

# WBT Expands to 25,000 Watts

By EARLE J. GLUCK, General Manager, Station WBT, Incorporated

THE new 25,000 watt equipment of WBT went into operation with colors flying on Aug. 12th with a gala dedication program participated in by North Carolina, South Carolina and Charlotte city officials and civic leaders, and some of the system's outstanding musical artists.

Radio fans over the south and middle west were able to pick up the dedicatory program, broadcast from the steps of the new transmitter building on Nation's Ford road after the switch had been thrown in and the power was expanded from the 5,000 watt local station power to the 25,000 watt national broadcast power.

Ronald Jenkins, announcer, explained to the invisible audience that the station was still operating on its low-power basis and had the orchestra, headed by Michael Wise, play a



EARLE J. GLUCK  
GENERAL MANAGER WBT.

fore the federal radio commission and aided in getting the new power

## Kuester Speaks

The first speaker was Clarence O. Kuester, Chamber of Commerce executive, who declared the new station marks an important step in the advancement of the two Carolinas. Mayor Charles E. Lambeth pointed out that radio links the country together, has wonderful educational possibilities, and aids in instilling in the people a better understanding of their government. Mayor Lambeth expressed the hope that the station will soon be allowed by the government to use its full capacity of 50,000 watts.

## Lauds System

Representing Governor Gardner, Col. J. W. Harrelson, director of the North Carolina department of conservation and development, praised Gardner's safe and sane administration, praised the Columbia Broadcasting System for its progressive move in improving the Charlotte station and described the state's resources for the benefit of listeners outside the state.

The group taking part in the program, members of the WBT staff including the manager, Earle J. Gluck; V. Paul Rousseau of the Charlotte Merchants Association, H. Elliott Stuckel of the New York office of the Columbia Broadcasting Company, artists of the system, and newspaper men attended a dinner at the Chamber of Commerce, and went to the transmitter plant in a long motorcade, led by state highway patrolmen and rural policemen.

## 41-Hour Broadcast

WBT was on the air for forty-one hours of continuous broadcasting. After the dedication at the transmitter station, there was a special broadcast from the studios in the Wilder Building, featuring songs by Barbara Maurel, famous Philadelphia opera contralto who has been starred by the Columbia system for several seasons. The program featured by



ENTRANCE TO TRANSMITTER BUILDING OF WBT

number. The switch was pulled and the number was repeated under the new power with five times the strength and volume.

Lieutenant Governor James O. Sheppard of South Carolina pointed out that people of that state testified for station WBT in the hearings be-

advancement, even in the face of objections from Spartanburg and Columbia stations.

He asserted the station will serve as a link to further join the sister states. The address was closed with a description of South Carolina's resorts and resources.

the Modernists, artists taking part being Alfred Garr, Bill Elliott, the Dixonians' quartet, Ephraim Lee, Slufoot Lochman, Clair Shadwell and Peter Martin. Lee Everett was master of ceremonies. Billy Hamilton's orchestra played during this program.

This special dedicatory program of music was broadcast over the stations

Eight miles south of Charlotte stands this new monument to the faith of man in the progress of the South. Located on an old Southern plantation, it occupies thirteen acres, many of which are underlaid with a network of buried wires constituting the elaborate ground system.

The approach to the building brings one facing architecture mod-

letters of ever bright monel metal carry the WBT identification.

### The Entrance

Directly over the entrance doorway is the universally accepted insignia of radio, a large relief sculpture of a carbon microphone, carved in white limestone. Modernistic light brackets of chromium on either side of the entrance are in pyramidal design; white stone steps flanked by wrought iron rails complete an attractive, hospitable doorway.

Entering, one finds a pleasant reception room, with the chief operator's room to the right, and ahead the main control room, acoustically treated so that the operating engineer, listening to programs from a high quality speaker, can judge their quality without room-echo or other disturbing sound.

The control desk faces the center of three large plate glass windows which provide a complete view of the transmitting switchboards, and the tubes in the adjoining transmitter room. The desk is fitted with push button controls for starting or stopping the entire plant at will, or for controlling individual units of the transmitting apparatus.

