



The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

August 2019

Volume 25 Issue 08



MEETING/ ACTIVITY NOTES

Reported by
Marv Beeferman

The ON-LINE Broadcaster

The *Jersey Broadcaster* is now on-line. Over 160 of your fellow NJARC members have already subscribed, saving the club a significant amount of money and your editor extra work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

For starters, please note a change in our "Upcoming Events" schedule. We felt that it might be a problem for people to carry their homebrew entries and displays from the Bowen Hall parking lot to the Computer Science Hall so we moved this event to November 8th at InfoAge. In its place, Technical Coordinator Al Klase will offer a revised edition of his 2012 AVC presentation. Al describes it as follows:

"It's really easy to become spoiled by modern (post 1930) radios. You tune across the band, and all the stations are there, and none are too loud. It wasn't always this way. For instance, if you play with the Atwater Kent 20C, TRF, three-dialer in the RTM at InfoAge, you'll discover that you not only have to coordinate the three tuning dials, but you must constantly fiddle with the RF/detector filament rheostat to control amplification.

We'll take a look at the history of AVC and study how it's actually implemented in your radio. The circuit is usually almost invisible on the schematic diagram. We'll also discuss troubleshooting and repair techniques."

Ludwell Sibley has announced that the Tube Collectors Association (TCA) "Web Wizard" has put up some new indexes in addition to those already present to tube publications on the TCA site:



MEETING NOTICE

The next NJARC meeting will take place on Friday, August 9th, at 7:30 PM at Princeton's Computer Science Hall (35 Olden Ave.). Directions may be found at the club's website (<http://www.njarc.org>) with a map showing the location of the Science Hall in relation to Bowen Hall. This month's topic will be an update of Al Klase's 2012 AVC presentation. A small auction will also take place. Please take note of the temporary **building location change** from Bowen Hall to the Computer Science Hall. Signs will be posted in the Bowen Hall parking garage showing directions to the Science Hall.

www.tubecollectors.org

Just click on the "Archives" button to access the following:

- All AWA tube articles, 2006-2019 ("Journal" and "Review")
- All TCA material from Feb. 199 through Aug. 2019 ("Tube Collector," "Data Cache," and "Special Publication")
- An index to the RCA-Dowd Harrison Archive at the AWA Museum
- Twenty-some years of "Vacuum Tube Valley" and the "ARCA Gazette"
- Brother Dowd's date guide on RCA tubes (1924-1941)
- A "jaw-dropping" variety of tube catalogs, data sheets and other historical material

Thanks Lud!

To those not familiar with it, member Jim Whartenby would like to bring your attention to a site that offers manuals for special pieces of test equipment and obscure ham radios:

<https://www.lost-manuals.com>

For those members interested in the basic history of the Theremin, member James Doran recommends the following:

<https://www.wnyc.org/story/theremin-archival>

Last month, we mentioned "Tom's Furniture" for cabinet work. One of our members has offered the following endorsement:

"I have known Tom for better than ten years and his work is excellent. He even worked on some small custom jewelry that needed refinishing and my wife was

thrilled at the outcome. Here is a link to his website - just give him a call and say you know Ted from Landscape if you want. See if he can meet your budget for cabinet work. Can't hurt to ask."

<https://www.tomsfurniturerefiniting.com/>

The glow from NJARC's first field day is still in the air and offers great new opportunities for the club. Member John Ruccolo, if he "can get some gear together," has offered to take ownership of a "Vintage" Field Day" using some equipment from yesteryear. Great idea John ... we are, after all, an "antique" radio club. Anyone else interested?

Finally, don't forget our Summer Repair Clinic at InfoAge scheduled for August 3rd.

Upcoming Events

August 3 - Summer Repair Clinic at InfoAge

August 13-17 - AWA annual convention, Henrietta, NY

September 13 - Monthly meeting at InfoAge; talk by ARRL Hudson Division Director Ria Jairam (N2RJ).

September 19-21 - Kutztown Antique Radio Swapmeet

October 11th - Monthly meeting at Princeton's Bowen Hall; presentation by Mike Molnar (topic TBA)

November 2 - Fall NJARC Swapmeet-Hamfest at Parsippany PAL

November 8 - Monthly meeting at InfoAge building 9032A; homebrew contest and display.

