

HOW RADIO GOT STARTED... A CANADIAN VIEW

Ever since radio broadcasting began, there have been claims and counterclaims as to which radio station was first on the air regularly. The controversy goes on, and probably will never be resolved to everybody's satisfaction. Broadcaster Sandy Stewart assesses the situation, and comes down on the side of Canada's own claimant.

XWA on the Air! A staged photo showing Jack Argyle and chief Engineer J. O. G. Cann. This 1919 beauty came in two parts; left side contained the transmitter. Note the three large power tubes in the centre compartment. There are practically no controls and one meter to read voltage. Right side contained the receiver part of the set with seven small radio tubes and several "verniers" for fine tuning. The tubes when operating lit up like light bulbs. The window is open probably to let out the heat of the tubes. Top left shows the lead from the transmitter to the antenna up on the roof.



FEATURE

This month marks the 60th anniversary of radio broadcasting. Amplitude Modulated radio was invented by a Canadian, Reginald Fessenden in 1902, and the first professional and commercially operated radio station was the Marconi Wireless Telegraph Company's XWA in Montreal, later called CFCF. Curiously, few Canadians are aware of Canada's contribution to radio history in the face of American publicity.

Fessenden was such an obnoxious creature that the primitive electronics industry of his day conspired to deprive him of his patents and his place in history. It cost them dearly. Fessenden successfully sued American broadcast interests for 2½ million dollars. And that was when a dollar was worth a dollar—1928. They never forgave him. Some of the big electronic companies still claim Fessenden's inventions for themselves.

Marconi was much more personable than Fessenden but he suffered a similar fate because he was even more successful commercially than Fessenden. When Marconi had completed the establishment of commercial radio in Montreal he decided to improve his position by purchasing the Alexanderson generator which had been created by Fessenden, perfected by Alexanderson, and manufactured by General Electric. Because Marconi almost controlled the world's telegraphic system, the American interests feared his domination of radio broadcasting. They appealed to Uncle Sam for protection and he responded by forbidding the sale of the Alexanderson generators to Marconi. And just for good measure, a law was passed requiring all radio installations in the US to be owned by Americans.

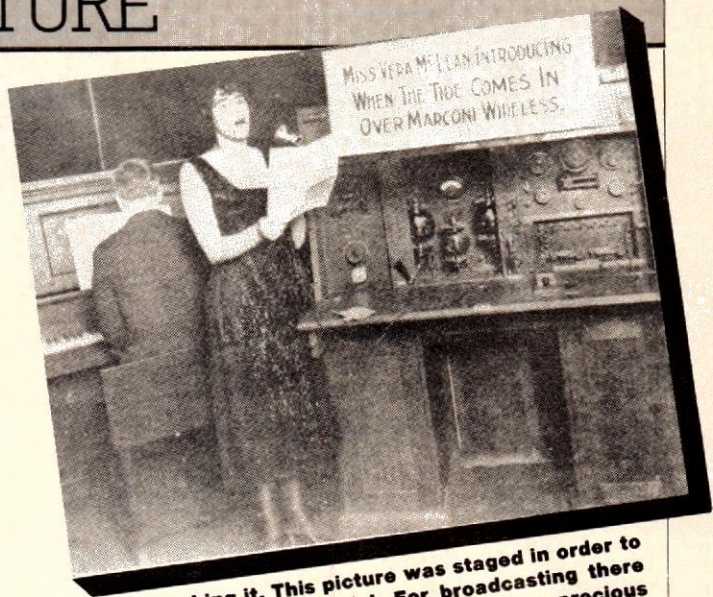
The following is the Canadian version of the first radio station in the world.

XWA radio was created by the Marconi Wireless Telegraph Company on Williams Street in Montreal in December of 1918. All the staff were experienced technicians. The experiments were commercial, funded by the company with the intention of making money. The Marconi company was the leader in overseas radio communications but until these recent developments their work had been in code. As a matter of policy they had decided that there was a future in spoken radio broadcasting and they intended to be part of that development.

The Marconi company had started voice experiments as early as 1914 and intensified their research in Ireland early in 1918. The Montreal group was authorized to start its own experiments right after the war. It appears that they started right away, late in 1918, and continued through 1919. By early 1920 a demonstration was set up, similar to demonstrations then taking place around the world, but with a big difference. Most of the others were just beginning the process, but the Canadians were showing the end results of the Marconi experiments.

It all started, however, as a publicity stunt to sell crystal radio receivers. A. J. Morse, the head of Canadian Marconi, had gambled by ordering into production in 1920, 100 crystal receiver sets to sell in Montreal. In order to recover his capital he had to develop a radio station to attract customers. He was made bold by the success of a year and a half of experimenting in Montreal. His confidence was misplaced. It took a couple of years to sell those sets. Morse counted on the support of important politicians in Ottawa to help develop the radio industry, but they were not interested. A few years later, however, radio sales took off, and Marconi and other companies could not keep up with the demand.