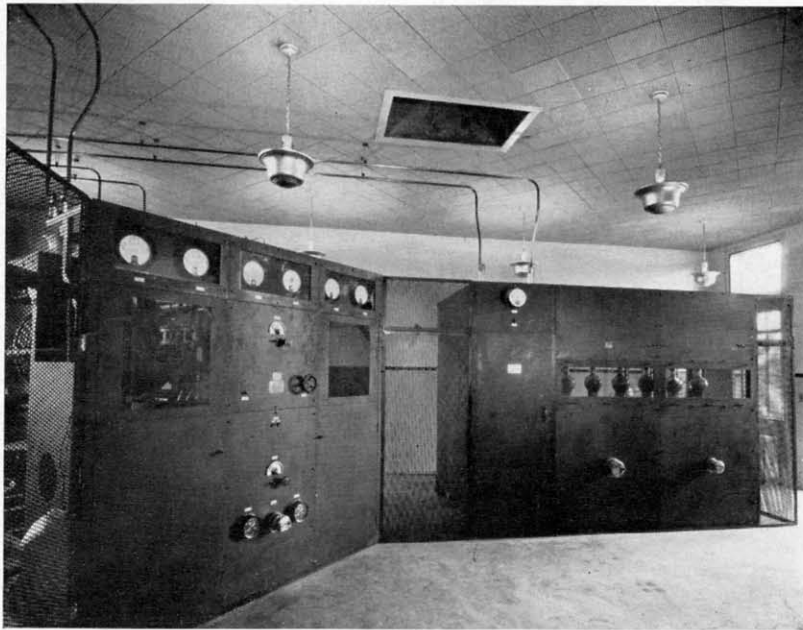
Here also are the regular telephone, private line telephone and telegraph instruments for communication with the control room at the studios in the Wilder Building. The oscillograph,

of the Dixie network and the Columbia Broadcasting System.

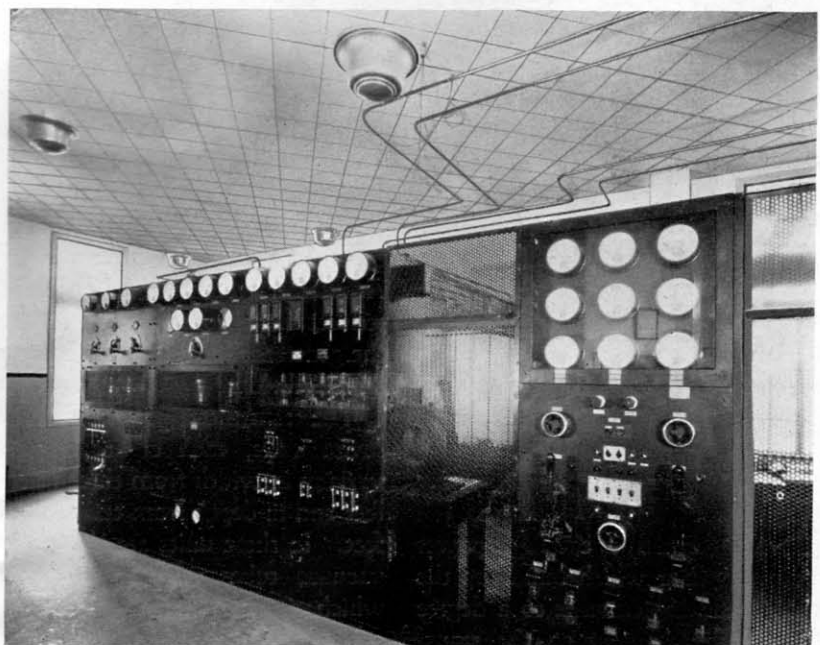
Quietly business like in appearance yet in no sense lacking the refining touch of artistry, nestling in a panorama of rolling hills and forest, stands the newly completed transmitter building of WBT, the only high power radio station authorized to the two Carolinas.

No throbbing scene of activity here. Almost as silently as the electric range in the modern home fulfills its duties, so the array of transmitter equipment functions; giant transformers, intricate control boards, monster radio tubes that dwarf a child in size. Trained and created to do the will of man, bank after bank of apparatus grasps the feeble electrical signals filtering through from the broadcast studios in the Wilder Building, adds new strength to them, finally to hurl them amplified millions and millions of times, to every nook and corner of the Carolinas, to the far reaches of the nation and frequently to the opposite end of the globe.

ernistic in design, a touch in harmony with the rapid advance of the broadcasting industry. The mottled red of the face brick is relieved by trimming of white limestone, while large



VIEW INSIDE TRANSMITTER BUILDING AT WBT



ANOTHER VIEW OF WBT'S TRANSMITTER—A PRODUCT OF THE RCA VICTOR CO.



too, finds its place on the control desk; a unique instrument this, showing a constantly changing picture of the radio waves themselves,—as they leave the transmitting aerial.

