The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

April 2009 Volume 15 Issue 4

MEETING/ ACTIVITY NOTES

Reported by Marv Beeferman

THE ON-LINE BROADCASTER

The New Jersey Broadcaster is now on-line. To date, 106 of your fellow NJARC members have subscribed, saving the club over $1900 a year. Interested? Send your e-mail address to: mbeeferman@cs.com
Be sure to include your full name.

At the March meeting, and after 10 years of support by our gracious host Dr. Alex Magoun, the club bid a nostalgic farewell to the David Sarnoff Library. We all wish "Doctor Alex" the best of luck in his future career and endeavors. Turning the next page, with the help of NJARC member Professor Mike Littman, we will now be dividing our club meetings between Bowen Hall at Princeton University (only minutes away from the David Sarnoff Library) and InfoAge in Wall Township. A meeting schedule and driving directions will be published in the May *Broadcaster* and on the NJARC web site. **Note that the April meeting will be at InfoAge (2201 Marconi Road).**

John Ruccolo presented an entertaining and well-received talk on an alternate way of "powering up" an old radio for the first time. In lieu of using a Variac to slowly bring up the line voltage and reform capacitors, John demonstrated how to pull out the rectifier tube and directly apply B+ using a DC power supply and socket adapter. As with the case of the Variac, the B+ is brought up slowly while watching current to ensure it stays within a reasonable band. Of course, like all initial restorations, John suggests that the radio is given a full visual inspection to discover any obvious faults that require repair before this method is used.

MEETING NOTICE

NOTE: LOCATION CHANGE!

The next meeting of the New Jersey Antique Radio Club will take place on Friday, April 10th, at 7:30 PM at the InfoAge Learning Center. See the NJARC or InfoAge web sites for directions. This month, we'll be presenting awards to the winners of the club's BCB DX Contest, conducting the judging of the Homebrew Contest (so remember to bring your entries to this meeting) and opening up the floor to a show-and-tell of those rare and unusual items you are dying to tell us about.

NJARC members surround Executive Director Dr. Alex Magoun in a final goodbye to the David Sarnoff Library. Information regarding our new meeting location will be published in the May *Broadcaster*.

We also leave the month of March with another successful swapmeet and repair clinic. We've captured both events on camera with pictures included in this month's *Broadcaster*. NJARC member Nick Senker provided us with the following comment regarding the March clinic:

"Allan Daniels brought in a beautiful Crosley 56FA farm set for repair. I helped him with it and found the wires from the speaker output transformer disconnected for some reason. It appeared that the transformer had been replaced at some point and rewired but somehow they became separated. I also put some heat shrink on some wires that had broken insulation and were shorting out. I also checked the tubes which were all good. As it was a farm set, we couldn't try it out but we discussed possible power supplies and battery packs."

"Sal Brisindi showed us an inexpensive on-line battery pack (dialcovers.com) and we also discussed homemade packs with 9-volt batteries, etc."

"Much to my delight, Allan e-mailed me to say he cobbled together a battery pack and got the set working. Allan offered his thanks to the NJARC for hosting these events and even posted his experience on YouTube! (http://www.youtube.com/watch?v=Lz9NmxOjsHg)."

"This really made my day and I can say I got as much out of the clinic as Allan did!"

Finally, two gentle reminders. First, to prevent a conflict with the Kutztown swapmeet, the **May** meeting will be held on the 15th instead of the 8th. Second, membership expiration for non-payment of dues is on April 15th.

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.

NAVY MORALE RECEIVERS

By
Ray Chase

During WWII, the military recognized the value of entertainment radios for servicemen and set about to contract for radios specifically for this purpose. We've seen Zenith Transoceanics with military nomenclature for this duty, but these radios are rare and command a hefty price. More often, we see radios specifically designed and contracted for entertainment duty by the Army and Navy.

