"The Nation's Station"

by John Price

You can tell when a man owns a powerful radio station. There's a bit of a swagger at the NAB convention, which means either a 1-A clear channel or four years at West Point. There's a tendency to drop little gems: "Son, I spill more watts than that on the floor just warmin' her up." And the habit of referring to lesser licenses as "coffeepots."

What follows is a fond recollection for the power trippers of kilocycle avenue — a look back at a station located at that bend of the river where Kentucky, Ohio and Indiana meet. It was called *"The Nation's Station,"* a true statement in an industry prone to superlatives.

It boomed out with enough watts (500,000) to literally dim the street lights. In an age free from layers of man-made hash, it got requests from the royal family of Britain, not to mention loyal families from Portland to Portland.

It was a one-station network with a rate card like the NBC Red, a cast of thousands, a Who's Who alumni club, a 750-acre farm and a heart as big as the buzzing, arcing giant out at the Mason, Ohio transmitter site.

Powel Crosley, Jr. never intended to be a broadcaster. Son Powel, III, in the very early twenties, pestered Dad for one of those wireless outfits. When they went shopping for what the elder Crosley considered a toy, they found only rich men's playthings.

Instead of spending $100 for a wireless, they bought *"The ABC's of Radio"* for 25¢.

The next step involved parts for a crystal set. Then came a $200 receiver, and soon a 20-watt transmitter.

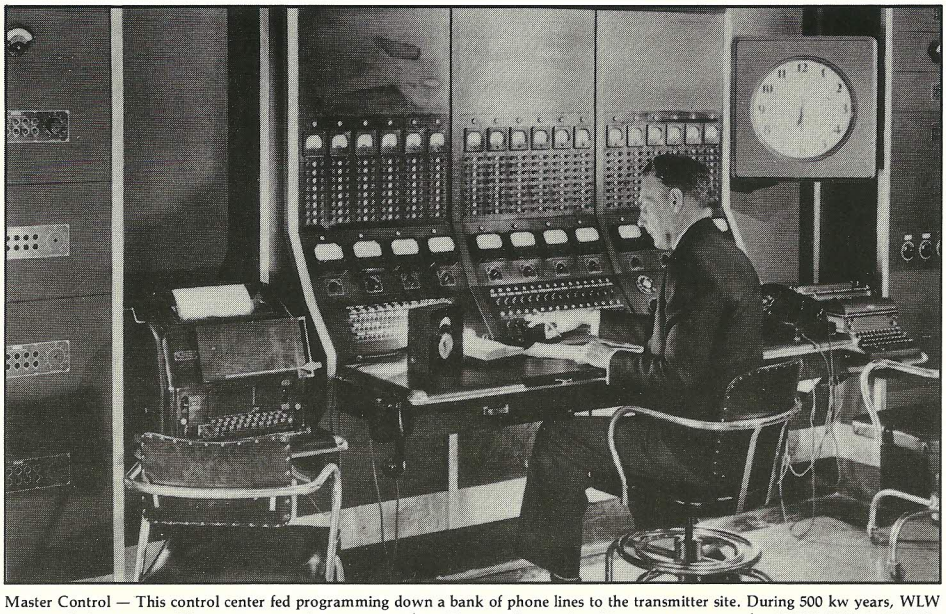
And Powel Crosley playing such records as "Song Of India," thrusting his head down an eight-foot morning-glory horn to ask for listener reports, then playing the record again.

The first Crosley radio receiver, the "Harko," was only $9.00. A ready-to-use crystal set, it was not too aware of the ether floating by. Nor were the models that followed. Inexpensive, but not sensitive. There was a simple solution: Make the ether stronger. And power-minded Powel did just that:

