# UNITED STATES EARLY RADIO HISTORY

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section **13**

## Radio During World War One (1914-1919)

*Civilian radio activities were suspended during the war, as the radio industry was taken over by the government. Numerous military applications were developed, including direct communication with airplanes. The war also exposed thousands of service personnel to the on-going advances in radio technology, and even saw a few experiments with broadcasting entertainment to the troops.*

### GOVERNMENT CONTROL AND PREPARATIONS

The introduction of vacuum-tube equipment promised to revolutionize radio. However, all amateur and commercial use of radio came to an abrupt halt on April 7, 1917 when, with the entrance of the United States into World War One, most private U.S. radio stations were ordered by the President to either shut down or be taken over by the government, and for the duration of the war it became illegal for private U.S. citizens to even possess an operational radio transmitter or receiver. Radio in the U.S. had become a government monopoly, reserved for the war effort. Amateur radio operators were particularly hard hit by the restrictions. Before the ban, amateurs read the monthly issues of *The Electrical Experimenter* in order to find out about the latest improvements in equipment design, but now that magazine was featuring articles like How the Government Seals Radio Apparatus, which appeared in July, 1917. The American Radio Relay League's July, 1917 *QST* magazine brought Arthur C. Young's report of What Happened at Buffalo When Closing Orders Were Received. *QST* also began carrying monthly reports from former amateurs who were now enlisted in the U.S. Navy, and in September, 1917, in its final issue before suspending publication for the duration of the war, mused about the uncertain future of amateur radio in Another Season Opens, But---. The war was an opportunity for some to advance beyond standard peacetime restrictions. In this heavily segregated era there were a limited number of jobs open to African-Americans, however Negroes for Army Signalmen announced that radio operator training was being established in Richmond, Virginia.

### EARLY MILITARY EQUIPMENT

Radio communication played a vital role for all combatants during the war, although, in the era before mechanization, army transportation still largely depended on mules and horses. In the 1906 *Manual of Wireless Telegraphy* by A. Frederick Collins, the Clark Portable Army Set sections reviewed "apparatus as compact and portable as possible so that it may be transported on the backs of mules", and in the 1911 edition of *Drill Regulations for Field Companies of the Signal Corps (Provisional)*, the two main radio field units were the Pack Set, carried by a "section normally composed of 10 mounted men and 4 pack mules", and the Wagon Set, whose "section is normally

composed of 18 mounted men, the wagoner and engineer, who ride on the wagon, and one wagon wireless set, drawn by 4 mules". The October, 1916 edition of the United States Signal Corps' Radiotelegraphy manual reviewed advances in Pack and Wagon Set designs, including the adoption of quenched spark transmitters, and the reduction, by one, of the number of mules needed to carry a Field Pack set. Also included was a short section on the beginnings of mechanization, with development of transmitters carried by automobiles, plus information on an early form of spread spectrum transmission. After the entrance of the United States into the war, U.S. Signal Corps Radio Outfit in France, from the September, 1918 *Electrical Experimenter*, reported on field units deployed on the battlefield.

**U.S. INITIAL NEUTRALITY**

With the outbreak of war in Europe in August, 1914, the United States had initially declared its neutrality in the conflict. In order to enforce this neutrality, on August 5, 1914 President Woodrow Wilson issued an Executive Order instructing the Navy Department to censor international telegraph messages sent and received by radio firms, as reported in Wilson's Proclamation, from the September, 1914 *The Wireless Age*. The Marconi Wireless Company of America -- the dominant radio company in the U.S. at this time -- immediately and vigorously challenged the legality of this order, with their arguments spelled out in The Censorship of Messages, from the September, 1914 issue of *The Wireless Age*. (Although American Marconi was a U.S. corporation, its parent company had very close ties to two of the countries, Great Britain and Italy, allied against Germany). A short time later, the U.S. government complained that the American Marconi station at Siasconsett, Massachusetts had handled an unneutral message from the British cruiser Suffolk, but the Marconi company once again disputed the right of the U.S. Navy to monitor its operations, as detailed in The Censorship Situation, which appeared in the October, 1914 *The Wireless Age*. Dissatisfied by American Marconi's response to the Suffolk incident, the Navy shut down the Siasconsett operations for three and a half months, while the Marconi company unsuccessfully contested the action in the courts. The station reopened in January, 1915, with American Marconi now agreeing to follow the Navy regulations. On January 20, 1916, the U.S. Secretary of State sent a letter to Congress explaining the current censorship policy toward U.S. radio communications, and how it differed from cable restrictions. A *New York Times* article including the text of the letter was reprinted in Wireless Censorship, from the February, 1917 issue of *QST*. The Navy's expanding roles during this period are reviewed in the Operations and Organization of United States Naval Radio Service During Neutrality Period chapter of Linwood S. Howeth's 1963 *History of Communications-Electronics in the United States Navy*.