To the rear of the control room are three large panels or switchboards containing line-terminating equipment, facilities for changing the regu-

nal strength would be sufficient to actuate some twenty average receiver sets speakers at more than usual room volume.

Careful shielding of the control room from the powerful waves constantly being generated in the transmitter and radiated from the aerial is desirable to prevent pickup in delicate

heat generated in the latter is overcome by a continuous stream of distilled cold water. Each of the power tubes is rated electrically at 100 kilowatts, or four times the 25,000 watts power on which WBT will operate. They are capable of delivery of more than 130 horsepower of high frequency electrical energy, and two of them are used continuously in the familiar (push-pull) arrangement.

### Radiotrons

A story of electrical romance and development could well be devoted to tubes of this type, the largest available. The twin pair in operation require over 13,000 watts of electrical energy to light the filaments alone, sufficient to light a dozen large homes to full brilliancy.

The masts and antennae of WBT are a familiar sight to many Carolinians, but only the initiated know of the "dummy antennae" located in the transmitter building. The dummy duplicates electrically every detail of the regular antennae, but it sends forth no signal.

One might wonder at its purpose and would readily understand the explanation of its use while testing the transmitting equipment under actual operating conditions during the wee small hours of the morning, or for warming-up purposes before going on the air in the morning, when it is desirable that no signal be broadcast.

A bank of six tubes partially screened by a metal grill, each glowing with dancing purple lights catch the eye. It is explained that these are rectifiers, changing high voltage alternating current to direct current to be applied to the plates of the 100,000 watt power tubes. The voltmeter above shows a reading of 18,000 volts direct current, or ample to operate ten electric chairs according to some morbidly inclined statistician.

Adjoining is the precision crystal control units, remarkable combination of vacuum tubes and a thin slab of quartz, which holds the broadcast wave in its proper place. Two such units are used, each with its elaborate electric oven and sensitive thermostats, maintaining a constant temperature.



CONTROL ROOM AT WBT

lar wires bring the broadcast in the Charlotte studios, to emergency lines always kept in readiness should the regular wires fail. Meters at this point check the weak incoming signals, while others measure the strength of the outgoing music or voice.

To one side is the frequency monitor, a precision measuring device constantly indicating just exactly how close to 1080 kilocycles clear channel wave length the sign of WBT, that the transmitter is being maintained. Since WBT's wave does not vary more than ten parts in one million, and since each part of the ten is directly indicated on the meter, the precision of modern broadcasting equipment is easily realized.

### Amplifiers

The next panel to come to the visitor's attention is the high power audio amplifier which builds up the weak incoming currents to a degree suitable for delivery to the transmitter proper. At this point the sig-

measuring instruments and amplifying equipment. At the WBT transmitter building this is accomplished by totally enclosing the room in two layers of copper screening, each insulated from the other, and laid in floors, walls and ceiling—literally a "room within a room, within a room".

The room housing the main transmitting equipment adjoins the control room, with the apparatus erected in the form of a large L before the control room observation windows. Acoustical treatment of the ceiling reduces and absorbs the slight hum of the generator located in the basement directly below.

The transmitter proper consists of seven units, each eight feet high, varying in width from three to eight feet and in depth from ten to twelve feet. In these units are the array of vacuum tubes ranging from those which, in size, compare with tubes used in radio receivers, to the giant power tubes some five feet high. The

### Modulation Panel

Next to greet the visitor's eye is the modulation panel where the continuously varying voice or music currents are impressed on the radio wave to be amplified to higher power and relayed to the transmitting aerial, to be broadcast as radio waves into the ether. Large fans carry away the heat generated by the multitude of glowing tubes and keep the air fresh and comfortable.

The remaining space on the main floor is occupied by a tube storage, and spare parts room; shop and laboratory; washroom, and a completely equipped kitchen with electric stove, electric refrigerator and other necessary appliances. As the station is isolated from stores and restaurants, it is necessary that cooking facilities be provided for engineers' use while on duty. A long corridor separates the transmitter room from the utility rooms, providing individual entrance to each.

### Power Room

A concrete basement extends under the entire area of the building, and here are found the power transformers and generators. Here also is the outlet of the 210-foot deep artesian well, drilled through 150 feet of solid granite to provide adequate water supply for the use of operators and engineers, for watering shrubbery and for cleaning purposes.

