

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

September 2000

Volume 6 Issue 9



MEETING/ ACTIVITY NOTES

Reported by Marv Beeferman

Vacation time for your editor brings a shortened version of the *Broadcaster* for September; even the AWA Rochester conference will take a back seat to the Grand Caymen Islands this year. But one never knows what a coral reef will reveal to the snorkeler's mask when it's least expected; maybe I'll come up with one of those boat anchors that everyone seems to be talking about.

The club was treated to another great meeting in August, but first let's get some important dates under our belt. **The September meeting has been moved up one week to the 15th instead of the 8th** to avoid a conflict with the Rochester conference. Since our quarterly show-and-tell is scheduled for the same date, the revision will also provide an opportunity to show off those new treasures captured in the wilds of New York and swap some conference sea stories. If you're a Board member, you'll need to arrive at 6:30 to attend the business meeting prior to the regular meeting.

Our Fall swapmeet gets underway on Saturday, September 23rd so try to reserve your table early to unload those conference slips of judgment. The keepers that require some TLC can be brought to our Radio Repair Clinic on Saturday, October 21st. Technical Coordinator Al Klase would appreciate a call at 908-782-4829 if you plan to attend.

September is the last month that nominations will be accepted for the Tony Flanagan Memorial award which recognizes an individual (member or non-member) who has been instrumental in promoting and preserving any aspect of radio history. The basis of the award, with founding President Tony Flanagan as its

MEETING NOTICE

DATE CHANGE (SEPT. MEETING ONLY)

The next meeting of the NJARC will take place on Friday, Sept. 15th at 7:30 PM in the Grace Lutheran Church, corner of Route 33 and Main Street in Freehold. Contact Marv Beeferman at 609-693-9430 or Phil Vourtsis at 732-446-2427 for directions. The date change was made to accommodate those members attending the AWA Rochester convention. A Board meeting at 6:30 will precede the regular meeting. The meeting's activities will be highlighted by a show-and-tell session; there is no major theme so all contributions are welcome.

namesake, is:

- The promotion of the antique radio hobby
- The preservation of wireless, radio and electronic communication history through artifacts and documentation, and
- The promotion of the public's awareness of radio development and history



A grab-bag of assorted radio and TV knobs donated by Issac Blonder created quite an interest at the September meeting

through books, articles and exhibitions

Please submit your nomination (with a short, descriptive paragraph justifying your selection) to Phil Vourtsis no later than the September meeting.

Our September meeting theme was "Spy Radios" and a film highlighting some fascinating insights into the major

players and their techniques was provided by John Dilks. For example, KGB trained Ruth Werner operated in Britain for over nine years before being betrayed by another operative. Her key to success was the facade of a normal family existence shared with her two children and the utilization of common, everyday materials for building her apparatus. A typical transmitting key was comprised of a Chinese paperweight, a cotton spool and a wood screw.

British agents utilized the American HRO receiver for intercepting enemy radio traffic. Three cars equipped with RDF's were sent out in a 10-mile radius to get a rough location. Portable, concealed receivers or "sniffers" were then carried by individual agents to pinpoint transmitters. Once the suspect apartment building was isolated, agents would start pulling basement power fuses until the signal went dead to locate a specific apartment number.

Another interesting device was the S-phone used by British operatives to communicate directly with an aircraft. Since the signal was so directional, it was difficult to be picked up by RDF equipment.

Al Klase supplemented the video presentation with a demonstration of the RS-6 transceiver emphasizing its modular construction for easy concealment. An interesting aspect of the device was a

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 \$15 per year and meetings are held the second Friday of each month at the Grace Lutheran Church, corner of Route 33 and Main Street in Freehold N.J. The Editor or NJARC is not liable for any buying and selling transactions or for any other use of the contents of this publication.

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recording mechanism utilizing a magneto to record messages on tape. Driven by a clockwork mechanism, a pre-recorded message could be sent at 300 wpm to help prevent detection. Novice telegraphers could dial in the required letters and have the associated code recorded automatically.

John Dilks and Phil Vourtsis provided some tips on successful e-bay scouting. Phil found an early 50s Aristocrat jukebox/radio under the "antiques" category rather than under "phonographs." With this disguise, bidding began at \$10 and ended with a hammer price of \$15.50 for an item normally in the \$100 to \$200 range. John had similar success with a Conar Novice Transmitter for \$5.

Thanks to Issac Blonder for his donation of a signal generator, signal level meter, mini TV, 3-band radio and other goodies for a mini-auction with proceeds going to the club.

Finally, your editor set up a small NJARC display table at the Hamfest by the Shore in Bayville on August 13th. About six NJARC members were in attendance and a few communication and radio-related items did make their appearance. Based on the response to this small display, it appears that pre-transistor electronics is becoming more and more of an oddity rather than a major player in the history of technology, making it an even greater challenge for clubs like ours to responsibly support its preservation.

