ANTIQUE RADIO COLLECTORS & HISTORIANS (ARCH) OF GREATER ST. LOUIS

ARCH CLUB NEWSLETTER

JANUARY 2025

Special points of interest:

- 2024 Christmas Party
- January 2025 Meeting Notes Page #1
- History of Radio Technology—Page #8
- Did you know & Q&A — Page #11

Join us for our next meeting:

February 11th, 2025 at 6:30 PM

Maryland Heights Community Center
300 McKelvey Road,
Maryland Heights, MO 63043

Meetings are temporally being held at in Maryland Heights Community Center while the Kirkwood Community Center is being re-finished.

2024 ARCH Christmas Party

The yearly Christmas party was held and enjoyed by all attendants. The "Rob your Neighbor" gift exchange had a large participation. Many great gifts were exchanged among club members. There was a great amount of food this year. *Editor's Note: This is the only Christmas party, of the few I attend, I look forward to each year.*

A voting action occurred for all club officer positions. It was for individuals to maintain their currently held positions. Bill Petty however declined being Vice President in 2025. James Richter took this position. Thanks Bill for your years of club support!

Club dues for calendar year 2025 is again $20.00 dollars. Please support the club and become a paying member. Dues go toward the Christmas party, room rental, and club picnic events.

January 2025 Meeting Notes

16 Members were in attendance. Many club members find positive and negative aspects with meeting at the Maryland Heights Community Center. One notable discussion was that you must walk through a metal detector when entering the building. Walking into the building with radio parts and chassis is challenging. The staff have been very kind when inspecting bags and boxes.

"*AM Radio for Every Vehicle Act*" has failed to gain inclusion in the final major legislation of the 118th Congress. The Continuing Resolution (CR) aimed at averting a government shutdown in December 2024. The language for the act was removed within the CR. There is future hope this Act will be signed in 2025. The act is favored by both sides of the House. AM Radio is widely known to be a communication medium that has a farther reach than FM and other commercial frequencies. Opponents state the AM broadcast medium is antiquated given the wide use of satellite radio and cellular phones that provide clear high quality audio. One notable matter is that artist do not receive royalty payment as AM radio stations do not pay royalties. The American Music Fairness Act (AMFA) is also being pushed through Congress that would result with artist receiving royalties from AM radio stations.

Show and Tell —January Meeting

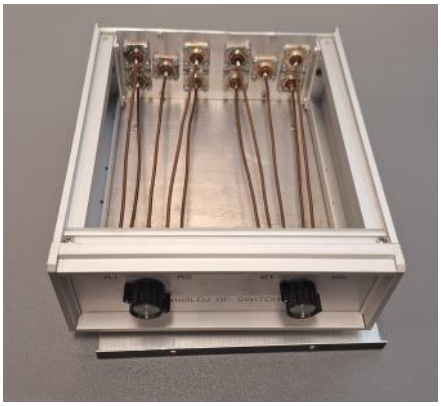
Carl Kleinsorge — 1952 General Electric Model #610

This radio, a five (5) tube radio, has a selenium rectifier for AC power use. Carl, when restoring the radio immediately replaced it with a silicone based rectifier. As this is a 5 tube radio with no rectifier tube, this has a separate tube for RF amplification. Carl expressed how well the radio receives, how loud and great the radio sounds. When powered by a battery, the radio requires 90 Volts for B side and 4.5 volt for A side. The radio features a "target" tuning indicator. On the front is a thumb wheel (dark green) for tunning. The recessed tan knob is the volume and on/off. Notably, Carl was surprised to discover the dial light illuminated when using either the AC or DC supply. The radio was put on the raffle table as Carl is trying to clean out his home.

Mike Harmon — Custom Antenna and Radio Switch Box

Mike, like many of us, has to many HF Transmitters/Receivers and too many antennas. A normal antenna switch permits you to select which antenna to use with only one radio. Mike decided to create a box permitting both the antenna and the radio to be selected.