### Auxiliaries

A separate room is allotted to the pumps, one regular and one reserve, constructed to force distilled water to and around the huge water cooled tubes in the transmitting room, then back again to the storage tanks and cooling radiator. To the cooling radiator is assigned another room; a giant of metal standing 15 feet high, it encases a high-power blower forcing air around a system of copper coils through which flows the incoming water carrying the heat from the tubes, to be quickly cooled and returned to gather more heat.

An elaborate system of switches permits disconnecting any part of the equipment from operation for repairs, and in many cases allows the throwing into service of other reserve units

so that service to the listener may go on without interruption.

The main power switch board in the basement distributes the incoming power from the power company to the various circuits of the transmitter, and also shows the amount of power being consumed by each unit. Large high-voltage switches, immersed in oil with only the operating levers projecting to the front of the switch board, enable the engineers to control the power without risk to themselves.

The entire building is heated by steam, with a modern automatic oil-fired boiler. Immediately to the rear of the building an automobile shelter affords parking space for cars of staff members; at some distance to the rear stands the big outdoor sub-station erected by the power company to supply the tremendous flow of power required to operate WBT's super-power station.

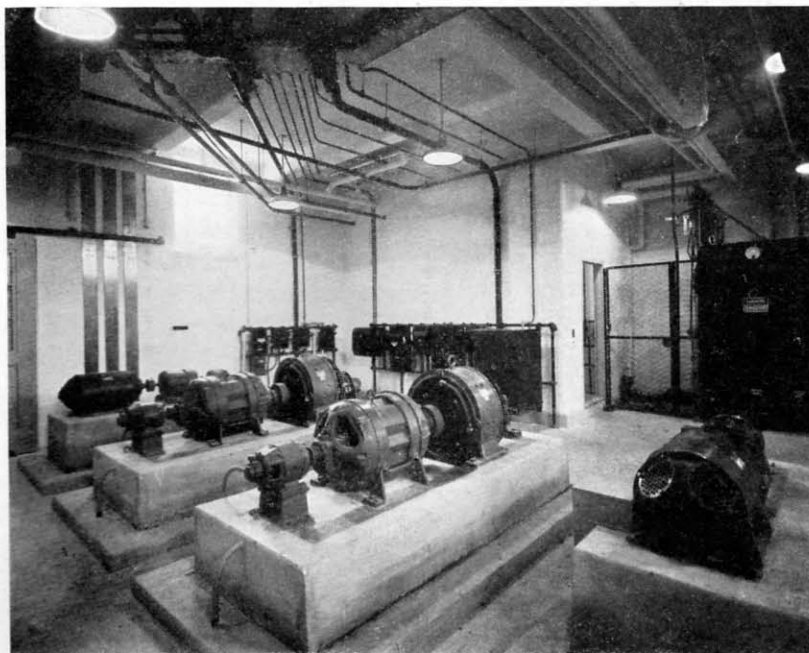
Spare transformers which may be thrown into service by switches at the sub-station provide for the pos-

sub-station by the power company can be drawn from two different sources and the equipment is installed to automatically shift to the other, should the power fail on the line in use.

Thus every possible precaution is taken to guard against interruption of broadcast service to the listening audience.

From the north side of the transmitter building extends a feed line composed of two heavy copper wires supported on wooden poles, leading to a small brick structure directly under the center of the antennae. It is known as a radio frequency transmission line, and serves to carry radio energy from the transmitter to the aerial.

Arriving at the "tuning house", the energy travels through a group of massive coils and condensers and then to the aerial, which also has entrance to this building. In appearance the tuning house is almost a replica of the transmitter building. Though much smaller in size, it is



POWER ROOM WBT

sibility of failure of those in use. From the sub-station the 2300 volts is fed to the transmitter plant through underground cables, which too, are in duplicate and equipped with switching devices at each end, for use in the event of failure of the main cable supplying power.

Even the power supplied to the

further dwarfed by the towering masts supporting the antennae overhead.

The antennae and masts erected three years ago for WBT's 5,000 watt station, and designed at that time for possible use on 50,000 watts power, will continue in use without

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## BROADCASTING PERSONALITIES

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papers, is the new manager of WMBH.

Edgar Bill of WMBD, Peoria, Illinois, says that his business has been increasing slowly but surely during the past days. This can likely be blamed to "old man hard work".

"Radio Headquarters" welcomes two old-timers back into the fold this month,—E. J. "Uncle Joe" Hendrickson as Merchandise Manager in E. H. Vogel's department, and Gerald Nelson as Assistant to E. A. Nicholas. Happy Days are coming back again,—sure enough!