November 16 - Fall Repair Clinic at InfoAge (building TBA)

December 4 - E-Board meeting

December 14 - Annual Holiday Party at West Lake Golf & Country Club

THE JERSEY BROADCASTER is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University. The Editor or NJARC is not liable for any other use of the contents of this publication other than information.

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THE DEVELOPMENT OF THE DIRECTIONAL AM BROADCAST ANTENNA

PART II

By
John Schneider

This article originally appeared in "Spectrum Monitor" magazine and later in "Radio World." It is reprinted here with the kind permission of John Schneider. Mr. Schneider retired in 2015 after a long career in radio electronics, most recently in international sales with Broadcast Electronics and HD radio. He is a lifetime radio historian, author of two books and dozens of articles on the subject, and is a Fellow of the California Historical Radio Society.

Part I traced the history of the first known use of a directional antenna at WFLA-WSUN and its development by Raymond Wilmotte. It also traced Westinghouse's work in designing an innovative directional antenna system for their new 10,000-watt KYW transmitter site.

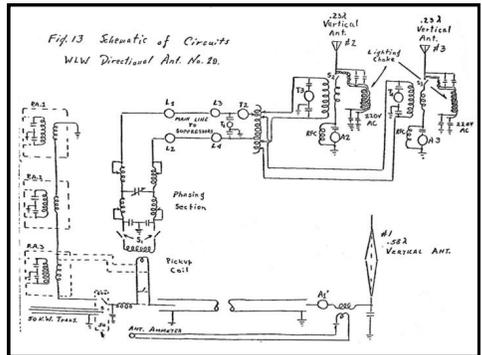
WLW CINCINNATI

WLW in Cincinnati, Ohio, was the first and only AM radio station in the United States ever authorized to operate with the remarkable transmitter power of 500 kW, doing so from 1934–1939. Upon being granted this coveted experimental authority by the FCC, the Crosley Radio Corporation spent a half million depression-era dollars to construct the country's most powerful radio facility.

Broadcasting on WLW's clear-channel 700 kHz frequency, the super-power transmitter at first only operated after 1 a.m. using the experimental call sign W8XO, but after it proved reliable, it was authorized to operate 24 hours a day using the WLW call sign.

The existence of such a powerful signal on the radio airwaves was certain to create interference. And sure enough, in the summer of 1934, the FCC began receiving complaints from the Canadian government about interference to CFRB, which operated with 10 kW on 690 kHz in Toronto, 400 miles Northeast of Cincinnati. "With station WLW operating with 500 kilowatts," read the official complaint, "the service area of the To-

ronto station was reduced to little more than the city of Toronto itself, and 50 miles out the signals from Toronto were completely obliterated."



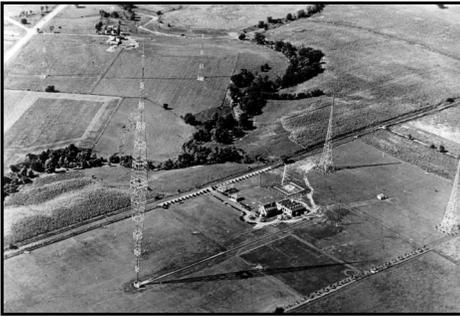
This sketch of the WLW antenna configuration is taken from documents created by the Crosley radio engineers.

WLW's experimental license needed to be reauthorized by the FCC every three months, and WLW dutifully filed to renew the authorization that would expire in February 1935. But the FCC's response was the cancellation of WLW's temporary authority, stating that it was obligated to comply with the international treaty that governed the sharing of the airwaves. WLW would be allowed to operate with 500 kW during the day, but would have to reduce its power to 50 kW at night. But although the FCC had closed the door, it left open a tantalizing window — the commission would approve 500 kW nighttime operation "providing such a radiating system is employed that the effective signal delivered in the area between Niagara Falls, N.Y., Lockport, N.Y. and Lake Ontario does not exceed the effective signal in that area when operating with 50 kW."