Using off-the-shelf switches in his parts bin and a metal box from Gateway Electronics, Mike made a professional looking antenna and radio selection switch. This box employs no relays. A mix of 5 radios and 5 antennas can be chosen by the operator. The most challenging portion of this build was the drilling of 40 holes for the screws that hold the RF connectors onto the rear of the box. #14 or #12 gauge solid copper wire was used to connect the ceramic switches to the coax connectors. It is important to use ceramic switches for this build due to high power/voltages present.



Shawn Barton — KLH Model 21 FM receiver

Brought the KLH model 21 at an antique store. FM only receiver with an internal speaker. From the mid 60s... It was pretty dirty. Replaced the speaker grill cloth with a replacement found on-line. These KLH radios excel in audio quality and FM reception. The radio is comprised of a sealed cabinet with an acoustic suspension speaker. Has separate base and treble knobs. The radio also features an accurate and sensitive veneer tunning knob. Shaun refinished the cabinet. Someone had splattered poly-urethane in a pattern on the radio. The knobs are made of a pot metal insert. Shawn identified that the main tunning knob had cracked due to the expansion/corroding of the pot metal. Repair of the knob was done by the use of both glue and other knobs in his parts bin.

Notably, many members discussed the poor use of pot metal (aka "monkey metal") in a radio of this vintage. The long term issues of pot metal were well known when this radio was made. Pot metal alloys, comprised of the mixture of various different metals, causes parts to swell over time. Note: Any KLH model is regarded as a high quality receiver. The same radio is sold today, in the same form, as a Tivoli Model One. The Tivoli Model One was designed by Henry Kloss, a founder of KLH.

Joe Tauser — 1941 Zenith Transoceanic 7G605 and Zenith 6G601

Joe recapped the "Bomber" radio. This radio, Zenith 1st Transoceanic, has a "silly" number of capacitors. Recapping took a considerable amount of time. The older and earlier Zenith "boat" radio was much easier to repair.

The Bomber radio is rare. Zenith was moving toward war-time production when this radio was built between 1941 and April 1942. There were numerous open discussions among club members regarding the covers of these radios. Carl K. discussed his experience with these radios with Joe.

Notably, the Wave Magnet antenna was deeply discussed. The Zenith patent of the Wave Magnet can be found today. US Patent #2,378,663. Discussions about the pinout of the antenna and the number of turns of wire were discussed. Many radio manufactures are known to have copied this antenna.

Joe Tauser—Discussion about a Philco 630 restoration

Joe discussed his troubleshooting of a Philco 630 radio. During rebuilding of the radio, Joe experienced several high voltage capacitors being continually "blown" within the radio. Joe detailed numerous sparks, loud sounds, and smoke was experienced. During troubleshooting, Joe continued to circumnavigate issues by being creative. Not knowing why a 400 volt capacitor was blowing up, he decided to construct a 500 volt capacitor. This worked well… until it blew up. Lot of head scratching occurred. Eventually, Joe discovered the #80 rectifier tube was inserted into the socket incorrectly. The #80 tube is keyed by having pins of different diameters. A previous individual had replaced the rectifier tube and pushed the tube into the socket incorrectly. The force of inserting the tube was enough the tube socket broke permitting the tube to be inserted in any rotation/direction. Joe was unaware he had inserted the tube incorrectly into the socket after recapping. As a result of the tube being inserted incorrectly, AC voltage was appearing on the DC portion of the circuit. So, learn from Joe and check the socket of tubes.

Joe also discussed his use of parchment paper and rubber cement glue to recreate the target shadow for the Philco 630. A target dial's shadow, the black line, is seen at the top of the dial of a Philco 630.

Canio Vaccaro—Radiola IIIa—1924 Regenerative Receiver

Canio did an amazing presentation regarding his restoration of a Radiola.

Canio experienced numerous challenges when restoring this very early radio. Design changes throughout the production also made this more complicated.

