could hardly be heard at 500 yards.



Hughes' experiment

Hughes invited several eminent scientists and electrical engineers of the day to observe his results, including Crookes, and in February 1880 Spottiswoode (President of the Royal Society) and Professors Huxley and Sir George Stokes (Secretaries of the Royal Society). "They all saw experiments upon aerial transmission..." Hughes was able to demonstrate reliable signaling up to 500 yards and, from the variation in signal strength with distance, apparently observed standing waves.

In his 1899 account of the 1879-80 experiments, Hughes talks about "aerial electric waves" or "aerial transmission," but admits that Hertz's experiments were more conclusive than his own, although, not having a coherer, Hertz's receiver was much less effective. Although Hughes' 1899 account talked about waves and aerial transmission, a later examination of his notes made at the time indicate that he thought conduction through the air was the mechanism.

Unfortunately for Hughes, the eminent scientists, in particular Stokes, pronounced that it was all due to induction, not waves, and assured Hughes that his demonstration was nothing remarkable. This so discouraged Hughes that he never published his results, and abandoned further experimentation in this area. Hughes was to later write: "Stokes commenced maintaining that the results were not due to conduction but to induction...Although I showed several experiments which pointed conclusively to its being conduction, he would not listen, but rather pooh-poohed all the results from that moment..."

Note that Hughes uses the term "conduction." Based on the language of the day, the strange effects that seemed to be observed in an inductive circuit when the current was interrupted was generally referred to as "conduction through air" or

"extra current" as opposed to an induced current. It was not realized in those days that the so-called "extra-current" was an oscillatory transient of high frequency.

As a result of the publication of Hughes' 1899 comments in *The Electrician*, J. J. Munro called on Hughes and inspected his apparatus and notebooks. Munro then confirmed Hughes' claims: the systematic work of developing a coherer receiver system, and performing long distance (several hundred yards) transmission and reception of wireless signals:

"Prof. Hughes had step by step put together all the principal elements of the wireless telegraph as we know it to-day [1899], and although he was groping in the dark before the light of Hertz arose, it is little short of magical that in a few months, even weeks, and by using the simplest means, he thus forestalled the great Marconi advance by nearly twenty years!"

Commenting on the bad advice given by Sir George Stokes, Fahie says in his *"History of Wireless Telegraphy"* : *"but in this case, as events show, the great weight of his opinion has kept back the clock for many years. With proper encouragement in 1879-80 Prof. Hughes would have followed up his clues, and, with his extraordinary keenness in research, there can be no doubt that he would have anticipated Hertz in the complete discovery of electric waves, and Marconi in the application of them to wireless telegraphy, and so have altered considerably the course of scientific history."*

The story takes up again in 1922, after Hughes' widow died, bequeathing some of his remaining notebooks to the British Museum. A.A. Campbell Swinton (Swinton had given Marconi his original letter of introduction to Preece in 1896) examined these notebooks and was able to recover even more of Hughes' original equipment and further notebooks which had been stored and forgotten about in a furniture depository in central London since 1900. The resulting report from Swinton included the following: *"They [the newly discovered notebooks] prove that Hughes undoubtedly noted some of the effects now known to be due to high frequency waves. He used a small spark coil as a generator, and a Bell telephone and a battery generally connected in se-*

ries with a microphone as a receiver. The microphone apparently acted sometimes as a coherer...He received signals up to distances of about a hundred yards...nine years before Hertz's memorable discoveries."

Where does this leave the Hughes saga? From Hughes' 1899 account of his 1879 work, where phrases like "aerial telegraphy" appear, and also from Munro's 1899 interview with Hughes, the claim of being the first to generate and detect electromagnetic waves would seem very well-founded. There is now no dispute about the successful demonstration of wireless generation and detection over hundreds of yards, nor of Hughes' early discovery and refinement of what became known as the coherer. However, Hughes had no suspicion that he was generating waves; he thought, as was pointed out previously, that the mode of transmission was conduction through air. This is an extreme contrast to the work of Hertz and Lodge, who had set out explicitly to try to confirm Maxwell's wave theory. Remembering that Hughes was a professor of music, Hughes in 1879 had almost certainly never even heard of Maxwell's theory.

The tragedy is that the experts of the day...Stokes, Huxley and Spottiswoode...did not recognize Hughes' experiments for what they were - a valid demonstration of electromagnetic waves. Stokes' interpretation as "induction" was as far off the mark as Hughes' own interpretation of "conduction through air." This reflects how Maxwell's theory was far from accepted, in fact little understood, by contemporary scientists.

Hughes clearly did demonstrate generation and detection of electromagnetic waves nearly a decade before Hertz (and in the process discovered the coherer), but neither he nor contemporary experts recognized the experiments as such.