Military entertainment radios did not have to function under battlefield conditions, but had to stand up under barracks duty and more than usual consumer handling. Some, such as the Scott entertainment radios installed aboard combat vessels, were specifically designed to have super low local oscillator radiation to preclude enemies from zeroing in on them with direction finders. If you ever saw or owned one of these Scott RBO (SLR-12) radios, you know where the term "boat anchor" comes from. The Navy was paranoid about this fear of local oscillator radiation and took pains to add labels to barracks type entertainment sets warning that they must never be used aboard a ship.

Another example of a Navy morale radio that **was** built to meet the low radiation standards for shipboard use was the Scott SLRM (designated by the Navy as the REE).

The model REP radio pictured in this article was obtained at a recent auction and is in unusually good condition. The prior owner had reconditioned it and I was fortunate to find out that it worked very well. I was even more surprised when I slipped it out of its case and found that it had 13 tubes with one vacant tube socket. WOW, 14 tubes - this must be some radio! But on closer examination, it turns out that this is a 7-tube set with a spare tube in an unwired socket for every active tube employed. Nice forward planning for the benefit of entertaining our troops. Of course, the one empty socket was for the spare 6E5 eye tube that was missing.

Full nomenclature for this set is a Model REP consisting of a CRO-46287 Receiver. (The Navy stubbornly held onto its own nomenclature system and did not adopt the standard AN/XXX-XXX system until late in WWII).

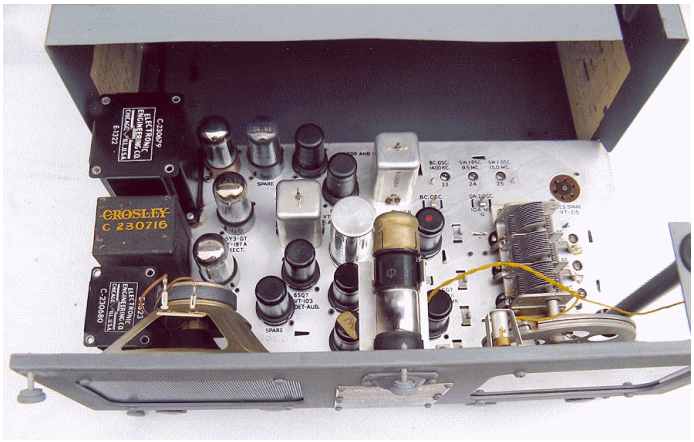
The radio has three bands; BC 540 to 1600 KHz., SW 6.0 to 10 MHz. and SW 10 to 16 MHz. This was enough to pick up European commercial stations but avoided the lower regions of the SW band where most military communications were maintained. Tube line-up is: 6SG7 RF amp, 6SA7 converter, 6SK7 IF, 6SQ7 detector/audio, 6V6 power amp, 5Y3 rectifier and 6E5 tuning indicator. The schematic with alignment instructions is glued inside the cabinet. The radio also has a provision for connecting a phonograph input.

The set can be operated from 115 or 230 volts and was made by Crosley. Crosley made a slew of these sets during WWII. Crosley also made an AC-DC, wood-case, 6-tube, broadcast-only version for the Navy which was designated the REO (Navy part number CRO-46286). Plastic was a strategic material during the war (as was steel), while wood was not.

Surplus Navy REP receivers were later relabeled sold to civilians as the "Pan American Tropical." (The Scott SLRM was also sold for civilian use after the war.) With a pent-up demand for radios due to unavailability during the war, and with the military occupation of the Axis nations for a time after the war, civilians, and especially soldiers overseas, pur-

chased radios that could receive news and entertainment from home. The civilian version of the REP even re-used the "unsafe radiation" warning tag by reversing it and placing the "Pan American Tropical" logo onto its blank side. There is some evidence that Crosley itself did not sell the Pan American Tropical but that a separate company known as Cincinnati Electronics, possibly made up of former Crosley employees, sold the Pan American.

As I indicated, the set plays very well and is very sensitive just using the built-in whip antenna. One problem is that the pushbutton switches and band selector switch tend to have some intermittent contacts as is common with a lot of radios of this vintage. I'll have to get in there with some contact cleaner one of these days.