The tunning of this radio is done by varying induction between coils and not by varying capacitance.

It is notable this radio used thick rubber bands to suspend tubes within the chassis. This suspension method is done to eliminate/reduce "microphonics" that were present in early tubes. The rubber material had become stiff over the years. Using a Bissel Vacuum belt became a perfect replacement to suspend the tubes.

The original tubes WD-11 are expensive. Canio used more readily available VT-24 tubes with adapters. The adapters simply change the pinout to match the WD-11. Adapters were provided by Stan. Canio expressed great gratitude with being provided these tubes adapters.

The cone speaker was also restored to work with this radio. The cone is notably made of rubber and not metal or Bakelite. Canio expressed his repair of the speaker. Repair was required for the speakers base volume control.

Clubs Monthly Raffle Table

Various radio's on the club's raffle table. A notable radio is the 1947 AM & FM Bendix Facto Meter. This radio was used by listeners to provide AM stations a signal report. Radio repair technicians also utilized this radio to ensure a customer's home was not hindering radio signal reception. (Provided a baseline signal report.) The radio, is missing the meter, but any current or volt meter can be used in it's place if restored. Also notable is the Zenith Circle of Sound radio (Model C472W-3) with an early "flip clock" display. Zenith moved to an LED display which was more popular with consumers.

The History of Radio Technology

Radio owes its development to two other inventions: the telegraph and the telephone. All three technologies are closely related, and radio technology actually began as "wireless telegraphy."

The term "radio" can refer to either the electronic appliance that we listen with or to the content that plays from it. In any case, it all started with the discovery of radio waves—electromagnetic waves that have the capacity to transmit music, speech, pictures, and other data invisibly through the air. Many devices work by using electromagnetic waves, including radios, microwaves, cordless phones, remote controlled toys, televisions, and more.

The Roots of Radio

Scottish physicist James Clerk Maxwell first predicted the existence of radio waves in the 1860s. In 1886, German physicist Heinrich Rudolph Hertz demonstrated that rapid variations of electric current could be projected into space in the form of radio waves, similar to light waves and heat waves.

In 1866, Mahlon Loomis, an American dentist, successfully demonstrated "wireless telegraphy." Loomis was able to make a meter connected to a kite cause a meter connected to another nearby kite to move. This marked the first known instance of wireless aerial communication.

But it was Guglielmo Marconi, an Italian inventor, who proved the feasibility of radio communication. He sent and received his first radio signal in Italy in 1895. In 1899, he flashed the first wireless signal across the English Channel, and two years later received the letter "S," which was telegraphed from England to Newfoundland (now part of Canada). This was the first successful transatlantic radiotelegraph message.

In addition to Marconi, two of his contemporaries, Nikola Tesla and Nathan Stubblefield, took out patents for wireless radio transmitters. Nikola Tesla is now credited with being the first person to patent radio technology. The Supreme Court overturned Marconi's patent in 1943 in favor of Tesla's.

The Invention of Radiotelegraphy

Radiotelegraphy is the sending by radio waves of the same dot-dash message (Morse code) used by telegraphs. Transmitters, at the turn of the century, were known as spark-gap machines. They were developed mainly for ship-to-shore and ship-to-ship communication. This form of radiotelegraphy allowed for simple communication between two points. However, it was not public radio broadcasting as we know it today.

The use of wireless signaling increased after it was proved to be effective in communication for rescue work at sea. Soon a number of ocean liners even installed wireless equipment. In 1899, the United States Army established wireless communications with a lightship off Fire Island, New York. Two years later, the Navy adopted a wireless system. Up until then, the Navy had been using visual signaling and homing pigeons for communication.

In 1901, radiotelegraph service was established between five Hawaiian Islands. In 1903, a Marconi station located in Wellfleet, Massachusetts, carried an exchange between President Theodore Roosevelt and King Edward VII. In 1905, the naval battle of Port Arthur in the Russo-Japanese war was reported by wireless. And in 1906, the U.S. Weather Bureau experimented with radiotelegraphy to speed up notice of weather conditions.