In the 1930s, the evening hours were radio's "prime time," and WLW stood to lose a lot of advertising revenue if it couldn't operate its super-power rig in the evenings, and so its engineers wasted no time in coming up with a solution to this unforeseen impediment. After analyzing 20 different possible solutions, the Crosley engineers chose to erect two 326-foot "suppressor" antennas to reduce the signal intensity towards CFRB. These two towers were constructed 1,850 feet away from the main 831-foot WLW tower, located directly in line on the bearing towards Toronto. The height and location of these towers were chosen to reduce the skywave signal towards Toronto at an angle of 20 degrees above the horizon.

By April 1935, WLW was conducting evening tests at 500 kW. Both the FCC and Canadian engineers took field meas-

urements and were satisfied that the system was effectively reducing the signal towards Toronto to the 50 kW level.



This aerial view shows the WLW antenna complex in Cincinnati in 1935. The station's main 831-foot diamond-shaped Blaw-Knox tower is at the lower left. The two 326-foot towers behind it on either side were the "suppressor antennas" designed to reduce WLW's signal towards Toronto. The two small towers at right supported the antenna of sister station WSAL.

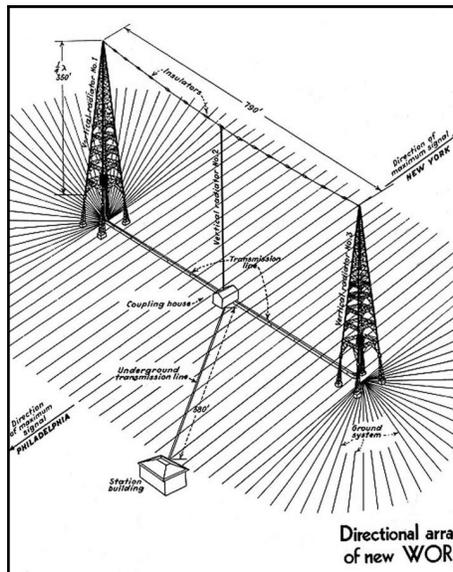
Simultaneous to the Canadian issue, the FCC received another objection of possible WLW interference from WOR in New York. WOR was on 710 kHz, and was concerned that the proposed reduction in signal strength towards Toronto would result in an increase in signal towards WOR. In response, WLW quickly sent a team of engineers to the East Coast to make field measurements. When they proved to WOR that there would be no objectionable interference, the WOR complaint was withdrawn and WLW resumed its full power evening broadcasts on May 8. It continued to broadcast at this power level as the industry and government argued over the benefits and evils of super-power broadcasting. Finally, under pressure from Congress, the FCC set a ceiling of 50 kW on all AM broadcasting in the United States. WLW's days as a super-power broadcaster came to an end on March 1, 1939.



The above coverage map shows WLW's original 500 kW non-directional nighttime coverage shown by dashed lines, and the coverage achieved with the directional antenna (solid lines). The signal towards Toronto was greatly reduced to protect station CFRB.

WOR NEWARK, N.J.

Beginning in 1922, the Bamberger Department Store had been operating station WOR, which was licensed to the store's headquarter city of Newark, N.J. (WOR was relicensed to New York City in 1941.) In 1935, the station decided to increase its power from 5 kW to 50 kW and moved its transmitter from Kearny, N.J., south to the village of Carteret. A new 35-acre site was built on the shores of the Arthur Kill channel, across from Staten Island.



This drawing shows the configuration of the WOR antenna system at Carteret, N.J., constructed in 1935. It is from *Broadcasting* magazine's issue of March 1, 1935.

The WOR engineers, led by broadcast pioneer Jack Poppele, wanted a directional antenna that would maximize the signal towards New York City to the northeast and Philadelphia to the southwest, while minimizing radiation over the mountains of Pennsylvania and the Atlantic Ocean. (For an extensive review of the life of Jack Poppele, see NJARC's Mike Molnar's articles in the 2019 "AWA Review"...Ed) They contracted with the AT&T subsidiary Western Electric to build the new transmitter site, which in turn employed their engi-

neers at the Bell Telephone Laboratories to design a directional antenna system.