**WARTIME USAGE**

The military importance of radio was immediately apparent. In August, 1914, the Belgians had to completely destroy a major international communications station located near Brussels, in order to keep it from falling into the hands of the advancing German army, as reported in Destruction of the Brussels Radio Station, by Henry M. De Gallaix, from the November, 1919 *Radio Amateur News*. Directing the War by Wireless, written by George F. Worts and appearing in the May, 1915 *Popular Mechanics*, reviewed the multiple applications of radio in both short and ling distance

wartime communication. A British overview of various uses by Great Britain and its primary foe, Germany, Wireless Waves in the World's War by H. J. B. Ward, appeared in the 1916 edition of the annual *The Yearbook of Wireless Telegraphy and Telephony*. In the May, 1917 *Popular Science Monthly*, Capt. A. P. Corcoran's Wireless in the Trenches reviewed radiotelegraph operations at the British front lines, where operators with portable transmitters proved invaluable, for "If a gas attack is coming, it is he who sends the warning to the men behind to put their gas helmets on." During the war, the Germans used radio transmissions to help airships navigate to their bombing run targets, reviewed by How the Zeppelin Raiders Are Guided by Radio Signals, which appeared in the April, 1918 *Popular Science Monthly*. However, the French would employ counter measures, as an article in the November, 1919 *Electrical Experimenter* reported how a special station had been used to confuse a group of enemy airships by transmitting phony signals, which put "another dent in Fritz's wild war dream" when Seven Zeppelins Were Lured to Death by Radio. In the July 15, 1917 issue of *Journal of Electricity*, Wireless Telephone Will be Used by The Navy in War outlined research efforts by AT&T, including one key development, two-way voice communication with airplanes, which would be quickly achieved, meaning that "squadron formations of all sorts could be maintained in the air as easily as infantry units on the ground", according to American-Developed Radio Telephone Success in Airplanes, from the November 23, 1918 *Telephony*. Although before the war ocean-going radio had generally been limited to passenger vessels, submarine warfare spurred merchant ships to add radio operators. In 1919, David W. Bone reviewed British World War One maritime activities in his book *Merchantmen-at-Arms*, and noted in the On Signals and Wireless chapter that "If to one man we seaman owe a debt unpayable, Marconi holds the bond". During the war, radio operator Dale Clemons kept a diary of his harrowing Atlantic run aboard an armed freighter, which his daughter, Bette J. Clemons, drew on to document his adventures in a 1991 book, Wake of the Wirelessman (radio operations extracts).

**CIVILIAN ACTIVITIES**

During World War One, a Committee on Public Information ("Compub"), headed by George Creel, was formed to promote the U.S. war effort at home and abroad. In the September, 1922 *Popular Radio*, Creel's The Battle in the Air Lanes noted that the World War had been the first to include "Public Opinion as a major force" where "moral verdicts took on all the value of military decisions", and the United States, with limited access to the international cables, had turned to radio for "reaching every country on the globe with the American message".

Although much of the fear in the United States about radio being used for spying was baseless hysteria, there were also legitimate concerns, one case reported in Remarkable Radio Outfit Built By German Spy, which appeared in the June, 1917 *Electrical Experimenter*. After the war ended, Pierre H. Boucheron reviewed radio espionage and counter-espionage in Guarding the Ether During the War, from the September, 1919 *Radio Amateur News*, and A War-Time Radio Detective, a four-part series which began in the May, 1920 issue of *Electrical Experimenter*.

**BROADCASTING EXPERIMENTATION**

While radio remained off-limits for the general public during the war, there were occasional hints of what lay ahead. Wireless Music for Wounded Soldiers from the April, 1918 *The Wireless Age* reviewed a low-power transmitter that could be used to entertain hospitalized soldiers with music and news. And between the cessation of hostilities in November, 1918, and the end of the civilian radio restrictions in 1919, there were scattered reports of military personnel firing up transmitters in order to broadcast entertainment to the troops -- for example a February 2, 1919 "Moonlight Witches Dance" transmitted from off the coast of San Diego, California by the battleship Marblehead, reported in Music by Wireless, in the March, 1919 issue of *Telephone Engineer*. A few months later, the U.S.S. George Washington was outfitted with a vacuum-tube transmitter for a transatlantic voyage, in order to test long-range radiotelephony, and during these tests the experimenters found time to broadcast occasional concerts. One of the passengers was U.S. president Woodrow Wilson, and it was also announced in Wilson's Voice Today to Carry 300 Miles, from the July 4, 1919 *Los Angeles Times*, that the president's Independence Day speech would be broadcast from aboard ship. However, as noted in Radiophone Transmitter on the U.S.S. George Washington, by John H. Payne, from the October, 1920 issue of *General Electric Review*, the president's speech actually went unheard, because he stood too far from the microphone. The George Washington transmissions were widely heard -- the January, 1920 *QST* carried a report, This Looks Like Record Reception, that James B. Corum had heard the George Washington in Derring, North Dakota. Another Navy effort, a radio concert transmitted from the destroyer Blakely, located at Albany, New York, was reported in Navy Man Gives Albany Concert By Radiophone from the November, 1919 issue of *Radio Amateur News*.

In 1919, the amateurs began returning to civilian life. And, in contrast to the enthusiastic reports which had appeared in *QST* at the start of the war, Irving Vermilya's review of two years in the Navy, appearing in the December, 1919 issue, summed up his experiences in its title, "S.O.L."

"Germany, seven hours before the declaration of war at midnight on August 14, 1914, flung round the world on its chain of wireless stations the vital message to its mercantile marine: 'War declared on England, make as quickly as you can for a neutral port.' This terse dispatch unquestionably saved Germany many millions of pounds of property and secured for possible future use a fleet of passenger and cargo boats which might yet play a great part in her recovery from war's ravages."--"Long Distance Services", *The Yearbook of Wireless Telegraphy and Telephony*, 1916.