

1844-1994



Our

Medical

Heritage

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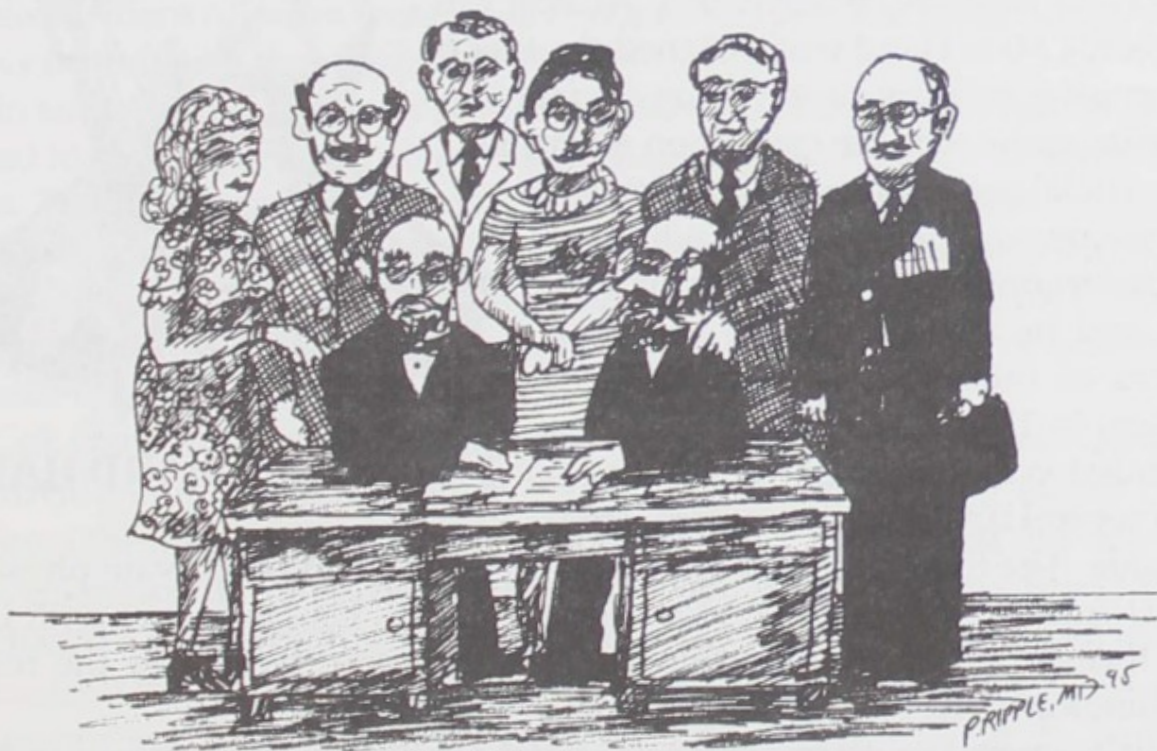


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Lancaster City & County Medical Society

Section 3

Prominent Physicians



Chapter 32
David G. McCaa, M.D.
Lancaster's Fulton of the 20th Century

On June 16, 1914 a group of skeptical people, military and civilian experts and reporters, gathered around a small "radio receiver" that was mounted in New York's Battery Park.

Miles out at sea aboard the USS Tyler, Lancaster's Dr. David G. McCaa fiddled with the disks and switches of a special transmitter he had designed, to which he had connected a telephone mouthpiece.

After the ship had sailed, the experts were straining to hear something from their "radio." They did. They heard static, buzzes, dots and dashes and nothing. The skeptics began to joke about it.

Suddenly, the operator shouted, "Here he is. He's talking." The crowd became excited and huddled around the operator to hear "the voice" that was coming from miles away at sea without connecting wires.

The voice called some of them by name and talked to them. A few minutes later the sounds of a cornet emerged from the receiver.

The Lancaster physician and radiologist had proved, although he was not the first to do it, that he could transmit sound - the voice of a human being and the sound of music from a transmitter to a receiver wirelessly. And McCaa proved he could do it distinctly. Other ships at sea picked up the human voice and were confused.

After this well-publicized demonstration which had been arranged by U.S. Radio Inspector R. H. Marriott, Dr. David McCaa returned to his home in School Lane Hills to try to improve sound transmission without wires (wireless telephony).

It all started by accident.

In 1905 Dr. McCaa was a practicing physician at 218 N. Duke Street, Lancaster, Pa., but his interest was primarily in x-ray and developing a new motivation for the x-ray tube by creating a high frequency voltage. Prior to this time x-ray tubes were motivated by a high voltage produced by an induction coil.

While he was doing experiments in 1906 to improve the x-ray machine, he made a discovery that led him to believe that the human voice could be transmitted over great distances without wires.

In 1915 two tall towers were erected in School Lane Hills at Dr. McCaa's home. Lancaster accepted these strange structures with suspicion and astonishment. Although he had a small model of a modern radio station, nobody in the area had ever heard of radio at that time.