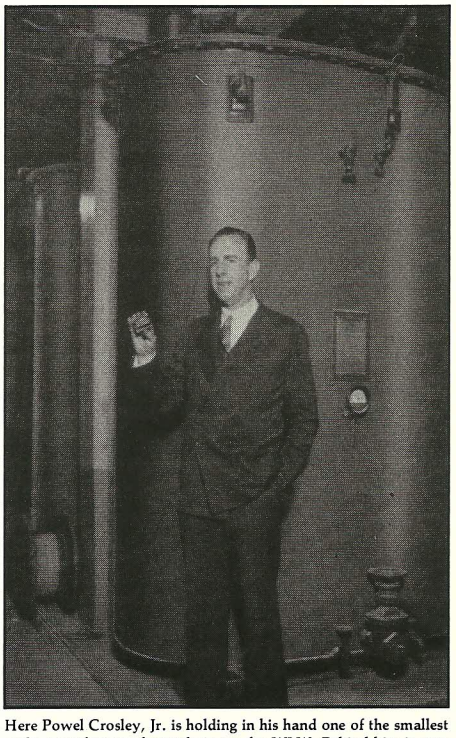
- Summer, 1921: Department of Commerce issues license for 8CR as a "special land station." Power is 20 watts, transmitter by the Standard Precision Instrument Company, of Cincinnati at 710 kc.
- March, 1922: Call letters WLW assigned by the new Federal Radio Commission. WLW is 65th licensed radiotelephone station to go on the air. Letters are received from Colorado, Maine, Michigan, Wisconsin, Connecticut.
- June 1, 1927: WLW moves to 700 kc, sharing time with WMAF, Dartmouth, Massachusetts, and KFBU, Laramie, Wyoming. Former operates summers only, soon disappears. Latter moves to another frequency, leaving WLW with a clear channel.
- January, 1925: WLW orders 50 kw Western Electric transmitter.
- October 4, 1928: WLW starts 50 kw operation from new transmitter site at Mason, northeast of Cincinnati. Longwire antenna puts "local" signal into Jacksonville, Florida, and Washington, D.C. WOR, Newark (710 kc) complains of co-channel interference. Federal Radio Commission station list dated November 11, 1928 shows four other 50 kw stations:

  660 kc - WEAF, New York
  790 kc - WGY, Schenectady, limited time.
  800 kc - WBAP, Ft. Worth, sharing time with KTHS, Hot Springs, Arkansas.
  980 kc - KDKA, Pittsburgh

- KFI, Los Angeles; WSM, Nashville; WCFL, Chicago; WFAA, Dallas and WTIC, Hartford, have 50 kw construction permits.



Master Control — This control center fed programming down a bank of phone lines to the transmitter site. During 500 kw years, WLW program listings appeared in up to seventy-six newspapers from Texas to Connecticut. Programs were routed to WLW, WSAI, W8XAL, the "New York Line" and various national networks.



Here Powel Crosley, Jr. is holding in his hand one of the smallest audio transformers formerly in use for WLW. Behind him is seen a portion of the huge audio transformer used in connection with the 500,000 watt transmitter. It weighs over 35 tons and is, by far, the largest in the world.

And Crosley's radio business is booming. By 1927, The Crosley Corporation grosses $18 million with a profit of $3,605,973. It has added patent medicines, scalp massagers, tire patches, the Shelvadoor refrigerator, the Cincinnati Reds and WSAI, a second station for local listeners.

The power of Positive Powel did not end with a mere 1-A clear channel and fifty thousand watts. Harold Vance, of the Engineering Products Division, RCA Manufacturing Company, remembers conferences about a 500 kw transmitter in May of 1932. While RCA, General Electric, and Westinghouse had experimented with up to 300 kw, there were no commercial designs for such an animal.

Evidently both parties were doing their homework, for RCA had a completed design by late that year. And in either December, 1932 or January, 1933 Crosley Broadcasting signed a contract for the beast.

And, in early 1933, the on-site installation did commence at Mason.

Some questions go unanswered at this point. Was Powel alone in his journey up the power tower? Was his application for "special authority" one of several? Many? Why was WLW singled out for the grand experiment?

Up went an 831-foot Blaw-Knox diamond-shaped "vertical radiator" next to the WLW longwire. It would be a half-wave antenna, end-fed, and the fat middle's purpose was to handle the point of highest RF current. The downward pressure of the tower and its pre-stressed bridge-cable guys was over 200 tons, and one giant insulator took it all. The station's call letters twinkled in neon across the mid-section, which was as wide as a four-story building is high.