The WOR antenna consisted of two self-supporting 385-foot base-insulated towers, which served as two elements of the directional array. They supported a taut cable that stretched 790 feet between the tops of the towers, and a drop-wire conductor that descended from this cable at the midway point served as the third antenna element. The ground system consisted of 40 miles of #8 buried copper wire. This was one of the first radio installations to use coaxial transmission line, which was also buried. The three elements of the antenna were fed in phase, which produced a broadside figure-eight array favoring New York City and Philadelphia.



A 1935 view of the WOR transmitter building.

Inside the spacious and windowless operations building, the 50,000-watt WOR transmitter was enclosed behind windows with a corridor running around it, which allowed visitors to view the inner workings of the system from all angles. The heat extracted from the water-cooled transmitter tubes was used to heat the building.

On March 4, 1935, President Franklin Delano Roosevelt threw the ceremonial switch to launch the new WOR signal, and a gala day-long program was broadcast from Carnegie Hall to inaugurate the powerful transmitter. The Carteret site remained in operation until 1968, when WOR moved to Lyndhurst, N.J.

MORE DIRECTIONAL ANTENNAS

The proven success of these directional antennas convinced the FCC to accept the technology and create regulations for its use. This opened the floodgates to applications from dozens of other stations.

In 1933, WJSV in Washington, D.C., (now WFED) installed a directional antenna to reduce interference at the Naval Laboratories on the Potomac River while also increasing signal strength in Washington. That same year, WKRC in Cincinnati installed a directional system to decrease interference to co-channel stations in Buffalo and St. Louis.

In 1934, WMC in Memphis was able to raise its power from 1 kW to 2.5 kW while protecting WTAR in Norfolk, Va. Its system consisted of an active vertical antenna and a passive 185-foot reflector mast spaced a quarter-wave distant on the bearing towards Norfolk.

A dozen other stations followed suit in 1935, including WINS in New York, KSD in St. Louis and KWKH in Shreveport. In 1936, WWJ in Detroit built a two-tower 5 kW directional system, and WBZ in Boston used two towers to reduce its signal over the Atlantic Ocean in 1939. In 1940, WEAJ New York (now WFAN) moved its transmitter site eight miles closer to New York — from Bellmore on Long Island to Port Washington. Its two-tower system was designed to reduce the signal over the Atlantic Ocean and increase power towards the west.



This is a rear view of the WEAJ antenna system, showing the elevated raceway supporting the coaxial transmission line that connected the two towers.

By 1940, directional AM antennas were enough of a proven technology that dozens of stations were using them to obtain power increases or full-time operation. But in the years before computers, the current and phase parameters for each tower needed to be calculated by hand. This was mathematically complex and tedious process, and was understood by only a handful of expert radio engineers. The few who had early knowledge of these systems, such as T.A.M. Craven, were doing brisk business designing new antenna systems. By the start of World War II, there were 646 AM radio stations

on the air in America, and 39 of them were using directional antennas.

In the early 1940s, Carl E. Smith (Cleveland Institute of Radio Electronics) built an elaborate electro-mechanical device that could calculate and draw antenna patterns. He published a 238-page book in 1936 that gave the parameters for over 15,000 possible two- and three-tower directional patterns. The publication of this reference work greatly simplified the design of directional arrays and made it easier for their design and construction.

When the wartime freeze on FCC applications was ended, hundreds of applications for new AM stations were submitted, with many specifying the use of directional antennas. Between 1940 and 1950, the number of AM stations in the USA tripled to 2,000, and then increased again to 4,000 by 1970. This was all made possible by the use of directional antenna technology. Today, the United States enjoys the greatest number of AM stations of any country in the world, and there are more directional antenna systems in the U.S. than all other countries combined.

References for the above article are quite extensive and would take up quite a bit of space. They can be easily found by "googling" the article's title.

Thanks to NJARC member Pete Grave for providing the following commentary on Part I of this article:

Hi Marv; Enjoyed the "Broadcaster" as always. The part on KYW hit a soft spot. Back in 1951, at the age of 13, my family moved to Philadelphia (Chesnut Hill), one of the highest spots in the city. Going out on the roof of the three story house to survey for SW antennas, I could see two towers in the distance to the north. I thought they did not seem far so I thought I might take a bike ride and see what they were.