A SONIC ANALYZER

An instrument which brings panoramic analysis to the audio spectrum

The following article was a cover feature in the October, 1948 edition of "Radio-Electronics." It describes a "Panoramic Sonic Analyzer" which was conceived and developed by NJARC member Ben Tongue while working at the Panoramic Radio Corporation. This was the first audio analyzer to be placed on the consumer market and Ben used the design as a basis for his Brooklyn Poly thesis. A demonstration at an IRE conference at Grand Central Station proved a

disaster with DC interference from nearby trains playing havoc with the instrument. Ben noted that one of the headaches faced in his design was the high dielectric absorption (the inability of a capacitor to discharge) of mid-40s capacitors whose very slow leakoff interfered with a favorable response; direct coupling solved this problem.

Panoramic analysis of radio-frequency signals became familiar during the last war. A receiver was electronically or mechanically tuned continuously over a given band of frequencies and its output fed into the vertical amplifier of a cathode-ray oscilloscope. A signal on any part of the band being covered would cause a pip to appear on the oscilloscope trace. By synchronizing the horizontal sweep of the oscilloscope with the tuning apparatus, the pip's position on the oscilloscope could be made to indicate its exact frequency.

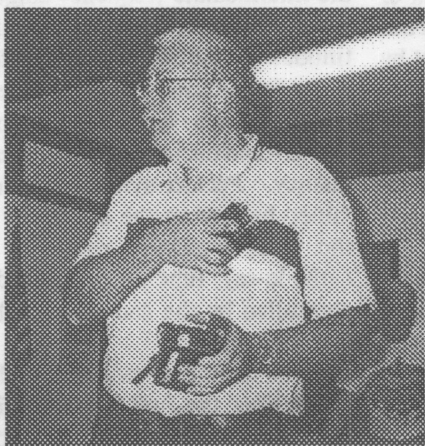
Numerous panoramic analyzers were used by the military to cover the whole usable radio-frequency spectrum. Not only did they indicate the presence of enemy transmitters the instant they opened up, but also intercepted many distress messages. Due to makeshift equipment and inexperienced operators, these were often well off the regular distress bands on which constant watch was kept, and the panoramic analyzer was entirely responsible for many rescues which would never have been made without its help.

In times of peace, the panoramic analyzer is used by amateurs, who can survey a whole band continuously with it, and by commercial stations who can substitute one panoramic analyzer for a number of receivers standing by on a single frequency.

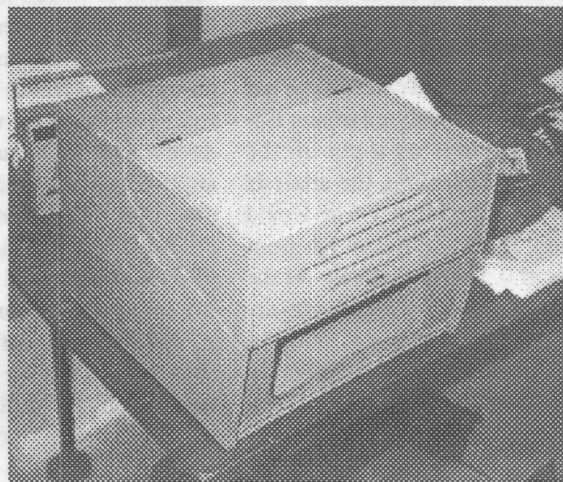
They are also used for monitoring and designing industrial r.f. equipment, are used in laboratories for analyzing oscillations, pulsed signals, modulation characteristics of FM and AM systems, designing and maintaining mobile transmitters and receivers especially for FM, telemetering, radar studies, and by broadcast stations for observing characteristics of their transmitters continuously.

Panoramic Audio Analysis

To further increase the usefulness of the system, the manufacturers of the



President Phil Vourtsis sharpens his auctioneer's skills at the August meeting



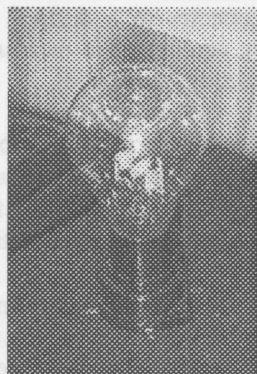
Phil didn't let this one get away - an Aristocrat juke-box/radio for \$15.50.



Part of the transmitter from 108.3 on your dial - Blairstown, NJ preserved by Steve Goulart



NJARC display at the Bayville Hamfest



Notice the depression at the top of this "tube" - any ideas?



