



★
A TRIP
THROUGH

WLW

THE WORLD'S MOST
POWERFUL BROADCASTING
STATION

A GLIMPSE OF THE PIONEERING THAT MADE IT POSSIBLE

IT was over fourteen years ago that Powel Crosley, Jr., President and Founder of The Crosley Radio Corporation, became engrossed in experimental research in the field of broadcasting. In April, 1921, the original Crosley broadcasting station made its debut, after Mr. Crosley was granted an experimental broadcasting license with call letters 8CR. It operated on a power of 20 watts and programs were conducted from the living room of Mr. Crosley's home. At the time, there were but very few broadcasting stations—and scarcely any of these operating on a regular schedule.

The experimental work of Powel Crosley, Jr. advanced steadily and in March of 1922, the first WLW—destined some day to dominate the broadcasting world—became an actuality.



This original WLW operated on only 50 watts—one ten-thousandths of the power of the new 500,000-watt WLW.

It took only from March to September of 1922 for this embryonic station to multiply its power by ten. For in September of 1922, WLW made its initial broadcast with 500 watts.

Early in 1923, Powel Crosley, Jr., acquired radio station WMH. This station had been operated since 1919 and was one of the first two broadcasting stations in America to operate on a regular schedule. Subsequently the operation of WMH was discontinued and Crosley's rapidly growing activity in broadcasting was concentrated upon station WLW.

Even then, Mr. Crosley was carefully developing plans which were ultimately to fulfill his vision of a super-power broadcasting station that would reach out and supply every radio-equipped home in the nation with high quality programs at all times.

This photograph, showing Powel Crosley, Jr. playing a phonograph record, gives one a fairly good impression of what the Crosley station was like in its infant days when broadcasting on 20 watts from the living room of Mr. Crosley's home

Below is illustrated the first broadcast of a musical trio from the original 50-watt WLW station. From left to right those shown are: Paul Ewing, announcer and operator; William Morgan Knox, violinist of the Cincinnati Symphony Orchestra; Romeo Gorno (deceased) of the Faculty of the Cincinnati College of Music; Giacinto Gorno, Baritone of the Faculty of the Cincinnati College of Music; Powel Crosley, Jr., President of The Crosley Radio Corporation.

The first remote control transmitter to be used in radio came into being in January, 1925, with the opening of the WLW 5,000-watt transmitter plant, located at Harrison, Ohio, twenty-two miles from the studios in Cincinnati. Locating the transmitting equipment of broadcasting stations outside of thickly populated cities originated with Powel Crosley, Jr. It



was his vision of the excellent results to be obtained in locating the station in a place where there would be the minimum amount of interference that has led other stations to follow the step of this pioneer for super-power. Many other innovations were inaugurated in connection with the 5,000-watt WLW.

With such tremendous advances in less than four years from the opening of the first Crosley



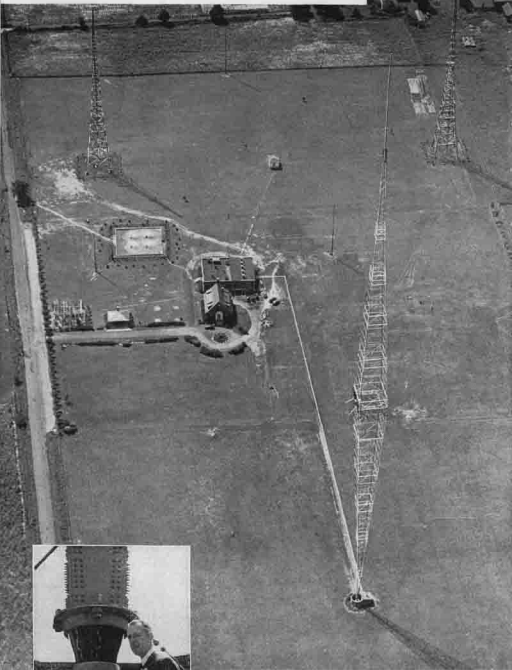
broadcasting station, the march of progress was rapidly moving on.

The next step in the history of WLW came in 1927, when it was granted a cleared channel on 700 kilocycles.

In October of 1928, 50,000-watt WLW was officially opened. This transmitter was located at Mason, Ohio—a distance of twenty-five miles from the Cincinnati studios. Since WLW was the first 50,000-watt commercial broadcasting station to operate on a regular schedule it became known as America's first really national broadcasting station and has held the title of "The Nation's Station" ever since.

