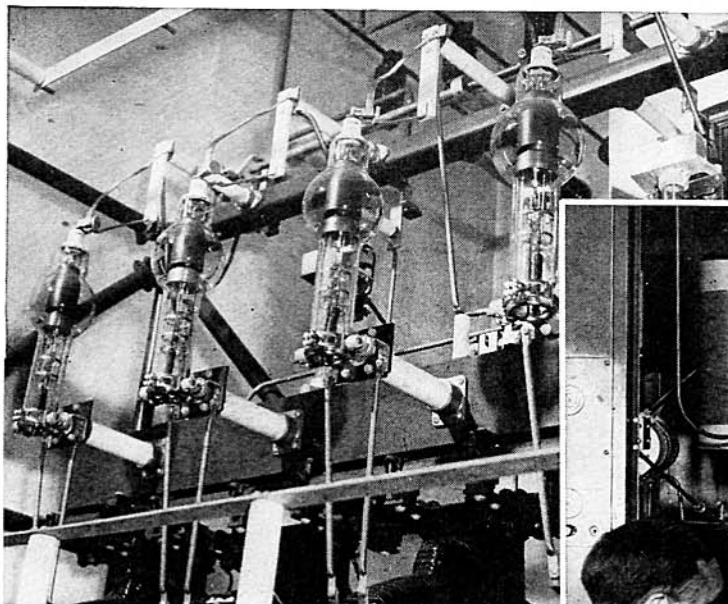
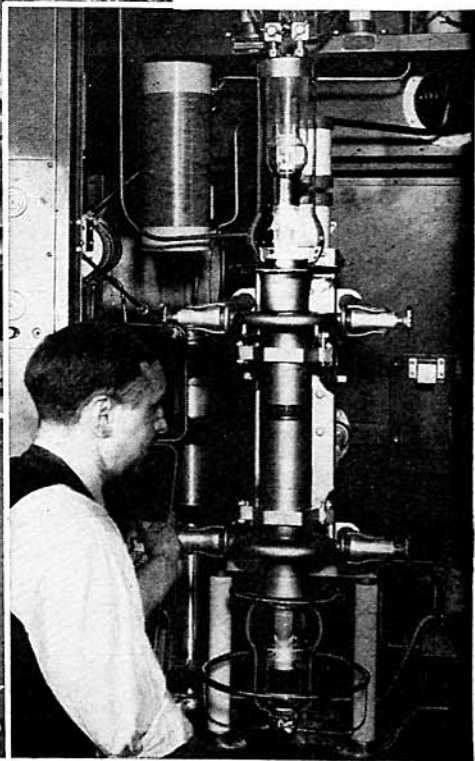
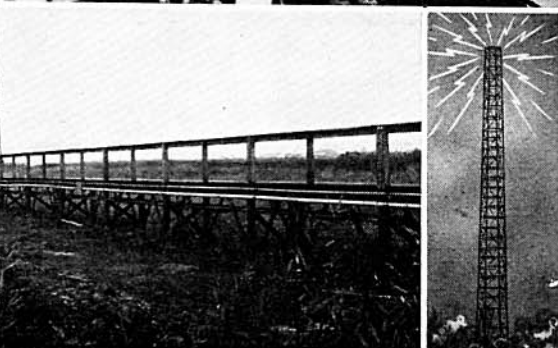
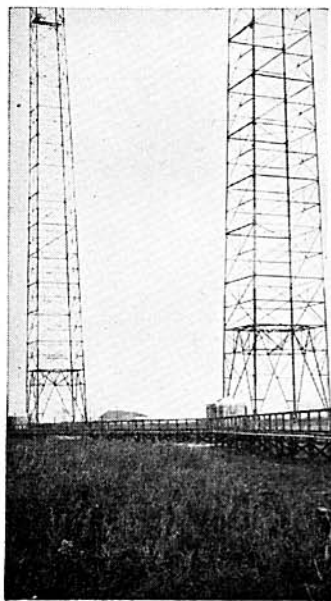


Right—These are the 50 kilowatt rectifying tubes with an output of 18,000 volts. For the sake of safety, they are located in the transmitter house behind electrically locked doors and are automatically shut off when the doors are opened.

