

Reginald Aubrey Fessenden (1866 – 1932)

By Brian Smith

As I approach middle age, I marvel at how little Canadian history was taught to us during our school years. Apparently, we missed a fair amount. Recent events, such as the controversy over changing the name of Mount Logan (for William Edmond Logan – surveyor / geologist) to Mount Trudeau and the CBC series, “Canada, A People’s History”, have begun to open the eyes of Canadians to our important and honoured past.

Canadians have contributed a great deal to the events of the world. And that includes the **‘Father of Radio Broadcasting’**, Canadian Reginald Fessenden.

Reginald Fessenden was born in East Bolton, Quebec on October 6, 1866. He was the eldest son of Anglican Reverend Elisha and Clementina Fessenden (who are buried in Ancaster, Ontario, where a school still bears the family name). He spent his early boyhood in Fergus and Niagara Falls, Ontario. Reginald Fessenden developed a keen interest in mathematics far beyond his years, which led him, at the age of 14, to a mathematics mastership at Bishop’s College in Lennoxville, Quebec. At 18, he accepted a teaching position that took him to Bermuda where he met and married his wife, Helen, with whom he would spend the next 40 years and have only one child, a son.

Fessenden had a keen interest in the work of Thomas Alva Edison. So much so that he left Bermuda at the age of 20 to seek employment at Thomas Edison’s machine shop in New York. He was hired as an instrument tester, without even meeting Edison, but so impressed Edison’s staff, that he was promoted to work in the labs and eventually became chief chemist; all before the age of 24.

When financial difficulties forced Edison to lay him off, he found employment with George Westinghouse. Here he was instrumental in designing new lead-in wires for electric light bulbs being produced by Westinghouse at the time. Thanks to Fessenden, George Westinghouse was able to fulfil a contract to light the 1892 Columbian Exposition in Chicago.

Fessenden went on to become a professor of electrical engineering at Purdue University in Indiana and then chief electrical engineering at Western University of Pennsylvania in Pittsburgh. It was at both these institutions that Fessenden was able to study his major interest, Hertz waves and the development of sound vibration and transmitting sound without wires. He wanted to improve on the work of Guglielmo Marconi, the first to broadcast electric pulses without wires. Marconi believed that the waves were generated by creating a spark, causing a “whiplash” effect, which Fessenden correctly rejected and theorized that the sound continuously rippled outward. If he could set the waves at a higher frequency, it might be possible to hear the human voice. It would take many years before his theory was proven accurate.

It was in 1900 that he joined the US Weather Bureau and, with the knowledge that he would retain the ownership of any devices he invented while in their employ, he set about to improve their Morse code systems for weather forecasting.

It was here, on the 23rd of December, 1900, from a site on Cobb Island in the middle of the Potomac River near Washington, Fessenden spoke these words - "one - two - three - four, is it snowing where you are Mr. Thiesen? If it is, would you telegraph back to me?" Mr. Thiesen, one kilometre distant, confirmed. Radio broadcasting was born. His voice was the first-ever to be broadcast by radio waves and heard by another person. To accomplish this feat, he had to prove to his detractors by his own invention that his was the correct theory for wireless transmission.

However, in 1902 the US Weather Bureau demanded a part in Fessenden 's patents. Despite a plea to the United States President, he was forced to resign. But with the help of two Pittsburgh millionaires, he formed the "National Electric Signaling Company" (NESCO) which employed Fessenden to carry out research and provide morse code services from Brant Rock, Massachusetts, to such points as Washington, New York and Philadelphia. In 1903 his voice message travelled 50 miles and another was heard in Scotland. He would eventually send dot and dash transmissions of 6,000 miles, a record, and even to Africa. He put wireless stations in the United States, on ships, and at the plantations in Guatemala of the United Fruit Company

In 1904, he was hired as an engineer at the Niagara Falls power plant for the new Ontario Power Commission. Two years later, he formed his own company, the Fessenden Wireless Telegraph Company of Canada, in Montreal.

After much fine-tuning, radio's potential was demonstrated. Fessenden presented radio's first program on Christmas Eve, 1906. From Boston, with the assistance of his wife, Helen, her friend, and his helper, wireless operators on United Fruit Company ships in the harbour and on the Atlantic with their NESCO radios heard the inventor play '*O Holy Night*' on his violin, a recording of Handel's "Largo" and Helen and her friend sang Christmas carols.

Further experimentation followed, but it was not until after World War One that the governments of Canada and the USA would start issuing broadcasting licences that would permit development of the exciting medium.

Reginald Fessenden, inventor and physicist, encountered growing resistance from his own backers who were not interested in voice or music communication. Marconi's theories still were regarded as superior and Fessenden's sponsors tried to seize his patents. A lawsuit entailed.

To provide the financial security needed while the lawsuit continued he put his mind to other tasks. One of the most impressive being his Fathometer - a detector to measure ocean depth that would be used to combat the U-boat menace during the War. He developed a wireless system so submarines could signal each other and a device that allowed radio waves to bounce off icebergs from miles away (after the Titanic disaster). In his lifetime, he patented over 500 inventions to benefit mankind, if not himself. He would always have trouble defending against others that would try to profit from his ideas.

In the 1920's, with the interest in radio growing by leaps and bounds, he was finally recognized for his pioneer work with several awards and accolades of his peers. His lawsuit was finally put to rest in 1928 in an out-of-court settlement of \$500,000. With this and suffering from a heart condition, he retired to Bermuda.

Reginald Aubrey Fessenden died a forgotten man in his house by the sea on July 22, 1932.

The New York Herald Tribune editorial provided the epilogue in Mr. Raby's book:

"It sometimes happens, even in science, that one man can be right against the world. Professor Fessenden was that man. He fought bitterly and alone to prove his theories. It was he who insisted, against the stormy protests of every recognized authority, that what we now call radio was worked by continuous waves sent through the ether by the transmitting station as light waves are sent out by a flame. Marconi and others insisted that what was happening was a whiplash effect. The progress of radio was retarded a decade by this error. The whiplash theory passed gradually from the minds of men and was replaced by the continuous wave -- one with all too little credit to the man who had been right."

In the stone of a snow-white memorial erected, in time, above his vault in St. Mark's Church Cemetery, Bermuda, are inscribed these words:

***His mind illuminated the past
And the future
And wrought greatly
For the present***

And beneath, in the picture writings of the ancient Egyptians:

I am yesterday and I know tom orrow

**Reginald Aubrey Fessenden
October 6, 1866 – July 22, 1932**

Sources:

"Radios First Voice: The Story of Reginald Fessenden" Ormond Raby,
MacMillan of Canada, Toronto, 1970, Reprinted 2001

"The History of Canadian Broadcasting", Reginald Aubrey Fessenden,
Canadian Communications Foundation // <http://www.broadcasting-history.ca/>

"Industry Canada, Collections" // http://collections.ic.gc.ca/heirloom_series/volume4/

"William Edmond Logan" // http://www.nrcan.gc.ca/gsc/logan/history_e.html