References:

1. G R M Garrat, "The Early History of Radio from Faraday to Marconi," IEE History of Technology Series 20, London
2. Darrel T. Emerson, "The Stage is Set: Developments before 1900 Leading to Practical Wireless Communication," National Radio Astronomy Observatory
3. <http://chem.chhuji.ac.il/~eugenik/history/hughes.html>
4. <http://www.privateline.com/PCS/history3.htm> (Early Radio Discoveries)

The 2005 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 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, February 18, 2005 through 12:00 Noon, Sunday, February 27, 2005.

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.

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, 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 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.

A log sheet has been provided for convenience. You may reproduce it or generate a similar one of your own.

Logs must be postmarked not later than midnight March 5, 2005.

DISTANCES: 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.

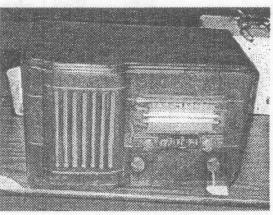
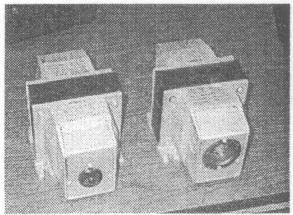
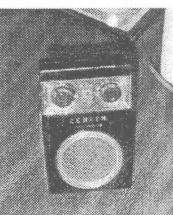
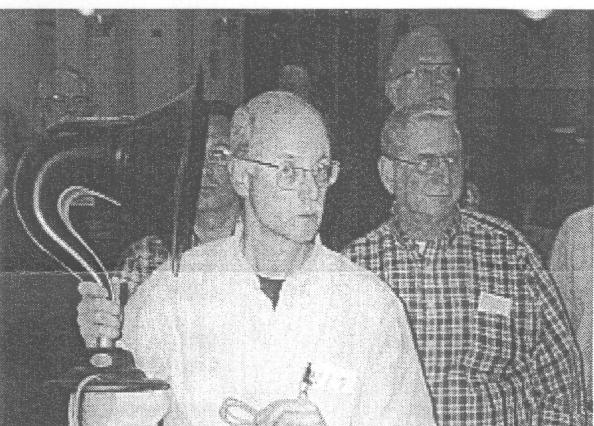
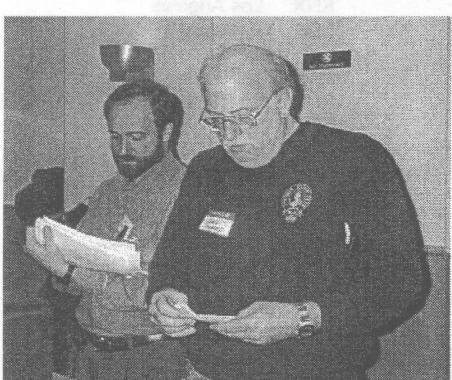
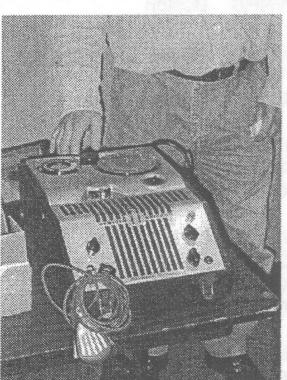
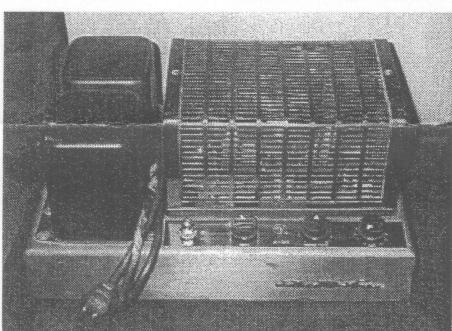
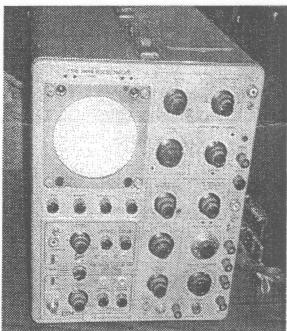
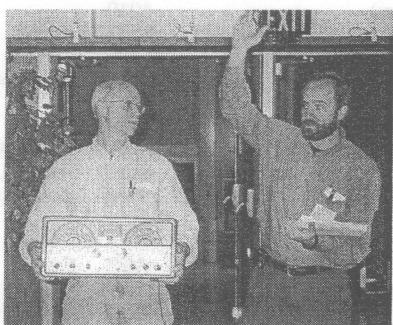
Submit logs to: Tom Provost, 19 Ivanhoe Dr., Robbinsville, NJ 08691

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

The following are 50KW stations operating nights on "clear" channels. This info is meant to be helpful, but may not be definitive.. Al Klase, January 1999. Revised October 2001.

