

# RAPID GROWTH FOR WHIO

*Miami Valley Station Makes Big Advance With New 5-C-1*

By PALMER A. GREER and CHARLES E. GAY

WHIO is just twenty-two months old—but it's already a Miami Valley institution. Affiliated with the Dayton Daily News, and the Springfield News and Sun, it is as important to radio listeners as their newspaper.

In the early spring of 1934, former Governor James M. Cox, with the vision of the need for adequate broadcasting facilities in a town that had heretofore been deprived of radio entertainment, started looking for a suitable studio and transmitter location, and wave length, which could be brought to this area.

Negotiations were started with WLBW, in Erie Pennsylvania, and the station's wave length was bought in the early fall of the same year. After permission was obtained from the Federal Communications Commission to erect a plant in Dayton, all new equipment from towers to tubes, most of which was RCA, was ordered and on December 1st, 1934, ground was broken on the Brandt Pike for the transmitter house, and the building adjoining the Daily News office was completely renovated, and three major studios installed, each with individual control room.

## Opening of WHIO

At 4 p. m. on February 9th, 1935, practically every set in this area was turned to 1260 kilocycles for the formal opening. The first bit of broadcasting after the station identification was a prayer by Rev. Herman Page, the first time this procedure had ever been used to open a new station.

WHIO immediately started a program of showmanship in a series of "First" broadcasts in this vicinity. They were the first station to broadcast the proceedings in a traffic court, which program is still on the air; the county, sectional and state basket-ball tournaments; the Dayton Ducks' ball games; the circuses which ap-



Hon. James M. Cox

peared here (both sponsored and with pack transmitter, interviewed side-show attractions); the first to describe major holiday and convention parades; the Soap Box Derby, which originated in Dayton; the Cincinnati Reds Baseball games, which were relayed to WPAY; The Dayton Speedway dirt track races; and other important civic events.

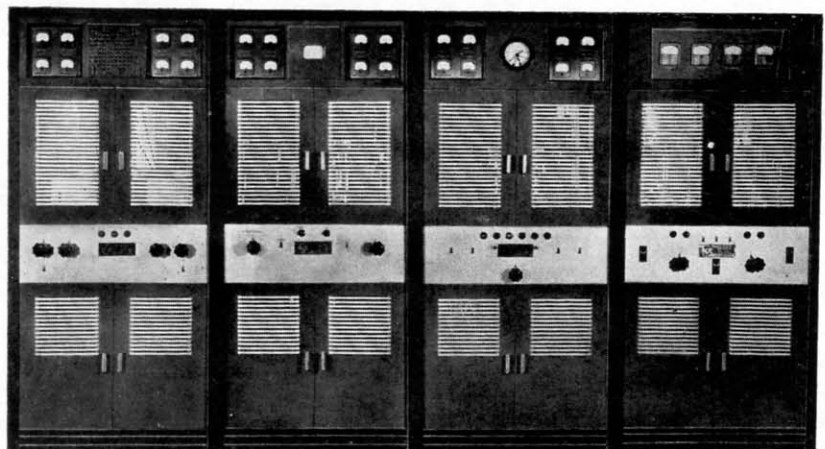
To boost the opening of the Tarzan of the Apes series on the station, they gave a Tarzan movie preview which attracted 15,000 children—and two squads of police to keep order.

The WHIO transmitter building is located three and one half miles northeast of the city of Dayton, and lies in the center of an eleven acre plot of ground. A short distance from the house the towers are located, one to the north, and one to the south. They are fed by means of a concentric tube transmission line.

## New Equipment Necessary

Prior to the time that WHIO was granted a construction permit for a power increase, an RCA 1-D transmitter was operating as a full 1000 watt station. Soon after the construction permit was granted, an order was placed with RCA, for an amplifier and rectifier and all associate equipment to increase the power to 5000 watts. As soon as the order was placed, work was started on the building, making the necessary changes in the building's interior, and adding a room to the rear of the present building to house the water cooling and power equipment. By the time the building was complete, the equipment was delivered, the transmitter moved in, and work on the wiring and changes in the 1-D transmitter was started immediately. The installation was carried on to the completion without interruption.