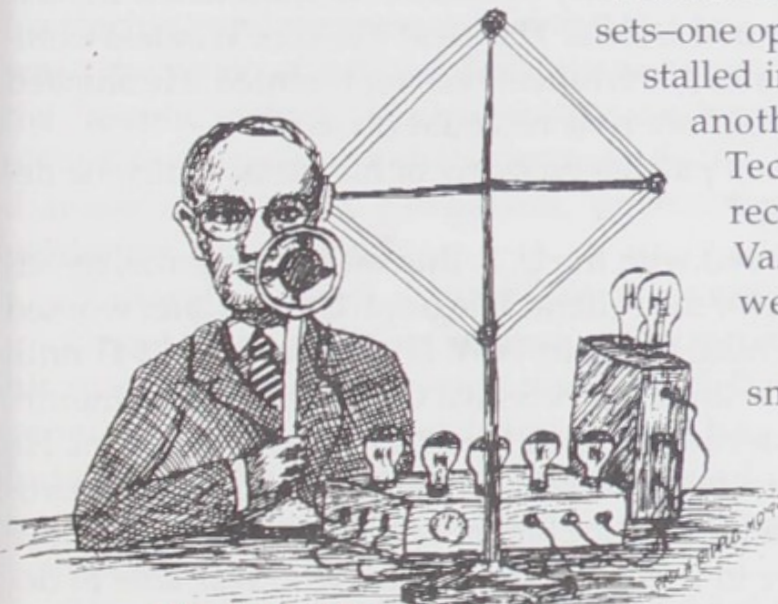
With H. S. Williamson, Dr. McCaa formed the McCaa Radio Co. in 1914 and conducted broadcasts from his School Lanes Hill home. This sending

station – eight years before KDKA was established in Pittsburgh to fill the air with words and music – was transmitting occasionally, but of course, not on any regular schedule.

He was born in Ephrata, the son of Dr. and Mrs. David J. McCaa. He graduated from Medico-Chiurgical College in Philadelphia in 1903, then served as a radiologist at the Lancaster General Hospital for a number of years.

Dr. McCaa, early in his experimenting, did make two significant advances in x-ray. It is said that Drs. Henry Davis and David McCaa were in charge of one of the best equipped and managed x-ray departments in the state of Pennsylvania in 1927.

The beginnings of this epochal event occurred in the garret of the Charles E. Bowman home at 150 East Chestnut Street. Charles Bowman and his brother, Chris, and M. G. Wade, another “ham” pioneer, along with Dr. McCaa, used this as their workshop. Charles Bowman remembered in an interview in the 1930s that he had been annoyed by the goings-on in the attic by his brother, Chris, Wade and David McCaa. They frequently spent half the night fooling around with this “chatter box.”



DR DAVID MCCAA

In 1913-14 Lancaster had three receiving sets—one operated by Dr. McCaa, one installed in the Bowman residence and another located in the Bowman Technical School Building to record signals from Arlington, Va. Both of the latter instruments were operated by the Bowmans.

Dr. McCaa had developed a small portable receiver-transmitter that he would carry with him. This was probably the first portable radio. The receiver could receive dots and dashes of the Morse Code and other radio signals.

(They intercepted coded messages in German during W.W.I.)

Very few people knew about these experiments. Even his colleagues at LGH brushed his ideas off as if he were a little “cuckoo.”

Then one night in the winter of 1913-14, Dr. McCaa and Chris advised Charles Bowman to listen to his ‘time signal’ receiver at a specified hour “if you want to hear the human voice.” Charles Bowman decided to humor them, as he said later, and turned the switch to the receiver and listened to the monotonous sounds and “buzz, buzz” of the Arlington time signal.

Suddenly the “buzz” faded into a static and then the room was filled with the voice of David McCaa.

"It was pretty startling," Charles Bowman said years later. Dr. McCaa was fully aware that he was not the first to transmit the human voice over the ether waves. But his efforts were to improve on a principle that had been proven to be practical as early as 1906.

He made two improvements over other types of broadcasting apparatus. One made it unnecessary for the operator to make constant adjustment because of disturbance from high potential currents. The other put broadcasting in a constant or positive operation rather than alternating current.

In other words, the instrument was no longer a subject for scientific curiosity, but one that was of commercial value and was very useful.

Previously there had been a "spark gap" much as an arc light that was a trouble-making point. When Dr. McCaa was able to overcome this difficulty, U.S. Radio Inspector, R. H. Marriott, who had been supportive and appreciative of Dr. McCaa's work, admitted that the transmitter was a marvel, but that it would be quite another matter to develop a receiver with the same principle which would work as well.

Dr. McCaa worked undaunted in his workshop in Mountville. Every night he removed essential parts so nobody could steal his concepts. When he produced the receiver that overcame the early obstacles, he summoned experts from abroad as well as leaders in this field. The great Marconi Wireless Company as well as the United States government was represented. He showed them what he was able to do, but not how he could do it.

He applied for and obtained patents on many of his ideas, which he developed into "electronic magic."

During World War I he served with the U. S. Bureau of Standards, developed trans-oceanic equipment for the Federal Telegraph Co. and later worked to improve receivers for the Philco Corp. In W.W. II – in fact from 1941 until his death in 1954 – he worked with the U. S. Signal Corps at Fort Monmouth, N.J. as engineer of the highly technical Piezo Electric Frequency Control. He trained Signal Corps troops in the construction and operation of the two-way field radio units that were so vital to combat operations during W.W. II.

A physician and a pioneer in x-ray and electronics who was able to develop ideas into reality, Dr. David G. McCaa was a great inventor and innovator of the first half of the twentieth century. Surely, he was the Robert Fulton of Lancaster County in our century.