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## The Origins of radio...

Radio was not invented by any single person, but instead was a culmination of several scientists' research, each of whom pioneered a different area of electromagnetic radiation and radio waves during the late 1800s and early 1900s. Among these men are well known researchers such as Heinrich Rudolf Hertz, James Clerk Maxwell, David E. Hughes, Thomas Edison, and Nikola Tesla.

### *The Role of James Clerk Maxwell*

In order to fully understand the invention of radio, we must go back to an earlier point in time when electromagnetism was first discovered. This takes us to James Clerk Maxwell and his research during the 1860s. During this time, he was proposing many theories for theoretical physics, including various aspects of gases and quantum mechanics. However, as important as all of his theories are in these other areas - he also predicted something that would become the foundation for all research in radio that was to come. He theorized that electromagnetic waves could be manipulated into a medium of transmission of sound.

### *Contributions by Lesser-Known Scientists*

Nearly ten years later, another major milestone was made. While not directly related to radio, Mahon Loomis was able to transmit the world's first wireless telegraph - proving that Maxwell's theory of using electromagnetic waves as a method of transmission of information was indeed possible. (continued next page)

## UPCOMING Events for July 2025

- ♦ RARC Sunday Night 2 Meter Net is held on the 146.970 repeater at 8:00 PM. Net control operators for July are:

July 6, 2025  
July 13, 2025  
July 20, 2025  
July 27, 2025

Rick KD9GVS  
Jon KD9WPD  
Mark KB9OFK  
David KD9EPN

- ♦ **Saturday** morning Rag chew, weekly on the 146.970 repeater, 8:00-9:00 AM.
- ♦ **July 1**...Monthly meeting at UU La Crosse, 401 West Ave
- ♦ **July 12**...Hams in the Park / Club picnic
- ♦ **July 15**...Trustee Meeting, Time: 5:30 PM, Las Margaritas. All members are welcome to attend.

## RadioDaze 2025... (continued)

It would not be long before the wireless telegraph would be replaced by actual voice communication via a radio. Also during the 1870s, David Edward Hughes made a massive leap forward in radio technology by creating the first method of induction transmission. This induction transmission technique allowed Morse code to be received and transmitted using what would later be known as radio waves.

### *The Role of Hertz and Edison*

With so much pioneering going on in America and Europe by lesser known (at the time) scientists, it was only a matter of time before some of the bigger names in the industry would begin to become involved in the radio revolution. Among them were Thomas Edison and Heinrich Hertz, two of the most important inventors of the time. In the late 1880s, Edison began to work on using a vibrating magnet as the transmitter and receiver for Hughes' induction transmission technique. Edison's work came to fruition a few years later when he was able to install a wireless signaling system for a local railroad. Meanwhile, while Edison was working on the practical aspects of radio, Heinrich Hertz was working on the theoretical aspects behind this new form of transmission. He began experimenting with radio waves and various other types of electromagnetism and finally published his findings in 1887.

### *The Role of Tesla*

The 1890s turned out to be a big decade for the invention of radio as more and more inventors and scientists began to join in. In the early 1890s, Nikola Tesla, renowned opponent to Edison, was granted several patents for major advancements in radio technology, including generators to produce radio signals and radio frequency (RF) power supplies.

As the 1890s marched on, Alexander Popov created the first radio signal detector and receiver in Russia, basing all of his ideas on the previous work of others in the radio field. While the receiver was extremely crude and basic, it did its job and paved the way for many future radios.

In 1901, Tesla decided it was time to transmit radio across the Atlantic Ocean, so he planned to build what would be known as Wardenclyffe Tower. Despite the possibilities for such an invention, Tesla received little financial support - and the project was shut down.