A day or two later, I did just that. The ride was a lot longer than it looked but in time, I arrived at what looked like a very nice stone home with two big towers behind it. The sign out front said "KYW". Being a "pain in the butt" sort of kid, I went up to the door and knocked. A gentleman answered the door and asked what did I want? I babbled away about radio shortwave interest, etc. and he asked if I would like to come in.

Inside you could hear KYW being monitored, the hum of fans and a pump running, and a big desk with things on it with knobs and meters galore. He proceeded to show me around BIG water

cooled tubes - "if the water goes off, they will burn up - we have a generator just in case there is a power failure".

He showed me everything there was to know about the site. Then, the highlight of the visit was when he handed me a fluorescent light tube, opened the door to one of the rooms, told me to step in and said "don't touch anything and don't drop the tube." To my surprise, I entered the room and the tube lit in my hand with no wires; "RF" he explained to my shocked face.

We continued the tour with me in complete awe. I asked is there a backup transmitter if there is a problem? Answer: "We don't talk about that around here, no". He then explained there was a big transmitter that was supposed to go in for a backup but with WWII, it was shipped to the Pacific and never seen again. He said that he was told it was left on a beach still in the crate, unused.

I thanked him with all my heart, got on my bike for the what seemed like a long ride home. The stone house is still there today with the towers and some other stuff behind it. No one is there; it's on remote control now. I go by about once a month as the cop car business carries me that way and I divert just to go by. I am hoping to catch a maintenance person there for another tour someday.

As another point of interest, both WFIL (560) and WIBG (990) were within a couple of miles of the site. I later stopped at both but no tour from either - just "go away kid, you bother us."

RADIO WAVES BEAT HEAT WAVE AT INFOAGE SWAP

By
Marv Beeferman

As expected, in light of the high temperature and humidity (at least it didn't rain!), attendance was just down a little at our July tailgate swapmeet at InfoAge, but a fine turnout of buyers and sellers showed up anyway. President Richard Lee described it as a "tropical radio paradise." In fact, your editor heard a few comments about the "good stuff" that was available for purchase. A very nice note was posted by Verni and Corrine Mattson of Mount Holly:

Dear Richard Lee:

Thank you for a wonderful Tailgate-Hamfest on Saturday. This was my first and I brought my wife and three of my

grandkids for the first time at InfoAge. I'm always impressed by the members and their willingness to inform, educate and share their technology skills with those who attend. We are grateful for our friendship with Paul and Judy Hart as well who have opened the door to this fantastic event and experience. I wish for you all the best and do keep up the good work in this important area of communication, radio and ham broadcasting. My three grandsons continue to talk about this experience as it sparked an interest they will not forget soon. To all who contributed to make this possible, I am grateful to you.

President Lee would like to thank Harry Klancer, Bill Zukowski, Sal Brisindi and Kasha Sadowska and Max Thies for their support. As usual, thanks to Bob Bennett, six minutes of some of the "goings on" is available at:

<https://www.youtube.com/watch?v=VHGbPdrclhc>



INFOAGE WELL-REPRESENTED AT 2019 MICROWAVE SYMPOSIUM

By
Ray Chase

The Institute of Electrical and Electronic Engineers (IEEE) organizes an annual International Microwave Symposium (IMS) in June. IMS is held in various U.S. cities; for 2019 it was at the Boston Convention and Exhibition Center with the slogan, "The Hub of Microwaves". The National Electronics Museum in MD (NEM) coordinates part of the Historical Display that is always included. InfoAge exhibited a small display that I prepared at IMS when it was last at Boston in 2009.



Last year InfoAge was invited to exhibit their SCR-268 radar artifacts (the Army's first radar) at IMS when it was held in Philadelphia. We have information on good authority that our collection is the most comprehensive extant about this historic radar. As a result of our success at Philadelphia, the historic display organizer for Boston requested that we bring it all to Boston. The commitment to Boston would be more involved than at Philadelphia as the distance would preclude daily home commuting for the seven days of the symposium.