Catwalk leading from the WHN transmitter house to the antennae is 725 feet long. Underneath the walk are five coaxial cables which feed the programs to the towers.



WHN engineer shown making adjustments on 50 kw. tube during test operation. Photo shows tube lighted. Each tube costs \$1650 and is kept cool by a constant flow of 150 gallons of distilled water.



# WHN - NEW YORK HAS 50 K.W.

*Now Most Powerful Independent AM Station in Nation*

SIX miles west of 42nd Street and Broadway, out in Rutherford, N. J., stands WHN's third AM transmitter, a 50 kw. (50,000 watt) unit which steps up the station's signal power ten-fold. Frequency used is 1050 kc.

The technical staff of WHN, New York's second oldest station, have long been familiar with Western Electric technique and performance, for both the 1 kw. and 5 kw. transmitters which preceded the new unit were of W. E. manufacture. Nevertheless, the new transmitter was selected only after exhaustive study and investigation of the various designs available.

Representing the last word in design, manufacture, and installation, the new transmitter is the product of years of research and development at Bell Telephone Laboratories.

One of the most outstanding features incorporated in the new WHN transmitter is the Doherty high-efficiency circuit, named after its youthful Bell Laboratories inventor. This circuit utilizes two giant 100-kilowatt power tubes, but unlike other circuits, its tubes do not both continually draw full power from the supply source.

Instead, one of these tubes serves as a part time assistant to the other. Normally in a *stand-by* condition, it is ready at all times to help out the other tube. For instance, the sudden blare of a bank of trumpets, a symphony orchestra in fortissimo,

may briefly provide a great volume of sound. At such times the stand-by tube contributes its share of energy toward the total fed into the transmitter's antenna, thus relieving the first tube of the extra burden and guarding it against overload.

The moment such a "peak load" has passed, the second tube lapses again into a temporary state of inactivity. Thus, one tube "rests" most of the time, with the obvious result that the life of the tube is materially extended, and the station's power bill is substantially reduced. Incidentally, guarding against any possible emergency, WHN has purchased five of these tubes, three to be stored and used only as and if needed.

WHN has installed its two previous transmitters, the 5 kw. and the 1 kw., one on each side of the new unit. In the event of service breaks, each could be switched into service at the touch of a button, thereby maintaining continuity of the station's signal.

Another interesting feature of the WHN installation is the *automatic program amplifier*. Located at the input of the transmitter, where feeble impulses picked up by the microphones are fed into the giant system, this device maintains those impulses below a safe maximum. Strong surges caused by loud bursts of volume in the program are sufficiently reduced in level to prevent overloading or distortion, and thus weaker impulses resulting from soft music or low tones

may be safely built up to keep the transmitter's output up in the high level range. The automatic program amplifier not only improves the quality of the station's signal by minimizing distortion, but also makes it practical to keep the station's signal continually strong enough to deliver the entire program with more satisfactory volume than would otherwise be possible. This extends the effectiveness of the transmitter without increasing its maximum power output above the 50-kilowatt figure for which it is licensed.

The two giant water-cooled tubes in the output stage of the new transmitter are each rated at 100 kilowatts, and are of unusual design. These tubes are double-ended, having a glass envelope at each end, with the metallic plate in the mid-section, around which water is circulated to dissipate the intense heat generated within. Instead of an outdoor cooling pond, an entirely enclosed water circulating system is employed. Thus the same water may be used over and over. The use of distilled water, furthermore, avoids the corrosive effects on metal parts of the impurities in ordinary water supply systems.

Apparatus for the new transmitter, as well as for the two former units, is locked in rooms behind each. The locks are automatic, and will not open until buttons are pressed which cut off power and ground the high-voltage units.