Here is shown Powel Crosley, Jr., making an announcement over his 500-watt WLW back in the pioneer broadcasting days of 1922. It is rather interesting to compare the rather humble transmitter of those days with the intricate, powerful, extensive transmitting equipment of today.

In the foreground is shown one of the world's highest structures—the gigantic 831-foot high vertical radiator antenna of the 500,000-watt WLW. On the ground are seen the buildings which house the enormous transmitter equipment.




Powel Crosley, Jr., photographed at the base of the 831-ft. antenna of 500,000-watt WLW. The two cup shaped porcelain insulators, with walls less than two inches thick, support a stress load of more than 900,000 pounds.

And NOW... 500,000 WATTS ...The World's Most Powerful

THE most brilliant achievement in broadcasting history—500,000-watt WLW—the most powerful in the world! Here is power that will carry broadcasts to radio listeners throughout the whole of the United States, Canada and Mexico—and, under favorable conditions, throughout the entire world!

The gigantic 831-foot high vertical radiator antenna is, in itself, a phenomenal engineering feat. It is 35 feet wide at the center and only 30 inches in diameter at the base with the diameter at the base of the insulator bearing surface only $6\frac{1}{2}$ inches. Rising 273 feet higher than the Washington Monument in Washington, D. C., this antenna is a distinctive departure from the traditional type of antenna.



Here is shown Studio A, the largest of the many WLW studios which occupy the entire top floor of the main building of the Crosley Factories at Cincinnati. This beautifully decorated studio is evenly lighted, completely sound proof and constantly supplied with fresh cooled or warm washed air. It will accommodate the largest of orchestras together with several hundred guests.



A PROGRAM in the making...



Above is seen Crosley "Notes in Business" program in action. For this broadcast, there are four microphones in use. The sounds are picked up in these delicate microphones and then go through a wire to the studio control room.

BEFORE any program goes on the air, there are virtually hundreds of details that must be attended to behind the scenes. First must come the idea. Then the continuity must be written. The dramatic and music departments must spend hours in developing and rehearsing the program. Every detail must be prepared, timed and developed perfectly before the show goes on. At WLW, nothing is overlooked to give the program every thought, every effort, every preparation to provide the largest possible number of radio listeners with the best possible radio entertainment.

Shown to the right are a few of the mechanical devices used by WLW's sound engineers to reproduce, realistically, the many and unusual sound effects heard in the presentation of modern radio drama.



FROM MICROPHONE TO YOU...

TO help you form a mental picture of the workings of the 500,000-watt WLW broadcasting station, the following brief, non-technical outline is presented.

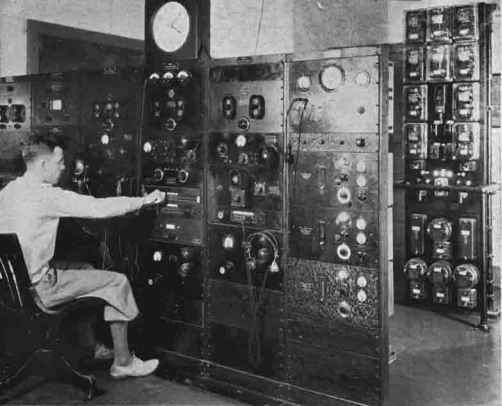
The studios of WLW from which programs originate are on the eighth floor of the Crosley plant located at 1329 Arlington St., Cincinnati, Ohio. The question is often brought up as to why the transmitting station is built at Mason, Ohio—a distance of twenty-five miles from Cincinnati.



This engineer in a studio control room is operating what is known as the studio control panel. It is his duty to watch the quality, the level and take care of blending the various sounds that are picked up on the studio microphones.



Here is seen an engineer on duty in the master control room who again checks the quality and level as well as the switching and transmission of the program. Further amplification is required here in order to send the program to the transmitter.



The program is received at the transmitter at the audio panel shown above. Here are seen the line amplifiers, monitoring amplifiers and volume indicators, together with the frequency monitors that check the frequency to within one ten-thousandth of one percent.

This is done for several reasons. If the transmitting stations were located in the city, nearby buildings would absorb some of the energy which is radiated from the antenna thereby reducing the strength of the signal. Generators and other electrical equipment in the vicinity might set up electrical interference which would play havoc with program reception.