IMS is a major International event for the microwave industry and draws participation from all corners of the globe. The 2019 program book had 80 pages of activities from its opening on Sunday, June 2nd to its closing on the 8th of June. Over 600 seminars, technical presentations, workshops and panel discussions were listed. On Tuesday the main display hall was opened to over 1500 commercial, industrial exhibitors for three days. Technical sessions continued through Friday with some spilling over into Saturday. My observation was that about 40 to 45% of

the participants were Asian with about the same percentage of industrial displayers. Clearly, the main theme throughout the vendors' displays and technical sessions was 5G and automotive applications of microwaves with frequencies up to 200 GHz. There does not seem to any limit as to how high we can go with microwaves or how small devices can now be made.

For the historic display, we were allocated about 2400 sq. ft. on the main floor in a public area adjacent to the main entrance from the parking lot. The historic displays are defined as largely unattended and open to passing traffic so complete descriptive signage is vital. Large display panels are provided for hanging interpretive signage boards and our own past experience and pre planning from NEM prepared good coverage. There was 24/7 security coverage, so we had no concern about leaving things accessible to attendees.

We set up on Saturday, the 1st of June and could not remove the display until late Friday, the 7th, and into the following Saturday morning. Show management provided good professional help in unpacking, setup and teardown, but the InfoAge displays take a lot of detail assembly that only I could perform. Therefore, it was not fully done until Sunday morning.

Sadly, major local firms and the MIT Museum in Cambridge declined to participate even though IEEE and NEM try to bring exhibits of local interest and promote local participation. At the last minute, Raytheon sent one display case of magnetrons with a librarian intern who was not cognizant of their history or operation. Unfortunately, major corporations do not seem to want to present their history. However, to our benefit, NEM and InfoAge pretty much split the space between us. Our displays always draw a lot of interest, particularly the SCR-268 transmitter and the Zahl tube (VT-158) display that I constructed over 10 years ago. The SCR-268 sixteen tube "ring oscillator" transmitter is pretty well known as being the only one remaining in

existence and is quite impressive when all its tubes are installed. It was significantly restored for IMS Philadelphia last year with much NJARC volunteer help so it was completely ready to go this year. The PPS-4 Ground Surveillance radar was displayed and also brought much interest. One display case was used to display historic early magnetrons plus a Raytheon magnetron from the first model Amana "Radarange" sold for home use. Original tech manuals for the SCR-268 radar were also included.

Since the display is designed to be unattended, once set up, I was free to listen in on some of the seminars or tour the commercial exhibits to try to keep up to date on what the industry trends and technologies are. I often returned to the exhibit to offer commentary to interested viewers. InfoAge and ISEC brochures were available as well as plentiful InfoAge and RTM business card size handouts. In this environment, these seem to be more effective for people to stick in their pockets rather than fold out brochures.

Downtown Boston hotels were completely out of our budget range, but I found reasonable lodging in Newton, MA, only 11 miles out, and the commute was no problem at all.

While this exposure probably will not send many new visitors to InfoAge, it does give us an International and National presence and recognition. It did strip our radar displays from the hotel for several months and now they are in the process of being reestablished. I would like to acknowledge the help of many NJARC volunteers who helped me put this together and particularly to InfoAge personnel Pat Flanagan and Ray Brown who provided significant help in loading and unloading these items which are very heavy. It was all done safely and expeditiously...thank you.



SCR-268 sixteen-tube "ring oscillator" transmitter.

TWIN DELIGHTS OF EUROPEAN RADIO

By
Robert Forte

I recently returned from a twelve-day visit to Europe, basically to attend the Ham Radio Convention in Friedrichshafen, Germany. Billed as the largest ham radio show in Europe, it is held at the end of June every year in a small, lakeside (lake Constance or "Bodensee" in German) village in the South of Germany. Friedrichshafen is the home of the German lighter-than-air dirigible such as the Hindenburg and Graf Zeppelin. It is also the home of V2 rocket engine testing which prompted the allies to level the town. Finally, it is the home of ZF transmissions which are found in many foreign cars and the successor to a company making transmissions for German tanks during WWII.