Robert E. Peary, an arctic explorer, radiotelegraphed "I found the Pole" in 1909. A year later, Marconi established regular American-European radiotelegraph service, which several months later enabled an escaped British murderer to be apprehended on the high seas. In 1912, the first transpacific radiotelegraph service was established, linking San Francisco with Hawaii.

Meanwhile, overseas radiotelegraph service developed slowly, primarily because the initial radiotelegraph transmitter was unstable and caused a high amount of interference. The Alexanderson high-frequency alternator and the De Forest tube eventually resolved many of these early technical problems.

The Advent of Space Telegraphy

Lee de Forest was the inventor of space telegraphy, the triode amplifier, and the Audion, an amplifying vacuum tube. In the early 1900s, the development of radio was hampered by the lack of an efficient detector of electromagnetic radiation. It was De Forest who provided that detector. His invention made it possible to amplify the radio frequency signal picked up by antennae. This allowed for the use of much weaker signals than had previously been possible. De Forest was also the first person to use the word "radio."

The result of Lee de Forest's work was the invention of amplitude-modulated or AM radio, which allowed for a multitude of radio stations. It was a huge improvement over the earlier spark-gap transmitters.

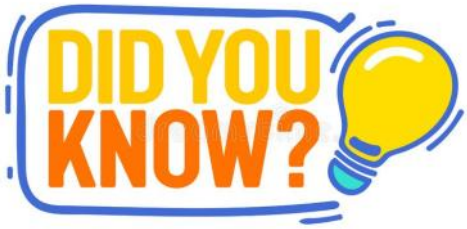
True Broadcasting Begins

In 1915, speech was first transmitted by radio across the continent from New York City to San Francisco and across the Atlantic Ocean. Five years later, Westinghouse's KDKA-Pittsburgh broadcasted the Harding-Cox election returns and began a daily schedule of radio programs. In 1927, commercial radiotelephony service linking North America and Europe was opened. In 1935, the first telephone call was made around the world using a combination of wire and radio circuits.

Edwin Howard Armstrong invented frequency-modulated or FM radio in 1933. FM improved the audio signal of radio by controlling the noise static caused by electrical equipment and the earth's atmosphere. Until 1936, all American transatlantic telephone communication had to be routed through England. That year, a direct radiotelephone circuit was opened to Paris.

In 1965, the first Master FM Antenna system in the world, designed to allow individual FM stations to broadcast simultaneously from one source, was erected on the Empire State Building in New York City.

Bellis, Mary. "The History of Radio Technology." ThoughtCo, Apr. 5, 2023, www.thoughtco.com/invention-of-radio-1992382.



Thomas Edison knew American Morse code. While courting his 2nd wife, Mina Miller, learned Morse Code from him. They both used Morse code, by tapping or squeezing of the hand, to communicate secretly with one another at social events. Thomas Eddison eventually proposed marriage to her via Morse Code.

Question: What reasons was an IF of 455 kHz chosen by many radio manufactures?

Answer:

Early amplifiers were not stable much above 500 kHz, so the IF had to be less than that frequency.

Also, the broadcast band itself begins around 530 kHz (in the US), and you don't want any chance of having a station on or near the IF.

On the other hand, making the IF as high as possible improves image rejection.

In addition to the desired station mixing with the local oscillator to produce an IF signal, two strong stations whose frequencies happen to be separated by the IF will also produce an interfering signal.

In the US, stations are spaced by multiples of 10 kHz.

February Newsletter Question: What company was formed first. Zenith or Radio Corporation of America?

Quote of the month:

"Oh, you have a free radio? I do not need any more radios. I have enough. By the way, what type is it? I will pick it up tomorrow!"

- Many ARCH Radio Club Members

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