WLW maintains eight special broadcasting studios at the Crosley plant as well as several downtown studios and many remote pickup points throughout the city.

At the studios are located the studio control rooms and the master control room. The engineer at the studio controls is responsible



for placing the microphones in proper position to pick up sounds of the various instruments of the orchestra and the voice of the announcer or singer. He listens to the program as it is picked up through the microphones and manipulates various controls to bring out the proper tone values.

The signal then goes to the Master Control Room where it is further amplified and where delicate instruments and skilled technicians check the level and quality of the program. It is then sent out over a special cable to the transmitting station at Mason, Ohio, in somewhat the same manner telephone messages are transmitted over a wire. When the signal reaches the transmitting station it is stepped up

View of the 54-ft. main transmitter panel of the 500,000-watt amplifier, which is a part of the WLW transmitter, showing the cat-walk and entrance into the various units. The control console is shown in the foreground. The panel consists of three radio frequency units, two modulator units and the rectifier and control unit, in order named.



At the left is seen the operator's control console of the 500,000-watt WLW transmitter. The only one of its kind in existence, it is a brilliant achievement of control of intricate radio and power equipment. The numerous controls operate the various units throughout the transmitter.



This unusual photograph shows Joseph A. Chambers, Technical Supervisor of 500,000-watt WLW, placing in position one of the twenty great 100,000-watt water-cooled tubes used in the WLW transmitter.

to compensate for line loss and is transferred to the transmitting equipment.

In the transmitting station, radio energy is generated at the required frequency of 700 kilocycles at low power. The generator of this power is called a Piezo Electric Oscillator. It is a quartz crystal the temperature of which is controlled by a thermostat, accurate to a hundredth degree of centigrade. The slightest variation in temperature would change the physical dimensions of the crystal which in turn would throw the station off its wave length.

In the 500,000-watt transmitter the signal is amplified just as it comes from the studio to the heretofore unheard of audio power of approximately 400,000 watts. Never before has any equipment been built which would deliver this tremendous audio power. The radio energy created by the crystal is also

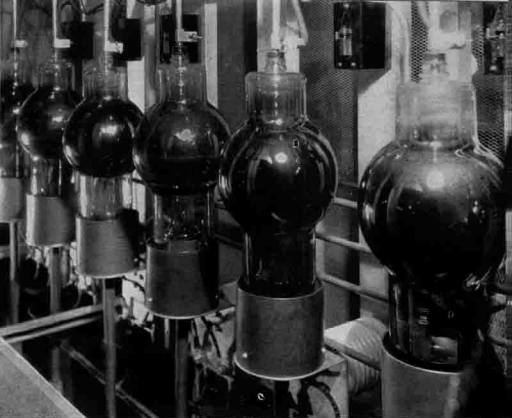
amplified to approximately 500,000 watts, and combined with the signal in the last stage of amplification.

The twenty giant 100,000 watt amplifying tubes used for this purpose represent a small fortune—approximately \$34,000. In addition 73 other tubes of smaller size are used in the transmitter. The power passing through these tubes is so great that they would melt unless cooled. One million gallons of water—enough to supply more than 6,600 families—is required daily to cool these tubes. Additional cooling is provided by the use of 1,350,000 cubic feet of air per hour.

After the signal is amplified to its required power, a tuning unit takes the energy from



Above are shown five comely WLW stars posed on the catwalk of the 54-ft. amplifier panel. Each is standing by one of the 100,000-watt tubes used in the transmitter. These tubes are five feet tall and cost \$1,650 each. One complete set of tubes for the WLW transmitter costs approximately \$35,000.



The six mercury vapor rectifier tubes shown here were especially designed and built for use in the 500,000-watt WLW transmitter. They were designed especially for this WLW transmitter and are rated at 450 amperes.

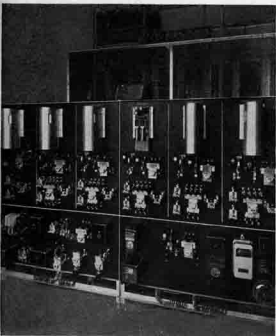
the tubes and transfers it to the huge vertical radiator antenna. From this tower the signal goes out in all directions to the receiving sets all over the country.

The engineers responsible for the design, construction and operation of this colossal broadcasting equipment have put forth tremendous effort to make sure that the signal which you receive in your receiving set is an exact duplicate of that picked up in the studio.

