

America Tunes In

The Rise of Radio



Store Window Radio Display

On the chilly night of November 2, 1920, a tired-looking man reached out to a tall rack of electrical equipment and began flipping switches and turning dials. He'd been testing the big radio transmitter all day and was not sure it would work properly. But now it did.

A few feet away, another man seated at a wooden table nervously glanced at his wristwatch. When it was exactly 8:00 p.m., he leaned toward something that looked like a candlestick on a box but was actually a microphone. He paused, cleared his throat, and began to speak.

"Good evening, this is station KDKA, broadcasting from the Westinghouse Building in Pittsburgh, Pennsylvania. Tonight we bring you early returns from the national election. In the presidential race, Republican Senator Warren G. Harding has taken the lead from his challenger, Ohio Governor James M. Cox. . . ."

This was a historic moment. America's first ever commercial radio station was on the air, and the nation would never be the same.

Radio Is Born

Of course, radio did not suddenly appear out of nowhere with the debut of KDKA. In the mid-1880s, Heinrich Hertz, a German physicist, confirmed early theories about traveling energy waves that people could not see, hear, or feel. Despite building instruments that actually produced and detected these mysterious waves, Hertz was indifferent to his own discovery, stating that "it's of no use whatsoever."

Other scientists and inventors were more optimistic. They believed that better equipment could harness “Hertzian waves” (later renamed radio waves) to send long-distance messages, perhaps by means of the same dash-dot Morse code used by the telegraph – but without the need for miles of wires.

Building on Hertz’s work, rival inventors Nikola Tesla and Guglielmo Marconi had within ten years developed apparatus for wireless radio communication. Two devices were necessary: one to generate and direct the radio waves (a transmitter) and a receiver to intercept the waves and convert them into something that people could understand.

In 1905, Marconi outdid Tesla by demonstrating that his radio system could broadcast a Morse code signal all the way from England across the Atlantic Ocean to Newfoundland, Canada. Marconi’s transmitter generated radio waves by forcing high-energy electric sparks to jump between two copper cones separated by a small air gap. Turning this “spark-gap” transmitter on and off produced long and short bursts of radio waves. An antenna wire captured these radio bursts, which Marconi’s receiver changed into dash-dot signals. Marconi named his system wireless telegraphy.

Navies and commercial shipping lines scrambled to equip their ships with Marconi’s wireless. With radio aboard, seagoing vessels could communicate instantly with other ships and shore stations. The value of radio was vividly demonstrated in 1912, when the liner *Titanic* used her Marconi wireless to summon help after striking an iceberg in the North Atlantic.

Radio for Everyone

Around this time, a few amateur radio enthusiasts (nicknamed “hams”) began experimenting with receivers that used cheap galena crystals to pick up radio code and home-built spark-gap transmitters. Working out of attics, basements, and garages, hams proved that radio technology was open to ordinary people – not just governments and big businesses. However, average Americans had little interest in dash-dot. They wanted voices and music.

Their wishes were soon granted thanks to the invention of vacuum tubes. Young American inventor Lee de Forest developed an air-free glass tube with three thin



Guglielmo Marconi

wires, called filaments, sealed inside. He named his new vacuum tube the “audion.” When electric currents of the right voltages passed through the filaments, the audion output a continuous electric wave that could carry sounds. In time, de Forest and others discovered vacuum tubes could also generate continuous radio waves, the kind essential for broadcasting complex sounds.

Vacuum tubes revolutionized radio after the end of World War I. Suddenly, it was possible to transmit and receive every sound the human ear can hear. Hams starting building tube-based sets. At first, they were content to chat with each other, and then they tried broadcasting music from phonograph records and live performances.

Intrigued by newspaper articles describing ham activities and by word of mouth, non-hams began asking where they could buy radio receivers so they too could listen in. Early in 1920, the Westinghouse Electric Company noticed that sales of the radios they manufactured were growing much faster than expected. Then Westinghouse discovered that Dr. Frank Conrad, one of its own employees, was operating a popular ham station out

of his garage in his spare time. Sensing an opportunity, Westinghouse assigned Conrad to help construct a large, powerful broadcast station on the roof of its Pittsburgh headquarters. Because Westinghouse intended to run its station to make a profit, it applied for and received the first commercial broadcast license from the federal government.

On November 2, Westinghouse's KDKA went on the air, reporting the national election results. There were only a thousand listeners that night. But KDKA was back the next evening at the same time, and the next, without a break. Word spread quickly – first locally, then across the country – that this new Pittsburgh station was broadcasting daily with news, music, and (a bit later) advertisements.