The Ham Radio Convention is held in the "Messe" or "Halls" of Messe Friedrichshafen. The show is slightly bigger than our Dayton hamfest, and occupies three of the eight halls, each the size of a football field. Found in the first two halls are old radios, mostly European - domestic and military. Included are military sets from WWII plus anything related to electronics going back to 1900. There's plenty of eye candy. Tom Perera of key and Enigma fame had a large table with Enigma displays, keys and radios and drew quite a crowd, probably as a result of the movie *Imitation Game*. Also displayed were computer items, unrelated antiques, electronic magnifiers, and parts.

The third hall featured vendors of new equipment with the usual suspects - Yaesu, Icom, and Elecraft. The emphasis seemed to be on Software Defined Radio (SDR) which invites a new learning curve and bankroll. Also in this building were amateur radio clubs from all over the world serving socialization and finger foods - dates from Israel, cheese from Italy, etc. A separate section was devoted to teaching youngsters how to solder, wire a set and read schematics.

Lectures abounded throughout the day. However, what I found the most interesting was the display of radios and homebrews from the Deutsches Museum. This museum, located in Munich, besides radios from the 30's and 40's, showed beautiful sets built on breadboards in oak and walnut, wooden antenna arrays and an operating ham station using ARC-5 receivers. As I was going to Munich after

the show anyway, I decided a stop at the museum itself was in order.

The Deutsches Museum is a world class affair, offering everything scientific and industrial. Cars, planes, astronomy articles, musical instruments, power stations, trains, etc. Located on the fourth floor is an active, all-band radio ham station - 80 meters through 440 MHz. They operate 1100-1200 every day with a licensed docent. The antenna is a very long and end-fed to a neighboring tower. How they got permission to do that baffles me. The rest of the radio section has sets going back to 1920, including homebrews, test gear and an Icom IC-M2E, a two meter FM transceiver built in 1988. It is displayed as "old" but I have the same set and still use it!

The amateur radio community in Europe has 101 satellites in orbit. This program started in 1961. They can track their satellites on a computer to monitor their exact positions and see if they have a shot at communicating with them. One satellite, AMSAT-DL travels at 4.5 miles/sec. Another is in a geosynchronous orbit over Qatar with signal coverage over most of Africa, parts of Europe and parts of the Middle East (Amsat P4-A, uplink 2400 MHz, downlink 10,500 MHz).

So ham radio is alive and well in Europe - hopefully, you'll get a chance to see for yourself.



LARRY GUTTADORA PASSES



The NJARC sadly announces the passing of former member Larry Guttadora on June 20th, 2019. Born in Newark, he lived in Irvington and settled in Iselin. He worked as an electronic technician at Airco Communications and for 37

years at the Princeton Plasma Physics Lab at Princeton University. Larry was an amateur radio operator, an avid collector of antique radios and a talented wood carver. He will be sadly missed, especially by NJARC members Tom Provost and Nevell Greenough who were his friends and co-workers.

CORRECTIONS TO COMMENTS ON JUNE MEETING TALK

By
Marv Beferman

I tried my best to summarize some of the points made by member Darren Hoffman during his talk "Receiving Tubes in the Post War Years" at the June meeting. Unfortunately, I need to apologize for some items that were misrepresented. They were first brought to my attention by honorary member and tube guru Ludwell Sibley and his following comments:

- Tubemakers were not literally rebranders. They routinely bought finished tubes from each other, but got them unbranded and were the original brander. That didn't even apply to some Amperex tubes, which were made by GE at Owensboro, branded "Amperex," and packed them in yellow-and-green cartons with "KR" on the inside of the flap.
- Rebranders were the inner-city schlockers who took used tubes, washed them, buffed the brand name off, and put on an arbitrary brand and fake date code.
- RCA-Harrison did not sell rejects. A tube had to meet its "Master Specification Sheet." A 1614 (RF-tested 6L6), for example, had a "bogie" transconductance of 6050 umhos, measured with 250 V on the plate and -14 V on the control grid. The "factory limits" were 5600-6500 umhos, and the "customer limits" (probably allowing for some jostling in shipment),

were 5450-6650 umhos.

