



WJZ



NEW YORK CITY

This will verify your reception of  
Station W. J. Z. on Dec. 22, Maxwell  
Travel Hour. See last page of  
booklet for hours of broadcasting.  
Watt, B. Coating Co.  
N. Y. C.

A Personally  
Conducted  
Tour Through  
WJZ  
NEW YORK CITY

## A Personally Conducted Tour Through WJZ



CHARLES B. POPINOF  
Manager of Broadcasting

THE average layman, when he visualizes a broadcasting station, is immediately overwhelmed with countless rows of dials and meters, miles upon miles of shiny copper wire, myriads of switches, varied colored lights and the gleaming microphone standing sentinel over all. He regards the studio as a place where science reigns supreme and peace and rest give way to the requirements of the engineer.

In many ways this impression is entirely erroneous. There is a certain fascination about a broadcasting station and there are few indeed who would not like to meet

the men who make the wheels go round and chat a few moments with the entertaining young men whom they hear so frequently talking to them in the privacy of their own homes. In order that the general public may have the correct conception of a broadcasting studio and the opportunity to meet the Staff, we invite you to WJZ, to roam around and see with your own eyes the many little details so essential to perfect radio entertainment.

But before that, let us take a preliminary trip with one of the men who will attend you when you visit us in person.

Upon entering one of the reception rooms, a uniformed attendant relieves you of your wraps. Immediately you are impressed with the air of luxury, of peace and calm—it is indeed a different world. But you are not alone in the large room. In one corner you recognize a popular novelist whose works you have read and whom you have often wished to see. And there is the famous contralto whom you have often heard at the opera and wished you could see "off stage." In another corner you can see a prominent vaudeville team chatting with some friends and you are a little shocked when you realize that they seem to be real common sense people and not

ludicrous jokers as you had imagined. In the background you are able to hear a piano solo very faintly. You look for the instrument but can find none. Your guide, realizing that you are at a loss to account for the apparent deception, indicates a point on the wall which hides a loudspeaker. Suddenly the music ceases and you are able to hear the announcer telling the radio audience of the selection played and the artist's name. Then a door opens on the far side of the room and a young man in dinner clothes appears, nods pleasantly at the opera star who rises and follows him through the door.

## The Studio

The guide escorts you through the door over which a small electric sign suggests CAUTION. You find yourself in a vestibule and a sign over the next door requests SILENCE as you pass through into the studio. As peaceful as the reception room seemed you are able to detect a great change in atmosphere within the studio. There is a strange stillness—an absence of those minute sounds which one does not ordinarily notice, but which become "audible" by their absence. This is explained by a unique feature in the construction of the walls. The slightest touch of the finger reveals the fact that they are soft and flexible and the slightest pressure will bend them outward. The fabric of the wall is wax-treated muslin laid over felt which absorbs all sound waves not intended for the microphone. This acoustically correct construction prevents even the minutest echo, which might blur the clearness necessary to enjoyable entertainment.

The room itself is delightfully harmonious in its dignified and restful beauty. The announcer's table, with its switch boxes and double microphone faces the entertainer from the left side of the room. From this position the announcer controls both his own microphone and the large movable one used by the artist.



BERTHA BRAINARD  
Asst. to the Manager

## The Control Room



ROBERT D. NEWTON  
Asst. to the Manager

AS YOU stand in the studio, you are conscious of being watched and occasionally you catch sight of a face through a long glass window at the far end of the room. You are relieved when your attendant motions you toward a door adjacent to that window and as you pass out into the Control Room you realize you will have the opportunity of seeing the person that kept a watchful eye on you when in the studio.

Whenever WJZ is broadcasting, an expert operator is stationed in the Control Room. Through the window which you observed in the studio the operator can see all that goes on and by means of the control apparatus within the cabinet, maintain a normal strength of the voice or music which is being broadcast. He also can curtail any sound made in the studio which is not meant for the ears of the radio audience and undoubtedly, he watched you to prevent any sound which you might have uttered from going out into the atmosphere.

The control board is a very vital part of the broadcasting station. Behind the black panel are vacuum tubes which are used to strengthen or amplify the electric currents which carry the voice or music before they actually reach the transmitter. Its use is especially necessary when the program is being brought to the station from distant points; without it there would be insufficient energy to materially affect the radio waves. Used in connection with programs being rendered in the studio, it is invaluable. The artist may move away from the microphone, may sway closer to it in his or her eagerness, but with a slight turn of a dial, the man at the control board easily offsets these variations. You will be much interested in the oscillograph, a device which shows the wave oscillation in a revolving prismatic mirror.