PUBLIC AUCTION
SATURDAY, MAY 2nd, 2009

Huge Radio/Electronics Auction Conducted by the
New Jersey Antique Radio Club
The Radio Technology Museum
at the
InfoAge Science-History Learning Center
2201 Marconi Road, Wall, New Jersey 07719

An all-day sale of vintage radios, electronic test equipment, transmitters, receivers, vacuum tubes and related parts and documentation. Radios from the 1920's, 30's, and 40's (some restored) and laboratory and test equipment...something for every collector's taste. The auction will be conducted by noted radio auctioneer Richard Estes of Estes Auction, Medina, Ohio

Auction begins at 10:00 AM Saturday
Viewing: 8:00 to 10:00 AM on day of sale

Sale of artifacts and donations is in excess of centers' needs. Proceeds will benefit InfoAge, the Radio Technology Museum and the National Broadcasters Hall of Fame. Auction is indoors with ample seating. Terms are cash or a good check. Sorry, no credit cards accepted. Contact www.infoage.org for directions to InfoAge.

WHY AN INFOAGE AUCTION?

WHY IS YOUR HELP NEEDED?

By
Ray Chase

On Saturday, May 2nd, the New Jersey Antique Radio Club and InfoAge will conduct a huge radio/electronics auction. What prompts this activity? InfoAge and the NJARC are overloaded with material that we need to dispose of. This comes about for several reasons:

1. We have a great deal of items that InfoAge acquired with the National Broadcasting Hall of Fame (NBHF) that are not suitable for present or future museum needs, are redundant, are in a condition that precludes them from display or are not worthy of expending efforts to restore. This is the first cut at rationalizing the NBHF inventory.

2. Over the past two or three years, we have been the recipients of countless donations from well-meaning individuals and groups. This has both positive and negative implications for a museum facility such as ours. In their mind, these individuals believe that they are doing us well by donating their grandfather's collection. Often, some choice items are included, and we keep them, but along with the good come items we do not need and must deal with. It's not all junk, just doubles of

what we have or items not suitable for us.

3. In the past year, we have picked up two estates that are quite large and needed to be stored someplace. We were able to do this at InfoAge and now we must clear them out. Out of these estates came some better items for the museum or the library and now the balance must be dealt with. We could not do this at the David Sarnoff Library or the new facility at Princeton due to the space required, the sorting needed and the transportation involved. Therefore, we have organized this large action at InfoAge.

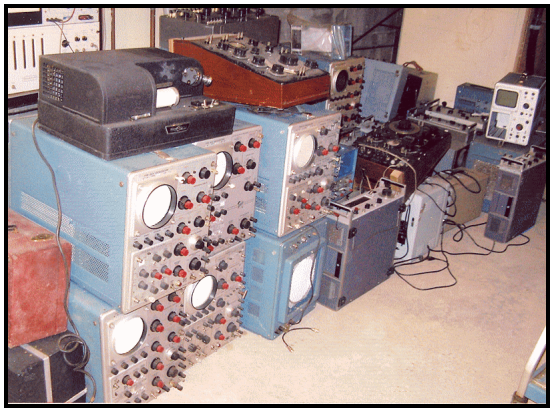
Richard Estes of Estes Auctions has graciously offered to help us with this sale and will be the auctioneer. This will be a large sale; over 500 lots or maybe more. We're still sorting, tagging and cataloging. This is a good chance to stock up a week before the Kutztown meet. If you were at the Parsippany swapmeet, you were able to see pictures of some of the items to be offered. That was only a sample; we are still sorting out NBHF items that are scattered around the facility. When you attend the April meeting, you'll be able to see the larger room that we will be using for this auction.

But, we need your help. For the week prior to the auction, we could use whatever help is available to move the goods to the auction room and set it up. The cataloging should be done by then and a prestaging area has been designated. We have started moving goods to this area, but the few days in advance of the auction will require quite a bit of additional set up.

Richard Estes will conduct the auction itself but we must supply the support staff. During the auction, I estimate that we will need five runners to handle the moving of merchandise. The day starts at 8 AM and will last beyond 4 PM. We will also need two people to handle clerking (not at the same time, but for relief etc.). We will need at least one cashier to handle checkout. Early in the day, a few people will be needed to help direct parking etc.

