

JOHN STONE STONE

Inventor, Mathematician, Engineer

by Myron B. Shaw

John Stone Stone is a puzzle to most OTB readers. The first time his name was mentioned in the bulletin, our printer called to ask if this was typographical error.

Fulfilling one of AWA's objectives, that of documentation, we print the following account of the life and work of this early pioneer.

Dr. Myron Shaw, of the State University of N. Y. at Geneseo, agreed to do the task. Myron is remembered for other excellent work in this field including a biography of Hugo Gernsback.

---BK, Editor

Although he remains a rather obscure figure in the history of telephony, wireless telegraphy and radio, John Stone Stone contributed most significantly to the advancement of these media. Not only was he one of the first to develop a transmitting system which made use of a radio frequency, Stone was also one of the first to demonstrate a method of modulating such a circuit by voice currents. He was also one of the first to use a radio-telephone transmitting system, the first to use the telephone to receive wireless signals, and the first to use a scientific method of preventing radio-frequency from backing up into the power circuits.

In the foreword to his book, *The Life of John Stone Stone*, George H. Clark described Stone as "a great mathematician and physicist, a great analyst and inventor, but much more than this: he was a great man and a great gentleman."

Another who greatly admired Stone was Dr. Lee DeForest. In mourning Stone's death in 1943, Dr. DeForest stated, "No one in the long history of pioneers of wireless could compare with Stone in clear-sighted mathematical analyses of the basic principles on which the science of radio is founded."

Born in 1869, John Stone Stone was descended from a long line of patriotic, intellectual and cultural men and women. His father's ancestors were among the earliest settlers of what is now New England.

Developing an early interest in mathematics, Stone attended Columbia University for two years before transferring to Johns Hopkins in 1888 where he undertook advanced study in mathematics, physics, and theoretical and applied electricity. During his final summer in Baltimore, he assisted the Bell Telephone engineers at the Paris exposition. A year later, Stone was hard at work on the new problem of electrical resonance as a member of the experimental Department of the Bell Company in Boston.

In February, 1891, Stone began work on a method to increase the efficiency of telephone lines by increasing the inductance of the line. He also devoted considerable attention to the influence of iron in the cores of induction coils used for telephone purposes. Stone discovered that if the inductance was increased and the resonance-balancing capacity reduced, the disturbance could be reduced to a marked degree. This principle was instrumental in Stone's later work in wireless telegraphy in the form of "swamping inductances."

Powered by an alternating current generator giving seventeen alternations per second, Stone's first wireless transmitter fed an oscillating circuit consisting of a discharger, a condenser, and the primary of a high frequency transformer. His consuming interest in high frequency investigations forced him to choose between that and telephony so John Stone resigned from Bell Telephone in 1899, remaining as a consultant in patent causes.

By late spring of 1900, he had theorized a process of selectivity in wireless by which a sending station could be tuned in conjunction with a receiving station so the message could be received without interference. With the aid of some devoted friends and associates, the Stone Wireless Telegraphy Syndicate was founded on December 13, 1900.

One of the most perplexing problems of interference Stone faced were the uncontrollable radiations due to atmospherics such as flashing from trolley wheels. He sought to eliminate this interference through the production of pure simple-harmonic electro-magnetic waves at the transmitter.

Having translated his mathematical researches into laboratory certainty, Stone needed a company to breathe life into his inventions by manufacturing the apparatus associated with them. On July 30, 1902, the Stone Telegraphy and Telephone Company was incorporated in the State of Maine with a capitalization of ten million dollars.

Among Stone's most significant inventions was the wave meter, which permitted a turn-by-turn and inch-by-inch calibration. Realizing the advancement of his equipment, he needed a station on which to test it.