- RCA's private brands were not supplied by "reject peddlers." RCA made the tubes with only the type number "etched" onto the bulb at Harrison. The ware house at Jersey City inked on the date code, the "274" source code, and the brand being supported. Sears (Silvertone), Lafayette, Zenith, DuMont, Magnovox, and Admiral were among the 340 private brands that RCA supplied. The Federal Aviation Agency, Coast Guard, Western Union Telegraph Company, Mullard, and Philips were other private brands. It's hard to imagine them routinely accepting rejects. (That doesn't mean RCA was the sole source of private-branded tubes. I have a DuMont portable radio with DuMont-branded tubes. They carry the EIA source codes for RCA, Raytheon, and Sylvania.)

- Sylvania did put out some rah-rah about smashing rejects, with a photo in "Sylvania News" showing an employee at Emporium shoveling rejects into a crusher.

- I wouldn't claim that Raytheon or Sonotone eventually sold "only" imports.

Darren Hoffman provided the following update:

Your *Broadcaster* paragraph regarding reject peddlers is incorrect and does not reflect the info I presented. The reject peddlers were the companies that advertised in the magazines such as Cornell, Rad Tel and later International and El-Menco. Zenith, Magnavox, Admiral, Sears, Lafayette and other OEM brands merely purchased first rate tubes from the big manufacturers at wholesale prices and printed their own names on them. These name brands were never second-rate tubes. To that end, the practice of washing the etching off of the glass and re-labeling tubes was not really even done by the early cut-rate rebranders. That was something that was done by companies like International, El-Menco and United, in the very end, when a type was needed that was no longer available. That practice likely did not begin until the mid 1970's.

The where and how that reject tubes fell into the hands of low end rebranders, such as Rad Tel and Cornell is and always has been murky. Their proximity to the RCA plant says something, as do accounts of former employees. With that said, it's simply lore and legend rather than documented practice. Some of their tubes were used, and some of them were new "rejects." I think it is true that RCA never "officially" sold reject tubes.

The tubes sold between manufacturers were not necessarily excess, but usually were factored into production runs, to fill orders from other manufacturers, while sometimes an order may have been an emergency and filled with tubes from any one manufacturer who had them on hand.

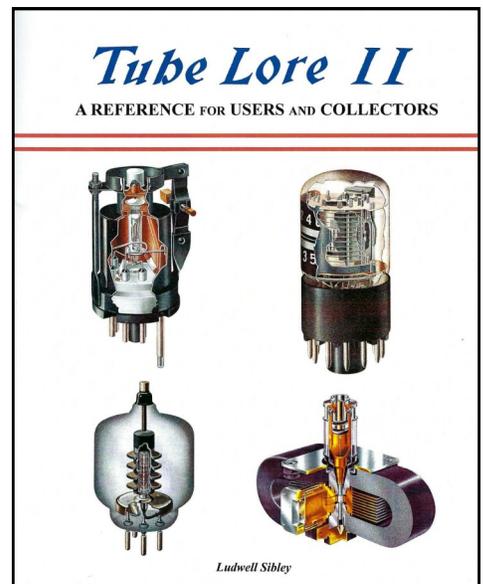
Raytheon, ITT, Sonotone sold primarily imported tubes, but would sell US made stock if it was available at an equally low price, or, if imported material was unavailable. Raytheon was the very first top name US tube producer to outsource receiving tubes from foreign countries. Channel Master also began doing so early, but never manufactured their own tubes, and was never considered to be a top shelf producer.

I hope this clears up some confusion.

If you're interested in the best reference presently available on tube information, I'm happy to announce that Ludwell Sibley's *Tube Lore II* is now on sale. You can obtain it from :

<https://www.ermag.com>

Cost is \$34.95 and you'll need to enter "Tube Lore II" into the "Search" box.



A LAST MINUTE NOTE

Thanks are in order for Alan Wolke's well-received July presentation on "Software Defined Radio for the Antique Radio Listener." A follow-up may be found at:

<http://www.skywaves.ar88.net/SDR/default.html>