This auction will raise a good deal of funds for the NJARC and InfoAge. The NJARC will receive a percentage of every item sold. The auction will not be held in catalog order, but an advance listing of most of the merchandise will be available.

Please contact me with whatever help you can provide:
(908)-757-9741
enrpnr@erols.com




STEAM ENGINES AND OSCILLOGRAPHS

By
Ray Chase

At the second Lukas estate auction on March 13th, Marv Beeferman included a strange mechanical device that he could not identify. It had many intricate metal bits and pieces, all contained in a fitted wooden box. Even stranger was the fact that all labels and markings appeared to be in Japanese (at least I assume that it was Japanese). Why this instrument was in an accumulation of otherwise electronic equipment is still another mystery, but the connection to electronics is really no that far-fetched.

I recognized the device as something that is called a "steam engine indicator." The indicator simply records, on a piece of paper, the pressure in one end of a steam engine's cylinder as the piston of the engine moves from one end of its stroke to the other, and then back. The steam plant engineer used this "graph" to optimize valve adjustments or trouble-shoot problems with the engine.

The first instrument for analyzing the performance of a steam engine, and even recording the results on paper, was invented some time shortly before 1800. Most historians attribute the invention to James Watt, but others attribute it to John Southern, an engineer who worked for Watt. The instrument was named a "steam engine indicator" by its inventors, a name that continues to be used today. It was used to test, adjust and rate the stationary steam engines that powered many mills and factories in the 1800's and the early 1900's.

What does this device do and what does it have to do with the modern field of electronics? In order to answer these questions, we first need to understand the operation of a typical unit.

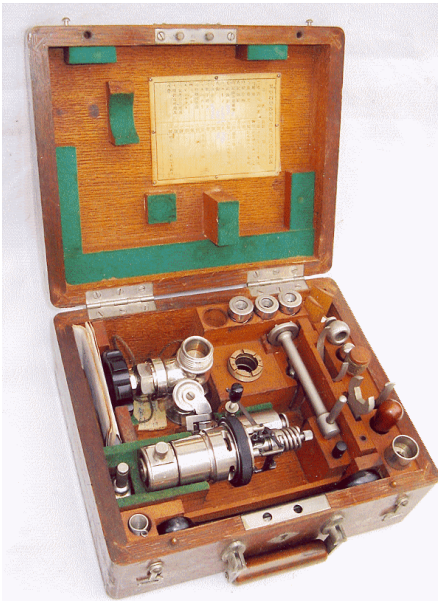
A small piston in the indicator is fitted to a test port on a steam engine's cylinder. The piston drives a pencil or scribe against a paper chart mounted on a drum. (Earlier versions used a flat board to hold the paper or "card.") If the paper was not moving, the pencil would simply draw a vertical line as pressure rises and falls and as steam is admitted, expands and is exhausted from the engine's cylinder. However, if the paper can be caused to move back and forth (as the indicator piston moves back and forth and as pressure rises and falls), the pencil will draw a diagram indicating the pressure in the engine's cylinder at every point of the stroke. To accomplish this, the drum is in turn rotated back and forth by a cord connected to the engine's crank that is driven back and forth by the piston action. A return spring in the drum keeps the cord taut.

Since it is impractical to move the paper the same distance as the stroke of the engine, a device known as a "reducing motion" is used so that the paper will move only four to six inches, even if the stroke of the engine is several feet. The vertical movement of the pencil is limited to about two to three inches by selecting an appropriate spring.

Eventually, optical and electrical instruments made this mechanical indicator obsolete. But the device is an interesting mechanical analog to an electronic oscillograph in that the crank action sweeps the drum back and forth (Y axis) and the steam pressure drives the scribe up and down (X axis). In addition, the "reducing motion" device and various springs act as attenuators to reduce the graph to a reasonable size.

I have had several of these devices over the years, but this one is the most complete example that I have seen. Usually, bits and pieces are lost along the way. It is also very well made and, with all the markings in Japanese, it is truly unique. As usual, a Google search will turn up additional information on the subject.