530 Radio Vision Cristiana Turks and Caicos	780 (US Clear) WBBM Chicago KKOH Reno, NV	1010 CBR Calgary CFRB Toronto WINS New York	1180 (US Clear) WHAM Rochester, NY VOA (Radio Marti) Marathon, FL
540 (Canadian Clear) XEWA San Luis Potosi, MX CBK Watrous, SA WQTM Pine Hills, FL	790 CFCW Camrose, AB CIGM Sudbury, ON	1020 (US Clear) KDKA Pittsburgh KCKN Roswell, NM KTNQ Los Angeles	1190 (US/Mexican Clear) WOWO Fort Wayne, IN KEX Portland, OR XEWK Guadalajara, MX
640 (US Clear) CHOG Richmond Hill, ON	800 (Mexican Clear) XEROK Juarez, MX PJB3 Bonaire, NA	1030 (US Clear) WBZ Boston KTWO Casper, WY XEQR Mexico City	1200 (US Clear) WOAI San Antonio CFGQ/CJBZ Ottawa, ON CKXM Victoria, BC
650 (US Clear) WSM Nashville KENI Anchorage, AK	CKLW Windsor, ON CHRC Quebec City	810 (US Clear)	1210 (US Clear) WPHT Philadelphia
660 (US Clear) WFAN New York KTNN Window Rock, AZ CFFR Calgary, AB	WGY Schenectady, NY KGO San Francisco WKVM San Juan, PR	1040 (US Clear) WHO Des Moines, IA	1220 (Mexican Clear) XEB Mexico City WKNR Cleveland
670 (US Clear) WMAQ Chicago KBOI Boise, ID	820 (US Clear) WBAP Fort Worth-Dallas (new) Halifax, NS	1050 (Mexican Clear) XEG Monterrey, Mexico CHUM Toronto WEVD New York	1500 (US Clear) WTOP Washington, DC KSTP Minneapolis
680 (US Clear) KNBR San Francisco WRKO Boston WPTF Raleigh, CJOB Winnipeg CFTR Toronto	830 (US Clear) WCCO Minneapolis	1060 (US/Mexican Clear) KYW Philadelphia XEEP Mexico City CKMX Calgary	1510 (US Clear) WLAC Nashville KGA Spokane, WA WNRB Boston
690 (Canadian Clear) CBF/CIQC Montreal XETRA Tijuana, Mexico CBU Vancouver,	840 (US Clear) WHAS Louisville, KY	1070 (US/Canadian Clear) KNX Los Angeles CBA Moncton, NB	1520 (US Clear) WWKB Buffalo, NY KOMA Oklahoma City
700 (US Clear) WLW Cincinnati,	850 (US Clear) KOA Denver WEEI Boston KICY Nome, AK	1080 (US Clear) WTIC Hartford, CT KRLD Dallas	1530 (US Clear) WSAI Cincinnati, OH KFBK Sacramento, CA
710 (US Clear) WOR New York KIRO Seattle WAQI Miami	860 (Canadian Clear) CJBC Toronto	1090 (US/Mexican Clear) WBAL Baltimore KAAY Little Rock, AR XEPRS Rosarito, Mexico KMPS Seattle	1540 (Bahamas Clear) ZNS-1 Nassau, Bahamas KXEL Waterloo, IA WDCD Albany, NY
720 (US Clear) WGN Chicago KDWN Las Vegas	870 (US Clear) WWL New Orleans	1100 (US Clear) WTAM Cleveland KFAX San Francisco	1550 (Mexican Clear) XERUV Jalapa, Mexico CBE Windsor, ON
730 (Mexican Clear) XEX Mexico City CKLG Vancouver, BC CKAC Montreal	880 (US Clear) WCBS New York KRVN Lexington, NE CHQT Edmonton, AB	1110 (US Clear) WBT Charlotte, NC KFAB Omaha, NE XERED Mexico City	1560 (Cuban Clear) WQEW New York KNZR Bakersfield, CA
740 (Canadian Clear) CBL Toronto CBX Edmonton WWNZ Orlando, FL KCBS San Francisco KTRH Houston	890 (US Clear) WLS Chicago	1120 (US Clear) KMOX Saint Louis KPNW Eugene, OR	1570 (Mexican Clear) XERF Ciudad Acuna, MX CKLM Montreal
750 (US Clear) WSB Atlanta KFQD Anchorage, AK	900 (Mexican Clear) XEW Mexico City CHML Hamilton, ON	1130 (US/Canadian Clear) WBBR New York KWKH Shreveport, LA CKWX Vancouver, BC	1580 (Canadian Clear) CBJ Chicoutimi, QU KCWW Tempe, AZ KBLA Santa Monica, CA XEDM Hermosillo, Mexico
760 (US Clear) WJR Detroit KFMB San Diego	920 CBO Ottawa, ON	1140 (US/Mexican Clear) WRVA Richmond, VA, XEMR Monterrey, MX KHTK Sacramento, CA CFXX Calgary	
770 (US Clear) WABC New York KKOB Albuquerque, NM CHQR Calgary, AB	940 (Can/Mex Clear) CBM Montreal XEQ Mexico City KFRE Fresno, CA	1160 (US Clear) KSL Salt Lake City	
	980 CBV Quebec, QU	1170 (US Clear) WWVA Wheeling, WV KVOO Tulsa, OK	
	990 (Canadian Clear) CBW Winnipeg CKGM/CHTX Montreal XET Monterrey, Mexico		
	1000 (US/Mexican Clear) WMVP Chicago KOMO Seattle XEOY Mexico City		