### *The Role of Ambrose and De Forest*

Around the same time, John Ambrose Fleming and Lee De Forest made major advancements in the creation of vacuum tubes and diodes, essentially paving the way for the first home based radio receivers that could actually be affordable and useful for everyday people. In time, the adoption of radios gradually increased before, during and after World War I. Finally, in 1922, the BBC went out over the radio waves for the first time, thereby solidifying the radio as an important means for the transmission of information. Tesla filed his own basic radio patent applications in Sept. 1897. They were granted in 1900. Marconi's first patent application in America, filed on November 10, 1900, was turned down. Marconi's revised applications over the next three years were repeatedly rejected because of the priority of Tesla and other inventors. The Patent Office made the following comment in 1903: "Many of the claims are not patentable over Tesla patent numbers 645,576 and 649,621, of record, the amendment to overcome said references as well as Marconi's pretended ignorance of the nature of a amendment to overcome said references as well as Marconi's pretended ignorance of the nature of a "Tesla oscillator" (a.k.a. Tesla Coil) being little short of absurd... the term "Tesla oscillator" has become a household word on both continents [Europe and North America]." [in other words, Marconi lied.]

<http://www.tech-faq.com/who-invented-radio.html>



## PRESIDENTS COMMENTS

Here we are as we wrap up June, the swap-fest is behind us, and here I am looking forward to Field Day.

The forecast looks like possible thunderstorms on Sunday, but really, would it truly be Field Day without rain? Field Day is June 28th and 29th, we will be at the Chaseburg Ball Field park, E2852 county road, OK Chaseburg, WI. We did Field Day there last year, and it is a beautiful park with lots of space for antennas and a couple of pavilions, including a kitchen. I enjoyed Field Day there last year, and I am looking forward to this year.

A few comments on the Swap-Fest. I have helped with Swap-Fests before, but this is my first time being involved at the level I was at, and I did what I could to the best of my abilities. I would have loved to have seen more vendors and a few more through the door but I was fairly happy with the way things went. I did hear positive comments from those that I had spo-

ken to and I even spoke to a group of guys that went to the Oshkosh fest then left and drove to our fest and they commented that our fest was bigger and better and I was happy with the door prizes that we were able to collect for the fest.

Congratulations to David Gaunky for passing his General Test at the swap-fest. All in all it would have been nice to see more attendees but it seemed to be a good fest after all.

The club picnic is July 12th at shelter #2, Veterans' Memorial Park in West Salem. Please bring a dish to pass. And I would like to have the August program night be a cruise on the La Crosse Queen. Well, I will wrap this up for now. I am looking forward to seeing everyone at Field Day and at the Tuesday program night 73 for now, David KB9EWG, Club President





## Swapfest 2025





## Nuggets



## BUY-SELL-TRADE-ISO



*Wanted: Articles for The Key*

*Please submit your Article by the 26th of the month and include "The Key" in the subject line.*

*Send your Amateur related classified ad(s) to Scott, NLT noon the 26th of each month to kb3mkd@arrl.net. Please Include "The Key" in the subject line.*

Looking for items for this space

## CLUB INFORMATION



**Riverland Amateur Radio Club**

**PO Box 621**

**Onalaska, WI 54650**

- \* The Key is published monthly and e-mailed to members and friends of the Riverland Amateur Radio Club by the 28th of each month. The newsletter focuses on news, announcements and activities of the Riverland Amateur Radio Club. It may also consists of news and information of interest to the Amateur Radio community as a whole. Guest editorials and articles related to Amateur Radio are welcome. Contribution articles should be submitted NLT the 26th of the month. Address any correspondence or anything that should be included in the newsletter to: Scott Cross KB3MKD@arrl.net. Please include the word "Key" in the subject line of your submission.
- \* The Riverland Amateur Radio Club maintains a website at [rarc.qth.com](http://rarc.qth.com). More information about the club can be found there as well as past copies of The Key.
- \* RARC also maintains a Facebook page where members add information and share there Amateur Radio adventures. Please friend us at Riverland Amateur Radio Club—RARC.
- \* RARC maintains a repeater that is located on the WXOW television tower above La Cresent, MN. 146.970 pl 131.8.
- \* RARC holds a weekly 2meter net on Sundays at 8:00 PM on the 146.970 repeater.
- \* Trustee Meeting is held the 3rd Tuesday of the month at Las Margaritas at 5:30 PM, all club members are welcome.
- \* Program evening is held the 1st Tuesday of the month at 7:00 PM, elmer session at 6:30 PM at Unitarian Universalist Fellowship, 401 West Avenue in La Crosse.
- \* Weekly "Breakfast Club" Ragchew on the 146.970 repeater on Saturdays from 8:00 AM to 9:00 AM. Stop by to say "hi".

**Below are listed your RARC 2025 Board of Trustees and contact information.**

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