To carry a predicted ninety amperes of RF current, a coaxial line about ten inches in

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diameter was mounted on concrete pilings across the grassy lawn of the site. The outer conductor was of aluminum, with spring-loaded expansion joints every twenty feet or so. A mica material suspended the heavy center conductor.

But the big job was at the transmitter building. The back wall was torn out, and a new room about twenty by forty feet was added, complete with an extension on the basement. Out front, a pond 75-feet square was excavated and lined with cement. A crane on the side of the building could swing large loads into garage doors on either floor.

Up at Camden, a lot of original research would soon get a test. The 500 kw would act as a power amplifier, using RF generated by the Western Electric 50 kw rig. Since only low-level modulation was used then, it would have its own modulator section. Imagine the look on the engineer's face who calculated the final weight of the double modulator transformers: 35,700 pounds each, including 725 gallons of oil!

The final power amplifier would actually be three PAs in parallel, a decision which was to prove most fortunate. Each PA would house four UV-898 RCA tubes — that's twelve. Add to it four more in each of the two modulator sections. Then there was the power supply, sort of a DC Incredible Hulk. The tubes required DC for their filaments. This would be supplied by several big generators. Cincinnati Gas & Electric ran *two* 33,000-volt lines toward Mason and a special substation on the WLW property. There was an automatic switchover out there, assuring power from one line or the other. 2,300 AC volts actually entered the building.

All of this original design was fitted into a cabinet about fifteen feet high and thirty feet wide. A catwalk about three feet from the floor led to tube compartments. Five double, shielded wooden doors, complete with interlocks, granted access to the rear.

Enough dials and meters for a small Boeing covered the front panels.

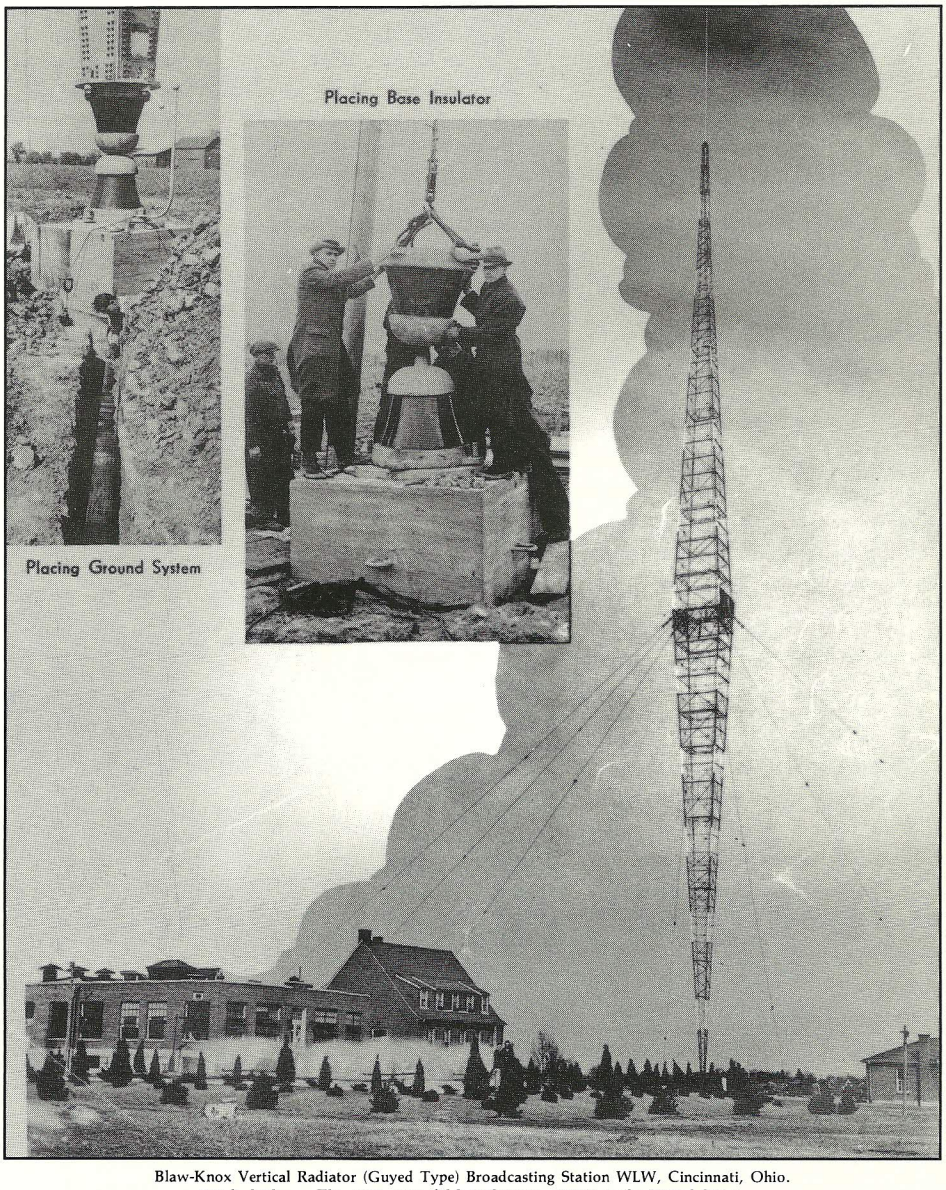
And several unusual bits of apparatus took their place here and there: a water still, which would manufacture all the distilled water for the inside cooling system. To isolate the high-voltage B+, this water would circulate through Pyrex tubing instead of metal pipes. A heat exchanger in the basement would warm a secondary system using tap water. This was routed through more big Westinghouse pumps to the outside cooling pond, where fountains helped lower its temperature before a return trip.