MEMBER AUCTION - 2005



NEW JERSEY ANTIQUES RADIO CLUB



ANTIQUES RADIO SWAPMEET

SUNDAY, March 13th, 8:00 AM - 1 PM*

North Centerville Vol. Fire Co. - Hazlet, NJ

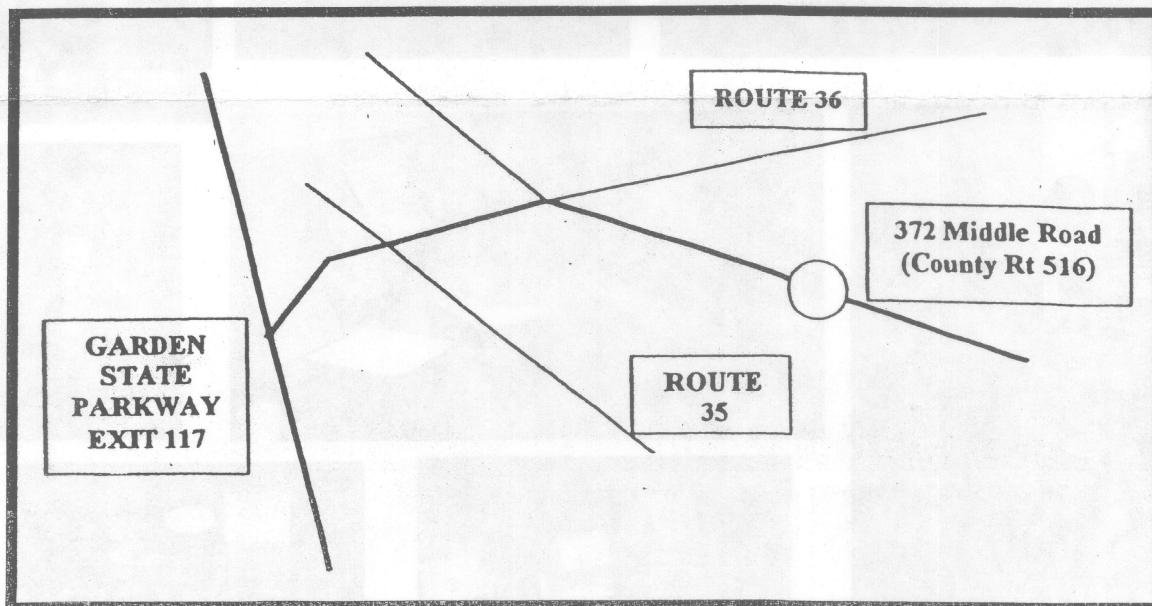
The NJARC presents its Spring swapmeet at the spacious North Centerville Fire Co. banquet hall in Hazlet, NJ. The first 20 reservations receive an 8-foot table at no extra cost. A \$3.00 club donation from buyers is suggested.

* Vendor setup at 7:30 AM (no early admittance); the meet may extend beyond 1:00 PM.

DIRECTIONS: Garden State Parkway, North or South - Take exit 117 (towards Hazlet (Rt 35)/Keyport/Aberdeen). Bear left onto Route 36 and continue for about 1/2 mile. Turn right on Middle Road (County Route 516 East) and continue for about 1.5 miles. The Fire Co. banquet hall is on the right.

RATES: NJARC members \$15/space; non-members \$20/space. **Note:** Free tables are only available to first 20 registered vendors.

CONTACTS/RESERVATIONS: Marv Beeferman, 2265 Emerald Park Drive, Forked River, NJ 08731 (609-693-9430). E-mail: mbeeferman@cs.com Phil Vourtsis, 13 Cornell Place, Manalapan NJ 07726 (732-446-2427). E-mail: pvourtsis@att.com



REPAIR CLINIC/SARNOFF OPEN HOUSE