Thousands of field strength measurements, verifications and reports from virtually every section of the United States establish the following facts. There has been an increase in the signal strength of approximately 325 per-

cent over the 50,000-watt WLW, at all points. The effective service area covers a huge circle approximately 5,000 miles in diameter—an increase of approximately 1,000 percent over the 50,000-watt WLW.

Thousands upon thousands of listeners who live too far away from any existing high quality stations to receive primary service and thus in the past, were isolated from the best radio has to offer, are now provided with consistent, uninterrupted radio service of high quality. Fading, static and interference have been materially reduced, and in many localities completely eliminated.



This is a front view of the control relay panel showing the complicated arrangement of special relays which provide automatic control of the 500,000-watt WLW amplifier.

The 500,000-watt amplifier of the WLW transmitter is divided into units to afford additional protection and continuity of service at all times. Joseph A. Chambers, Technical Supervisor of WLW, is closing the filament switches for the unit.



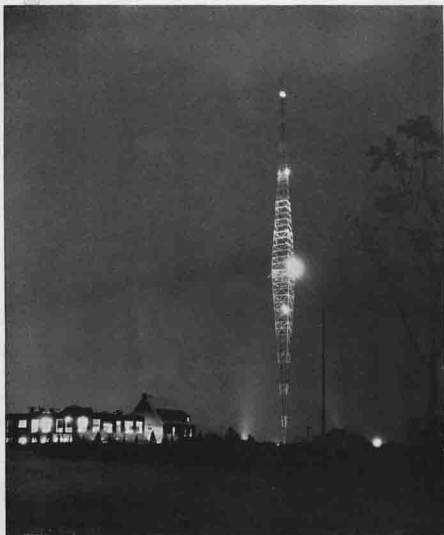
The extreme accuracy with which the transmitter is maintained on WLW's assigned frequency of 700 kilocycles, prevents any interference with other stations. With a peak power output of 2,000,000 watts, the new WLW has a full 100 percent modulation; that is, it provides the greatest possible program signal on its carrier wave.



Here are shown the buildings which house the enormous mechanical equipment necessary for the operation of 500,000-watt WLW. In the foreground is shown the spray pond, which supplies the water used to cool the tubes of this transmitter. One million gallons of water—enough to supply more than 6,600 families—is required daily, because the power passing through these tubes is so great that they would melt unless cooled.



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 nearly fifty tons and is, by far, the largest in the world.



This interesting night scene shows the picturesque illumination of the giant WLW tower and transmitter buildings. Being 831 feet high, the vertical radiator antenna is one of the world's highest structures. The antenna rests on a seemingly fragile bit of cup-shaped porcelain, which supports a total stress load of 450 tons, including 135 tons of structural steel. Eight two-inch cables—totalling more than a mile in length—hold this tower in position.

The same pioneering genius has developed the world's Greatest Radios for you...



Here is shown Powel Crosley, Jr. with one of the early radio receivers of The Crosley Radio Corporation. It was called the Crosley "Pup" and enjoyed the distinction of being the world's smallest factory-built radio receiver with one vacuum tube.

EVEN in the infant days of radio, Crosley was universally recognized as the radio pioneer—as the leader . . . pace-maker . . . in radio style, radio performance, radio value.

Throughout the past fourteen years, Crosley has pioneered in engineering developments and radio refinements that have brought matchless performance and highest quality to Crosley radios. The complete culmination of these fourteen years of pioneering and leadership is expressed to the fullest extent in the new Crosley Radios. There is a Crosley radio for every purpose and every purse—and each one is a world leader for its class in beauty, performance and value.



HOME OF WLW



HOME of The Crosley Radio Corporation and the studios of WLW—the Nation's Station. Practically the entire eighth floor of this building is devoted to broadcasting purposes. This floor is completely lined with felt so that the studios are "floated" in felt and are entirely vibrationless and sound proof. As pioneer manufacturers of radio receivers, The Crosley Radio Corporation has always recognized its obligation to the radio listener by providing through WLW the finest radio programs on the air. Crosley also operates station WSAI and short-wave station W8XAL.

VISITING HOURS:

Studios—Daily from 9:00 A. M. to 10:00 P. M.
Transmitter—Daily from Noon to 8:00 P. M.

THE CROSLY RADIO CORPORATION

Home of "the Nation's Station"—WLW—500,000 watts—
most powerful in the world—70 on your dial

POWEL CROSLY, Jr. President

CINCINNATI