Our kind of stuff



Where there's old radios, can John Dilk's Mobile Museum be far behind?

panoramic analyzer conceived the idea of extending the method to cover the audio range. The result was the *Panoramic Sonic Analyzer*. This instrument sweeps the range from 40 to 20,000 cycles once per second, showing an audio signal of any frequency within the range as a pip on the horizontal base. For example, the analysis of an amplifier fed a signal at 1.5 kc would show the second, third and fourth harmonics at 4, 1.25 and 0.5% respectively on the log (left-hand) scale of the cathode-ray screen.

The value of such an instrument in checking audio amplifiers is obvious. Not only may harmonic distortion be instantly spotted and measured, but intermodulation distortion shows up immediately. It also has applications in other audio measurements and particularly in vibration analysis.

In the Model AP-1 analyzer, a block diagram of which is shown, the output of the equipment under test is fed into an a.f. amplifier. Its output, in turn, is swept by an oscillator which beats with any audio-frequency signals which appear to produce a sum frequency of 100 kc, which is applied to a very sharply-tuned 100-kc i.f. amplifier. The i.f. output is detected, amplified through a video amplifier and applied to the vertical plates of the cathode-ray tube, whose horizontal sweep is kept in synchronism with the local oscillator, thus permitting the face of the tube to be marked off horizontally in frequencies.

The frequency scale on the tube is logarithmic, and the sweeping oscillator also scans logarithmically. Since the ability to separate individual frequency components (the *resolution* of the instrument) depends on the relationship between the instanta-

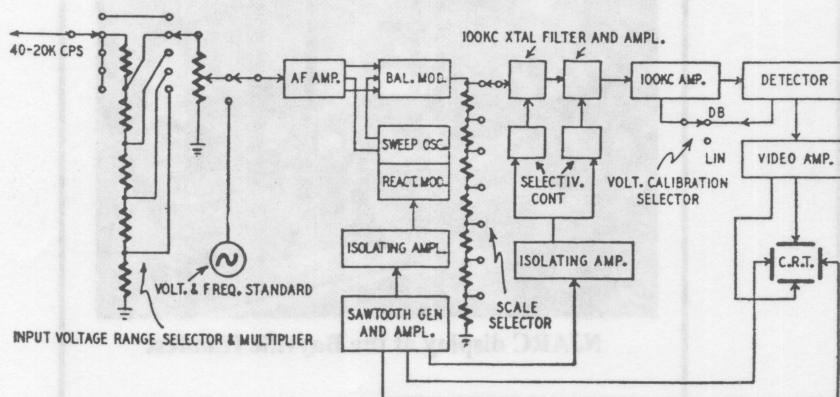
neous rate of scan and the selectivity of the intermediate frequency stages, means is provided to vary the i.f. selectivity continuously. Selectivity is greater at the lower frequencies - where frequency components may be close together in terms of cycles - and decreases with increasing frequency. Perfect synchronization is obtained by having the selectivity controls, the local sweeping oscillator and the cathode-ray tube horizontal deflection controlled by the same sawtooth generator.

The balanced modulator shown directly after the first a.f. amplifier eliminates spurious modulation products and keeps the local oscillator frequency out of the i.f.

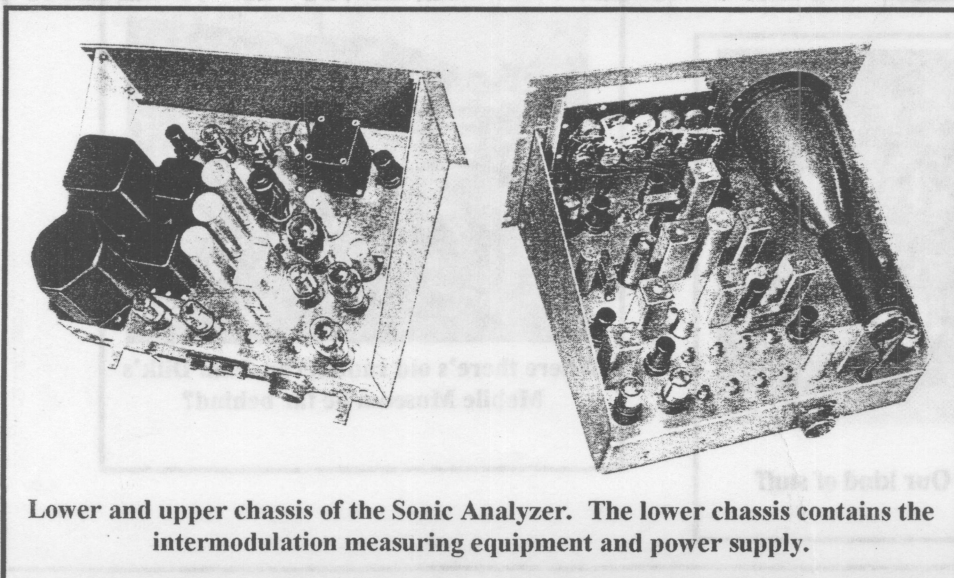
Two voltage scales are provided on the cathode-ray tube - the left graduated in a two-decade log scale and the right graduated linearly. Input voltages are measured with a scale selector and input multiplier. The scale selector has seven positions ranging from 0.5 to 50 millivolts, and the multiplier has five positions from X1 to X10,000. Thus a 250-volt signal would produce a pip reaching to the 0.5 point on the cathode-ray tube linear scale, with the scale selector set at 50 mv and the multiplier at X10,000. (Full scale output would be 500 volts in this case.) Measurements as low as 50 microvolts are possible. Smaller measurements can be made by using a highly linear amplifier between source and analyzer.