The equipment used by Marconi in Montreal was war surplus, from the Marconi plant in Chelmsford, England. The start date for regular AM radio broadcasting was set to co-incide



Miss McLean is faking it. This picture was staged in order to make Miss McLean look beautiful. For broadcasting there would have been a big conical horn "gathering" her precious voice, but it would have looked awful. This picture clearly shows the three big transmitting tubes in the centre compartment of the "station". Note the receiver tubes have been removed.

with a meeting of the Royal Society of Canada at the Chateau Laurier Hotel in Ottawa. The subject of the meeting was "Some Great War Inventions", the historic date, May 20th, 1920. The witnesses to this event were great men of the time, in politics, science, and the arts. In the audience were Sir Robert Borden, Prime Minister of Canada; Vilhjalmur Stefansson, the arctic explorer; the Duke of Devonshire; and William Lyon Mackenzie King. The star entertainer was Miss Dorothy Luton who was at the Marconi plant on Williams Street in Montreal.

A large radio receiver was installed using a Marconi 55A amplifier with six V24 tubes and one "Q" detector tube and a "magnavox" speaker. To run this apparatus, two 6-volt storage batteries and three 22½ volt "B" batteries were used.

The transmitting machine was actually a combined transmitter and receiver. After the war it was sold commercially, enclosed in a mahogany box which resembled an upright piano when closed—the top portion opened to supply a desk for the operators. Power for the transmitter was supplied from a generator in the basement of the Marconi plant. These sets were originally designed for Morse code, but had been modified to take a carbon microphone for voice transmission, so it could not transmit and receive at the same time. The announcer would speak and then say, "changing over". He would turn off the transmitter and listen on the receiver for a reply.

For the record, the staff at Marconi that worked on this radio project were Managing Director A. J. Morse, chief engineer J. O. G. Cann, and engineer Jack Argyle. The lecturer for the Ottawa demonstration was Dr. A. H. Eve of McGill and the Marconi man was A. Runciman. The rest of the staff in Montreal were Walter Darling, A. L. McCallum, Jack Ferraris, William Rose, Mr. Humphrey, George Eaton, Reg Scantlebury, Dick Newman, Max Smyth, and Darby Coats. Fortunately Coats made extensive notes of these days which are an important source for Canadian Marconi history. (He was later editor of *Canadian Wireless* magazine—Ed.)

The reception on this historic night was not very good and it



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aspects of radio. Most of them succumbed to "collecting" radio stations. It was inane, but it was fun and became a great hobby. All stations "CQ'd" listeners. (Translation would be "calling all listeners come in".) The listeners would write a report of reception showing time and quality of the signal and mail it to the station. The station would reply with "QSL cards" containing technical data on the station and perhaps a bit about the staff.

The entertainment on radio was just a break from the technical discussion, but local entertainers were smart enough to spot an opportunity when they heard one. Therefore at XWA song pluggers were constantly available free of charge to sell their songs to the audience. Even the great Berliner Record Company became involved, mainly because Herbert Berliner was himself passionately interested in things technical, including radio.

Berliner was enthusiastic about the new medium at a time when most of the record industry opposed it. But he came from a long line of innovators. His father Emile had invented the familiar lateral cut disc record. Herbert went so far as to sponsor a series of Tuesday night concerts on XWA. He not only sponsored the broadcasts but he bought newspaper ads to attract listeners:

His Master's Voice Records by Wireless Telephone! By arrangement with the Marconi Wireless Telegraph Company of Canada, His Master's Voice Victrola Concert, featuring the latest and most popular selections, will be given tonight and every Tuesday from 8 p.m. to 9 p.m. for the benefit of wireless students. Captains and officers of ships in port are invited to enjoy this entertainment aboard their vessels. Operators tune in 1200 meters.

Berliner had a party at his home for this first broadcast which included recordings by Fritz Kreisler, Harry Lauder, Billy Mur-

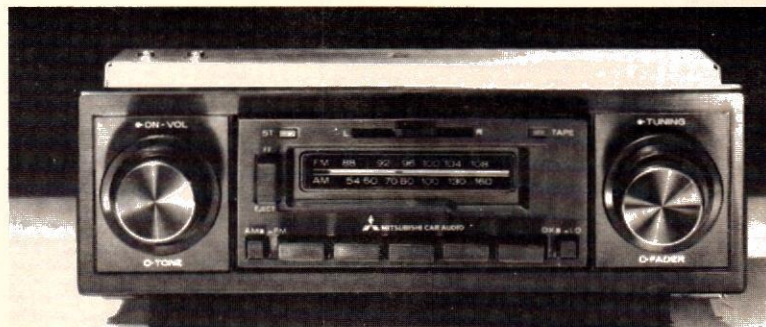
was hard to hear some of the singing, although it was reportedly loud enough to dance to.

During the experimental period in 1919 XWA set up regular Tuesday night concerts of recorded and live music so that Marconi representatives could attend meetings of service clubs or church groups to promote interest and potential customers for their work. All this was achieved under an experimental license issued by the Federal Department of Marine and Fisheries (it has since vanished). After the historic May 20th broadcast, programs were increased significantly. With the availability of commercial licenses, XWA became CFCF on March 23, 1922. The fee was \$50. The license was #9. Nobody seems to know who the previous licensees were.