Bob Compton, WCAZ, Carthage, Illinois, reports more signed contracts and better business than ever heretofore throughout their eleven years of broadcasting. He admits only hard work did it.

In a recent popularity contest polled by the *Radio Digest* in the State of Missouri, KMOX of St. Louis was awarded first place, WDAF of Kansas City, second and WIL of St. Louis, third.

Mr. L. A. Benson, President WIL, St. Louis, reports business 25% better during the months of April, May, June and July than it was during the same months of last year. And business for September has started off with a bang. WIL maintains a staff of thirty-two employees.

WIBW, Topeka, Kansas, fed Columbia chain from Roosevelt speech in Topeka, also Curtis' notification ceremonies.

Herbert Hollister, Owner and Manager of WLBF in Kansas City, Kansas is the proud daddy of a big boy born August 19th. Herb reports that business is good.

WMAS, Springfield, Mass. started operations September first. "Bill" Foss, formerly of WCSH is manager.

Earl Dannals has just completed the installation of new studio equipment for WEVD in the Hotel Claridge, New York.

WJAR, Providence, has just celebrated its tenth anniversary of broadcasting.

Earl J. Gluck, Paul Rosekrans, and C. T. Anson of WBT have just taken over operation of the new 50 KW

installation after completion of the usual tests. A complete story of this installation appears in this issue.

A. R. Rumble, formerly of the radio department, General Electric Company, is now Chief Engineer of WAAM, Newark, N. J.

Harold Thomas, formerly engineer of WEAN, Providence, R. I., is now attached to WSAR, Fall River, Mass.

Jack Kiefer, manager of KMPC, Beverly Hills, California, recently made a *flying* trip to New York, and returned by plane also. Just what the occasion for the hurry was hasn't yet been determined.

Mr. C. O. Chatterton, plenipotentiary of the Oregonian and KGW, both of Portland, will long remember his last trip to San Francisco, and the RCA Victor office. His recollection may or may not be of the fog.

Mel LeMon, chief engineer of KMPC, Beverly Hills, who does a little extemporaneous announcing on the side, should stick to his engineering activities, according to Clyde F. Coombs. At a recent remote broadcast he told the listening world of Mr. Coombs' retiring and unassuming disposition, by dedicating a selection to him. The number was "Keeping Out of Mischief Now".

Mr. J. W. Baker, assistant to A. H. Saxton, Pacific Divisional engineer for NBC, profited by Mr. Saxton's experience when he paid a visit to Portland, Oregon recently. He refused, very graciously, to accept any farewell gifts from the employees of KEX . . . and in fact shunned the National Broadcasting Company representatives at the train. It appears that Mr. Saxton, when departing from Portland, was presented with a box by Mr. John Cope, engineer for NBC in the Northwest Triangle. Greatly touched by Mr. Cope's thoughtfulness, Mr. Saxton could hardly wait until he reached his berth (it was an evening train) before opening the gift. The gift, upon being released, jumped an estimated twelve feet, with Mr. Saxton in hot pursuit. Not that Mr. Saxton wanted the present—he only wanted

to catch it. (The gift was a giant bull frog, with a "wing spread" of three feet.)

"All police cars stand by" was the alarming call that went out in the district where Harry Singleton was making a field survey for KGW. It appears that the rural residents surrounding Portland became suspicious of the nice, compact RCA box which contained the necessary equipment, and believed Mr. Singleton might be trying to pull a Mooney.

Clyde F. Coombs, Pacific Divisional Representative for RCA Victor, recently transported two Transceivers for demonstration to the California State Forest Fire Patrol. Astride his fiery Arabian Steed, he plunged fearlessly through the dense smoke, carrying the Transceivers. Upon their arrival, Mr. Coombs and the horse pitched camp on the ground for the night. The tests were made the following morning, much to the Rangers' glee. Mr. Coombs, however, returned alone and on foot,—since the unappreciative fire patrol felt that the horse was more valuable to their cause than Mr. Coombs. After all, it *was* an emergency.

## WBT EXPANDS

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change. Elaborate tests and varied experiments on super-power will be made to determine just what type will be most effective in serving the Charlotte station's listening audience, and a change may be instituted in the near future.

The new super-power transmitting plant of WBT represents the highest development of radio engineering and research. The tone and quality of the music sent out from this station is considerably higher than even the most modern radio receiver is capable of reproducing. In keeping abreast of the engineering advances in radio transmission of sound as WBT's doing, listeners possessing the new receivers now being introduced will find every delicate tone shading and the full roundness and richness they are capable of reproducing.