And oil-filled transformers would turn sour eventually, so acidity-testing and removal equipment was ready. (This may be the first transmitter in your memory which needed an oil change.)

Finally, there was a big brass nameplate. It credited the rig to RCA, although it was actually the joint effort of RCA (design), GE (RF) and Westinghouse (control). It also proclaimed a digit often quoted: "Serial Number 1."

Although Harold Vance told the FCC that installation chores were completed early in 1934, this was not the sort of thing that plugs in and plays. There were many hours of testing that winter and spring, and we can only surmise what sights and sounds the farmers just west of Mason may have heard and seen during the wee hours of a Depression spring. Diplomatically, Vance stated only that "special problems" had to be solved during both the design and installation. The test periods continued, using a test call of W8XO. Down in Cincinnati, Mr. Crosley undoubtedly waited with a certain air of impatience.

On April 17, 1934, the FCC granted Crosley Broadcasting authority to use 500 kw experimentally, during regular hours, with its regular WLW call.



Blaw-Knox Vertical Radiator (Guyed Type) Broadcasting Station WLW, Cincinnati, Ohio. 831 ft. high. The most powerful broadcasting station in the United States.

Bill Schwesinger remembers the night of May 2, 1934 well. The Crosley transmitter log remembers him well, too — his handwriting is all over it. A signal pair had been ordered to terminate at 1600 Pennsylvania Avenue, where a man whose fireside chats had made him well aware of the power of radio was prepared to assist. The golden key which Woodrow Wilson had used to open the Panama Canal was connected.

That log shows a final high-power test from 5:15 to 6:30 p.m.

9:02 p.m. Cut to remote line from Washington. President Roosevelt: "I have just pressed the key to formally open Station WLW . . ."

Far from the downtown festivities, I'll bet quite a cheer went up at the transmitter house. Bill made his entry in the log. Over in Mason, the street light dimmed just a bit. And around the world, folks found a new friend on their radios: *The Nation's Station.*

If WLW was a one-station network, it jolly well acted the part:

1 - There were no recordings on the station. None, except for sound effects. Later, some ET [electrical transcription] programs began to creep in. (In fact, a point of controversy during that time was the "transcribed" announcement which the FCC required between sides of a continuous half-hour ET show.) But nobody played the phonograph on The Nation's Station.

2 - The only thing the eighth floor of the Crosley Building may have lacked was privacy. 40 to 50 "legitimate" musicians, about 75 hillbilly-western ones, and a dramatic staff of 25 to 30 made sure of that. At an FCC hearing

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