During installation of new equipment, the 1-D transmitter was



The 5-C-1 Transmitter installed at WHIO.

moved to another position in order that trenches could be cut in the floor to accommodate additional wiring necessary for the new transmitter. These trenches were made amply large to facilitate work with the wiring. All of the transmitter wiring runs in the trench between the various units. One trench runs the entire length of the transmitter, then curves at a right angle to the speech input equipment rack, to facilitate proper connection. Another runs underneath the transmitter to the room in which was installed the power equipment and water cooler. This trench carries all wiring to the power transformer, voltage regulator, water cooler and pump relays, and is then routed to the proper units through conduits which open directly into the trenches.

#### Old Equipment Used With New

After the trenches were completed the transmitter was moved into position along with the 5 kilo-watt amplifier and rectifier. All of the units are built with the same cabinet design and color scheme, so when placed side by side they harmonize perfectly in their modernistic design, even though the 1-D transmitter was a year and a half older than the new units.

All wiring changes were made during the hours the station was off the air (between 1 and 6 a.m.) These changes included the installation of relays to provide a means of switching back to the 1-D transmitter from the 5 kilo-watt with about one second interruption. To do this, relays were installed to take care of power circuits, switching excitation, modulators and antenna change over. In this transmitter installation there is a total of 40 relays used, which represent an installation that is as near automatic as possible. This system of switching back to the 1-D transmitter from the 5 kilo-watt has proven very successful, and in addition to the manual switch to reduce power to 1 kilo-watt for night operation there is an automatic system that takes care of the switch-back in case of failure in the 5 kilo-watt transmitter. Should the 5 kilo-watt

transmitter be overloaded, it trips a relay that turns on one of the indicator lights on the panel at the same time energizing the filaments in the 1-D transmitter. The third overload in succession removes the plate voltage from the 5 kilo-watt unit, at the same time applying voltage to the tube-plates in the 1-D unit, during the fraction of a second break between the time the plate is removed from the 5 kilo-watt ampli-



James M. Cox, Jr.

fier and applied to the 1-D unit, relays switch excitation, modulators and the antenna, back to the 1 kilo-watt position. As the exciter unit used for these two amplifiers is practically trouble free, the automatic switch-back amounts to an auxiliary transmitter.

#### Placement of Equipment

The line-up of the panels from left to right is: the regular exciter unit, the 1 kilo-watt amplifier (used for 1 kilo-watt operation); the 5 kilo-watt amplifier, and the rectifier.

This 5-C-1 transmitter is the exponent of the present day desire for high fidelity transmission. The frequency response of the entire transmitter from 100 to 10,000 cycles is within plus or minus 1 DB and from 30 to 17,000 cycles is within plus or minus 2.5 DB. The total harmonic distortion for any percentage of modulation from 0 to 100 is less than 4%. The noise level of this transmitter is very

low, being measured as low as 68 DB below the zero level required for 100 percent modulation.

#### Only One Motor Needed

Another feature of this transmitter is its departure from the older type of transmitters, as the only piece of rotating equipment is the water pump and the air blower, both of these are run by the same motor. Therefore only one motor is needed in the station.

This transmitter is fed from a normal 220 volt, three phase power line. Two lines reach the station from opposite directions. One is used regularly and the other as an emergency. In the event the regular line fails, the feed is automatically switched to the emergency line by a relay mounted at the point the line goes underground to enter the station. All of the circuits are brought underground for several hundred feet before entering the transmitter house.

The personnel of approximately 42, is headed by J. L. Reinsch, manager, with Ernest L. Adams as chief engineer. The staff is perhaps the youngest in years of any station on the air, but all are rich in radio experience with a broadcasting background which dates from the beginning of the crystal stage.



View across the valley from the antenna.