Special equipment is provided in the lower chassis of the sonic analyzer for use in measuring intermodulation distortion. This consists roughly of amplifiers, attenuators and a demodulator to bring the input frequencies to a desired level and switching equipment to measure each of the interacting frequencies.

While the instrument is intended mainly for measuring distortion in such types of audio equipment as amplifiers, radio receivers, hearing aids, etc., it may also be used to investigate rectifier hum, power system harmonics, high frequency vibration and for Fourier analyses of square, rectangular, sawtooth and other types of waveforms. A variety of possible applications will immediately suggest themselves to the practical sound man.



Block diagram of the Panoramic Sonic Analyzer's main chassis.



Lower and upper chassis of the Sonic Analyzer. The lower chassis contains the intermodulation measuring equipment and power supply.

RADIO — ELECTRONICS

formerly

RADIO CRAFT

SPECIAL
AUDIO-SOUND NUMBER

HUGO GERNSBACH,
Editor



SONIC ANALYZER

SEE AUDIO SECTION

OCT
1948

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U. S. and
CANADA

LATEST IN RADIO — ELECTRONICS — TELEVISION

NEW JERSEY ANTIQUE RADIO CLUB



ANTIQUE RADIO SWAPMEET

SATURDAY, SEPTEMBER 23, 8:00AM - 3:00PM*

HIGHTSTOWN COUNTRY CLUB, HIGHTSTOWN, NJ

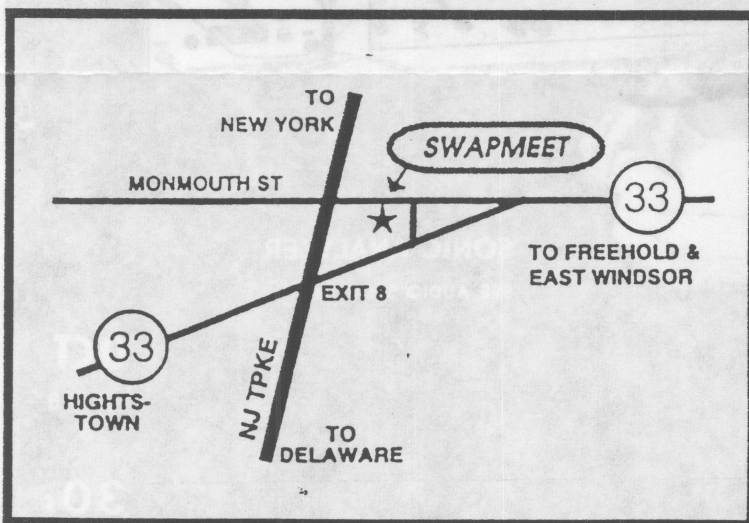
NJARC presents its Fall outdoor (rain or shine) swapmeet with vendors displaying a spectrum of collectible old-time radios, military and civilian communication equipment, audio equipment, phonographs, and associated parts and literature. A \$2.00 club donation is suggested to help defer rental fee. Tables are guaranteed to the first 50 reservations.

LOCATION: From NJ Turnpike Exit 8, go east on Route 33 about 200 yards. Stay to the left and turn left at the first traffic light on the center divider, crossing Route 33 west. Continue to the end of the block to Monmouth Street and turn left. The Country Club is on the left with a Ramada Inn across the street.

RATES: NJARC members \$15/table; non-members \$20/table.

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

*Vendors set up at 7:00; no early admittance!



Formed in mid-1992, NJARC has a membership above 160. The club meets at Grace Lutheran Church, corner of Route 33 and Main Street in Freehold, on the second Friday of each month at 7:30 PM. Visitors are welcome. The club publishes the monthly *Jersey Broadcaster* and has a program providing members with replacement tubes and capacitors at moderate prices. Technical, restoration and historical presentations are provided by members at each meeting. Contact Phil Vourtsis (732-446-2427) for additional information.