Within months, there was a stampede by businesses and other groups to get commercial licenses; by mid-1922, 220 new stations were on the air nationwide. Ordinary people lined up in stores to buy their own receivers so they could join in this exciting new type of home entertainment.



Government Official Tuning Radio in 1922

Discussion or Essay Questions

There are striking similarities between the rise of radio in the 1920s and the personal computer boom in the 1970s and 1980s. Using the information in this article as well as information found on the Internet or by using library resources, find out what types of people accepted these technologies first and last. What, if any, were the similarities in these groups?



Want to Read More?

MIDDLE SCHOOL

The History of Radio by Joanne Mattern
Guglielmo Marconi and Radio Waves by Susan Zannos

HIGH SCHOOL

History of Radio to 1926 by Gleason Archer
Listening In: Radio and the American Imagination, by Susan Douglas



Online Fun

Radio Transmission Activity

<http://www.pbs.org/wgbh/aso/tryit/radio/>



What to Hear

1920s Radio Network

<http://www.whro.org/home/1920s/>



What to Watch

Ken Burns American Stories: Empire of the Air – PBS



Listening to Radio in the Twenties

As the number of new commercial broadcasters swelled, many radio fans made a hobby of trying to tune in as many different stations as possible, writing down the call letters in a logbook. DXing, as it was called, was like stamp collecting – the more stations you “collected,” the higher your status among fellow DXers.

Competition between DXers spurred improvements in radio receiver technology. Any old set could pick up local stations, but extra-sensitive receivers were needed to snag faint signals trickling in from broadcasters a thousand or more miles away.

However, then as now, most radio listeners tuned into the new commercial stations to hear music. Most listeners preferred popular melodies and standard classical music, but some developed an appreciation for opera, jazz, and country music, especially when it was performed live in a studio.

Audiences delighted in live performances because, thanks to rapid advances in radio technology during the Twenties, a live concert broadcast over the airwaves sounded much better than the same music played back from phonograph records. Because everything was sent out over the air *immediately and exactly as it happened*, there was always a chance that something really interesting might occur. And occasionally it did.

On a humid summer evening in 1922, pioneer station WJZ in Newark, N.J., was broadcasting a solo by a local soprano when two very angry alley cats burst into the studio and had a screaming, yowling, spitting catfight right in front of the microphone. The station’s announcer finally managed to chase the noisy animals out the door, called for calm, and went on to introduce the next musical act as though nothing had happened.

Immediately the station’s telephone began to ring; the next day WJZ received over five hundred letters. Everyone demanded to know what were those unearthly noises? The next night, the station explained the story on air, and the two tomcats earned a place in the history of early broadcasting.

The End of the Beginning

By the end of the Twenties, radio was established as a fixture of American life. Almost twelve hundred commercial stations had gone on the air. Some stations had organized themselves into networks, such as CBS and NBC, to share costs and improve their reach and programming.

Millions of radio receivers had been sold to the public. Early consumer receivers were battery-powered build-it-yourself kits. But soon, ready-to-go sets that you could simply plug into a wall socket and turn on took over the market.

Listening tastes also changed. Although music remained a favorite, broadcasts of baseball, boxing, and other sports events were also popular. And while listeners eagerly tuned in to hear coverage of news like Charles Lindberg’s sensational 1927 transatlantic flight, there was also a fast-growing audience for stories performed by professional voice actors.

In 1929, *Amos & Andy*, the first situation comedy, premiered on the NBC radio network and was an instant hit. Other comedy and dramatic programs debuted soon after. Before long, listeners had their choice of radio westerns like *The Lone Ranger*, detective shows such as *The Shadow*, science fiction and adventure series including *Buck Rogers*, and dramas for homemakers called “soap operas” because their sponsors sold laundry and dishwashing products.

As the Roaring Twenties drew to a close, radio was a fixture of American life. In ten short years, it had grown from an obscure hobby into a huge business. Having a radio in your home was as accepted as your telephone. More than a few proud and enthusiastic radio set owners likely wondered, “How can they possibly top this?” The answer came quickly. In 1929, American inventors made the first demonstrations of what they believed would be the next big thing: television. 📺

About the author

James Sutherland is a technical writer whose interests are the history of railroads, aviation, and astronomy. He has published short stories, articles, and a science-fiction novel. He is currently working on a scary novel for young teenage readers that takes place in a small town during World War II.