Subsequently CFCF moved its operations to better lodgings in the Canada Cement Building in Phillips Square in Montreal. They increased their power to two thousand watts and installed a seven-strand, flat-top, inverted "L" antenna, 70 feet long and 50 feet high. The whole rig was on top of the building with the studios just below on the top floor. Five years later they moved again, to the top floor of the Mount Royal Hotel where a radio tradition was established. Radio stations for years were on the top floors of hotels. Why? Was it that the hotels needed the publicity, or the staff needed the bar?

What was early radio like? In a word . . . *terrible!*

First, it was really for technicians, amateur or otherwise. The entertainment we take for granted now was an afterthought. It was like having a hi-fi set but only playing demo records and tapes, and then discussing every detail of the equipment. Because it was mostly trial and error, it was as if they played the same disc or tape constantly. Distance was important. Stations tried to reach as far as possible, and listeners cooperated by striving to receive stations from as far away as possible. The listeners were passionately interested in the technical



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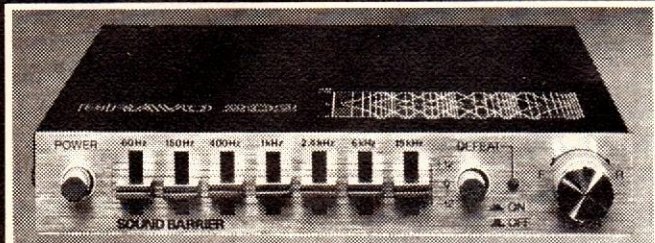
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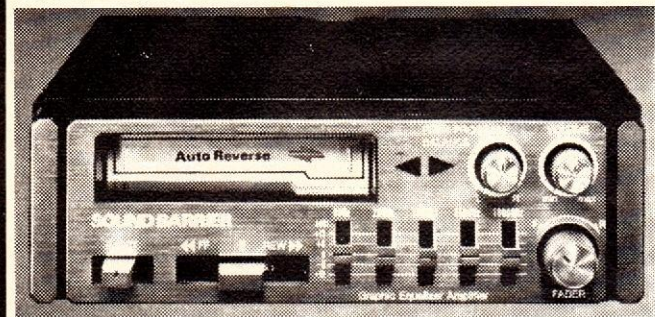
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ray, Lewis James and the orchestras of Coleman, Raderman, and Henri. At least another 150 listeners heard the program. With publicity in mind Berliner invited a newspaper reporter to his party who reported:

It is almost uncanny to think of sitting in one's own home and by means of a simple little piece of framework on the table actually hearing music and conversation miles and miles away. The receiving equipment, installed for the occasion in Mr. Berliner's house, was about one-third the number of amplifications required to talk across the Atlantic. That means with an apparatus of three times the strength, the party gathered there, could have heard the same music and messages transmitted at London or Paris. (ah such optimism!) It is understood that the Marconi Company will give similar weekly demonstrations each Tuesday throughout the winter.

Berliner's colleagues in the recording industry were not so enamoured of radio. Some record companies forbade their artists to appear on radio. Eldridge Johnson, the president of Victor Records, wasn't much concerned about radio and made this statement:

Radio bears some relation to the talking machine, but the contact comes chiefly through the combined talking machine and radio. However, the demand for this combination will always be but a small fraction of either business.

Don't laugh. He was right. Radio at this stage needed records but the recording industry didn't need radio until after the Second World War. When the radio networks in the US were established in the late 1920's records—all records—were banished from the air. This created problems for war correspondents like Edward R. Murrow and other American newsmen who could not record on the battlefields in the Second World War. Canada did not follow suit so that most good war sound effects available are Canadian recordings.

It would be nice to report that these early programs at least had good fidelity, but it was not so. The recordings of the time had a bass cut-off of 230 Hz and a top of 3,200 Hz. There was no market for woofers or tweeters. The microphones were loose carbon adapted from telephone microphones. For recorded music the mike was hung on a wire hanging from the ceiling and suspended in the horn of the record player. For live performances the mike had a large conical horn attached. A few years later the microphones were immensely improved and radio became the source of listening for hi-fi fans of the time. In the early radio stations there were no volume controls nor VU meters to read the volume of the transmitter's output. Volume was regulated—if that's the proper term—by controlling the loudness of the source of voice or music at the microphone. The staff learned about volume by asking their listeners how well they were being received. Distortion? In the experimental years it was all distortion.

There was one good thing about the receiving set tubes. They could be used for two purposes. To amplify the radio signal and light the room some early tubes blazed like a contemporary light bulb. The transmitters seldom held on the transmission frequency especially when being overmodulated, which they often were, since overmodulation increased the bandwidth. On one occasion three different Montreal radio stations decided to cover a sailboat race. All three were so off frequency and overmodulating that none of the reports ever got ashore.

Other stations claim to have been the first on the air. Some stations were on the air long before XWA, but they didn't last. Some established around the same time as XWA started as amateur stations and then became professional. XWA started out as a commercial enterprise and remained in business. ■