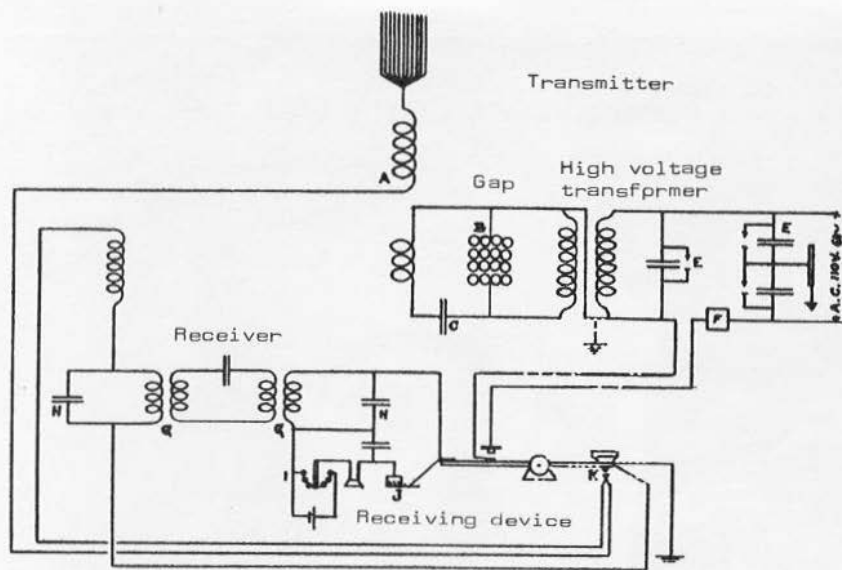
Located in Lynn, Massachusetts, Stone's station received its first message on November 29, 1903, from Cambridge, about fifty miles away. The message said simply, "There is a Stone in every date." With this receiver and the acid detector, the Stone Company moved from a purely experimental state into a crude form of commercial design which worked very well.

Another milestone in the John Stone Stone saga was achieved on May 31, 1905, with the completion of the installation in the Boston Navy Yard of the first oscillation transformer built by the Stone Company. Three months later, Stone equipment was installed at the Portsmouth, New Hampshire Navy Yard. That same year, Stone ventured for the first time into the commercial arena with a station on the Isle of Shoals, and in reporting the Roosevelt Cup yacht races off Halfway Rock, Marblehead, Massachusetts.



Rare picture of John Stone Stone as a young man. Most pictures are of an older man with round frame glasses.

[Continued on next page]



Circuit of Stone's 1905 Naval installation at Portsmouth, N. H.
A picture of the station may be found in Robison's 1906 Manual of Wireless Telegraphy for Naval Electricians.

Also in September, 1905, the Stone Company made its first naval ship wireless installation on the USN Lebanon, a derelict-destroyer.

By 1907, the Company began to systematize its drawings and instruction books, one of the first steps toward attaining its wireless majority. Emphasis was placed on receivers with Fred Kolster assigned the task of improving their design.

A most significant advancement occurred the following year with the development of the Company's 15,000 watt transmitter for the New York Navy Yard. Despite the promise of a most rewarding future buttressed by large Navy contracts, the Stone Company soon faced financial chaos. When the Navy observed the "quenched" gap wireless system of a German engineer by the name of Seibt, they adopted it at once. On May 28, 1913, a receiver's sale of the Stone Company's properties was held.

John Stone had settled in New York City in 1911 as an independent consultant and expert in patent causes. In 1908, he had founded the first wireless technical association in the United States, the *Society of Wireless Telegraph Engineers*, which evolved to the *Institute of Radio Engineers*.

Although his delicate health prevented him from serving in World War I, Stone was instrumental in organizing the radio men of the country and in serving on the Defense Committee.

His health worsened, and in 1919, when he was called to his Mother's bedside in San Diego, he decided to remain with her. Between 1919 and his death in 1943, Stone accomplished some of his most outstanding work.

His approximately thirty-one patents include those involving relaying, simultaneously transmitting and receiving, increasing persistency, and directing space telegraph signals. His Canadian patents include improvements in the following: apparatus for selective electric signaling, methods of receiving space telegraphic signals, methods of relaying space telegraphic signals and space telegraphy.

A more personal glimpse of this most complex gentleman is revealed in a letter to his biographer and colleague, George Clark, in 1933. "As you probably know, I have been associated with the Development and Research of the American Telephone and Telegraph since 1920, choosing my own place of residence and subjects for research and invention. I use and need no laboratory because I prefer to conduct my researches, and test the validity of my inventions, by mathematical analysis. . . For twelve years I have been the apostle of short wave radio in the Department of Development and Research. At first, of course, I was a prophet howling in the wilderness, but that stage soon passed as short waves came into their own."

John Stone was not only a true prophet of radio, he constantly demonstrated highly laudable characteristics which Dr. DeForest captures for us. "Stone's theoretical analyses were classics of insight and clarity of exposition. His language was precise and elegant in expression, for even his patent specification could be classed as literature."

Endotes

1. Clark, George H. *The Life of John Stone Stone*. San Diego, California: Frye & Smith, 1946.
2. *Ibid*
3. *Ibid*