As an aside, if one were in the New England area, it would be worthwhile to schedule a visit to the New England Wireless & Steam Museum in East Greenwich, RI. Here, one can see a large collection of many real stationary steam engines that are actually operated on special days during the year. As its name indicates, this is also an excellent wireless and radio museum that is in itself worth the visit. Full information is on the museum's website.



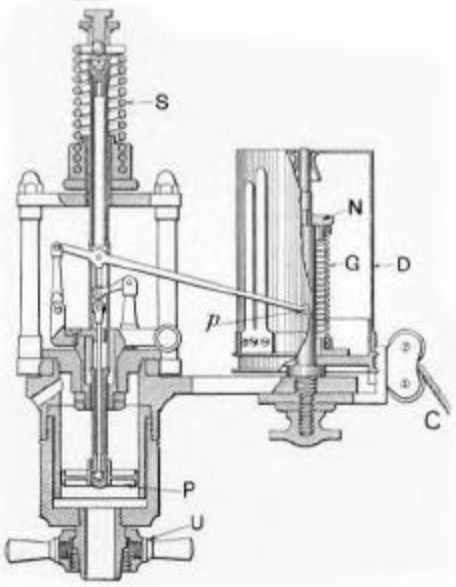
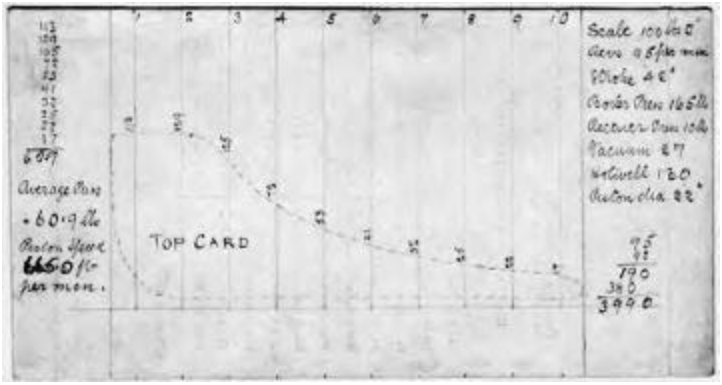
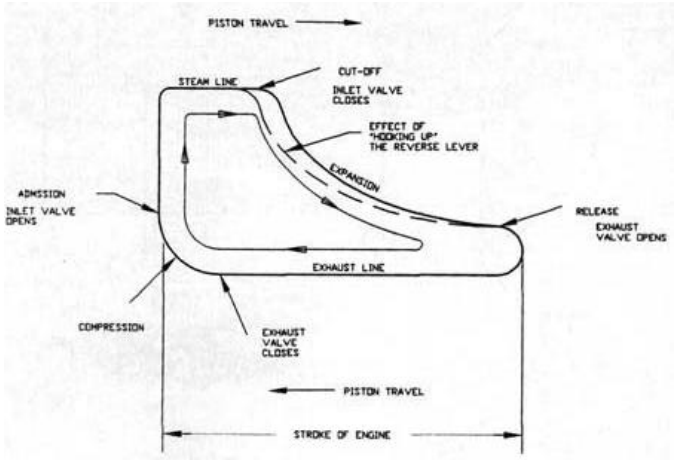


Diagram of an early steam engine indicator. C (cord that attaches to the engine cross-head or connecting rod), G (tensioning spring for the cord and drum), U (connecting union that attaches to engine cylinder), D (drum that holds chart), p (stylus that connects to indicator piston P) and S (pressure spring against which the indicator piston moves).





An actual steam engine indicator graph and its interpretation.

SPRING SWAPMEET '09 - PARSIPPANY, NJ













INFOAGE REPAIR CLINIC - MARCH 28th















THE "RAYSISTOR"

by
Marv Beeferman

In the spirit of the MARV-O-DYNE radio and MARVIN Kellogg-style tube, namesakes of your editor's great uncle Marvin Meshugener Beeferman and featured in previous issues of the Broadcaster, comes the "RAYSISTOR." The Raysistor was developed by NJARC member Ray Chase and was based on his top-secret work (now declassified) at Raytheon in the mid 1960's.

The Raysistor was developed in response to a CIA program that mounted "mind control units" on the sides of stealth aircraft developed by the Air Force. These units used focused electromagnetic microwave light that was "shined" down on people to make them disorientated, often causing them to black out. (Individuals that were targeted would notice little streaks of plasma in their vicinity when walking at night.) Some of these unfortunate victims were then secretly abducted for research purposes to gather data on radiation exposure. The ultimate end was to collect DNA samples to determine what cell characteristics were associated with a human who could survive space travel or survive on inhospitable planets such as Mars. The technology was soon expanded to experiments in controlling potential terrorists, activists and conspirators.

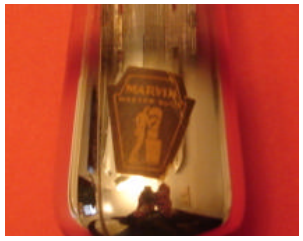
Since these mind control units produced visible light, they showed up as very bright lights on the side of the stealth planes. Because of this, it became very easy for the CIA to perpetuate the UFO myth that was very common in the mid-60's to mask the fact that the government was experimenting on the civilian population with mind control technology.

Unfortunately, these units had a major drawback; it was difficult to focus the electromagnetic radiation within a limited area. As a result, CIA agents within the immediate target area were also exposed. It was initially found that these agents could be protected by wearing wide-brim cowboy hats that were sprayed with an aluminum-based, heat resistant paint. However, this proved unacceptable for obvious reasons. The Raysistor was developed to overcome this problem.

The Raysistor is based on the principle of electromagnetic radiation in the form of light acting on a photo resistive element to provide a control function. In the application shown, the Raysistor (item 20 in Figure 1 below) is used as a phase modulator operating as a frequency modulator that is controlled electronically. The Raysistor, being light sensitive, is compared to the "mind control unit's" electromagnetic output. A high-gain feedback loop suppresses those frequencies that would result in disorientation by creating an error voltage that drives the Raysistor's output in a direction that will null the undesired frequencies. The input is connected to a thin, metallic covering that was worn under the CIA agent's suit.

In discussing the unit's name with Ray Chase at the March NJARC meeting, Ray indicated that Raytheon wanted to give him credit for this important development but still maintain the secrecy of the invention. They came up with **RAY SISTOR**, which imbedded his first name in conjunction with a component that would "resist" the "rays" used by the CIA's mind control transmitters.

Nice work Ray, and happy April 1st!



The MARV-O-DYNE radio and MARVIN Kellogg-style tube, namesakes of your editor's great uncle Marvin Meshugener Beeferman.

The RAYSISTOR

Ray Chase discusses the 40th anniversary of the Raysistor at an April 1st, 2005 IEEE conference.

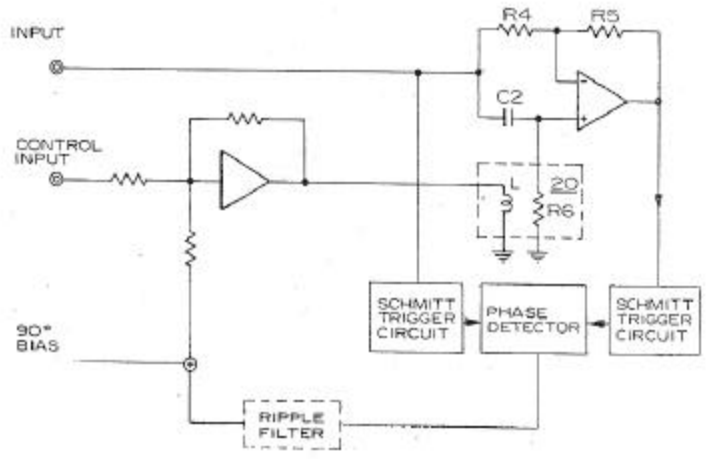


FIGURE 1

Typical application of the Raysistor (item 20) in a frequency suppression circuit. Raysistor operation is based on the principle of light acting on a photoresistive element.