This delicate instrument may be switched into any one of the many circuits and show, by means of an undulating, ever varying beam of light, exactly how the artist's voice or music is affecting the electrical and radio currents. By watching this little tell-tale beam, as reflected from a revolving prismatic mirror, the operator knows whether the sound waves are too weak or too great in volume or even if they are blurred.

Station WJZ is connected by means of private leased wires with all of the hotels, theatres, music halls, churches, sporting arenas, baseball parks and other points where material suitable for broadcasting may be obtained. All of these wires enter the Control Room and terminate at a large switchboard similar to a telephone operator's board. Red and white lights blink in and out incessantly as the remote control operators make ready to broadcast an event from one of these points outside of the studio or call in for further instructions.

Another piece of interesting looking apparatus is the instrument used for the Simplex System, by means of which communication may be maintained with the Morse Code (dots and dashes) on the same wire and simultaneously with a broadcast program without either one interfering with the other.

In the Control Room there are situated a set of amplifiers which are used to carry the material originating in the studio, or from points outside the studio, to various other broadcasting stations, such as WRC in Washington; WBZ, Springfield, Mass.; WGY at Schenectady, N. Y., and finally to the super power broadcasting transmitters of WJZ which are not located in New York City, but 35 miles from New York City at Bound Brook, New Jersey. The Control Room is connected to all of these points by means of wire lines, which are especially leased for this purpose.



HERBERT B. GLOVER  
Publicity Representative



KERRI McLEOD  
Studio Manager  
and Pianist

The Reception Hall—Its  
Walls Adorned with  
Autographed Photos of  
Famous Artists

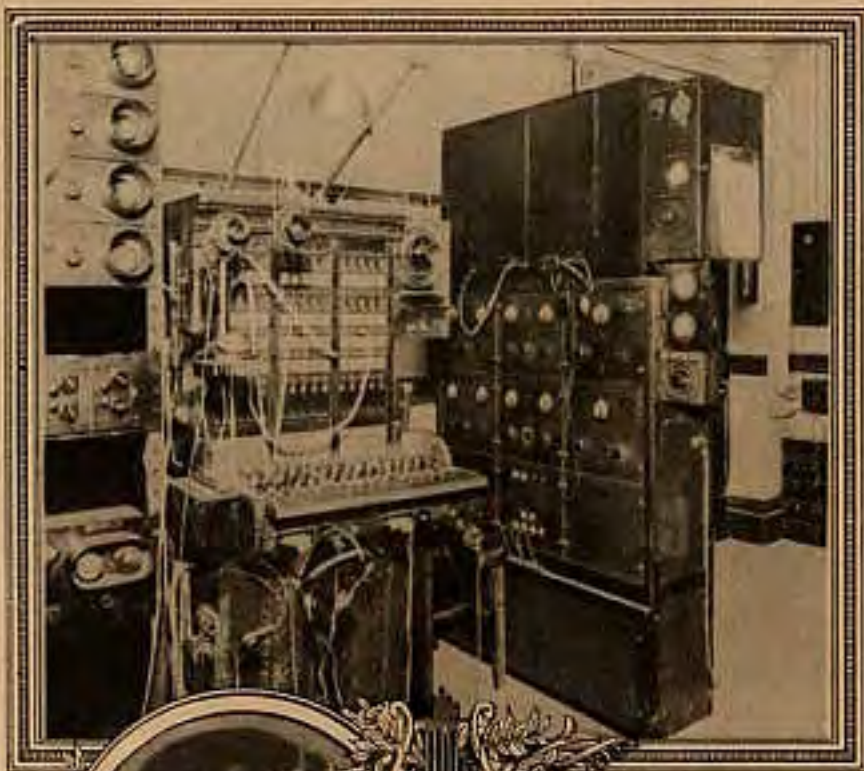
High up in the Aeolian Building, overlooking Bryant Park and a goodly portion of New York's interesting skyline, WJZ, while really situated in the heart of New York, seems to be apart from the great city. The reception room bears out this air of segregation, luxuriantly furnished with its windows looking down on busy 42nd Street, its activities suggest the air of the playground of art.



GEORGE LUDLOW  
Staff Violinist

The Studio—WJZ

Here is where your entertainment is made. The microphone is adjusted and its position changed for every artist. A large mural painting by one of the great masters gives the artists a vision of their listening audience. The announcer sits at the table at the right.



CARL DREHER  
Engineer in Charge  
at WJZ

The Control Room  
The incoming wire  
terminal board is at  
the left center

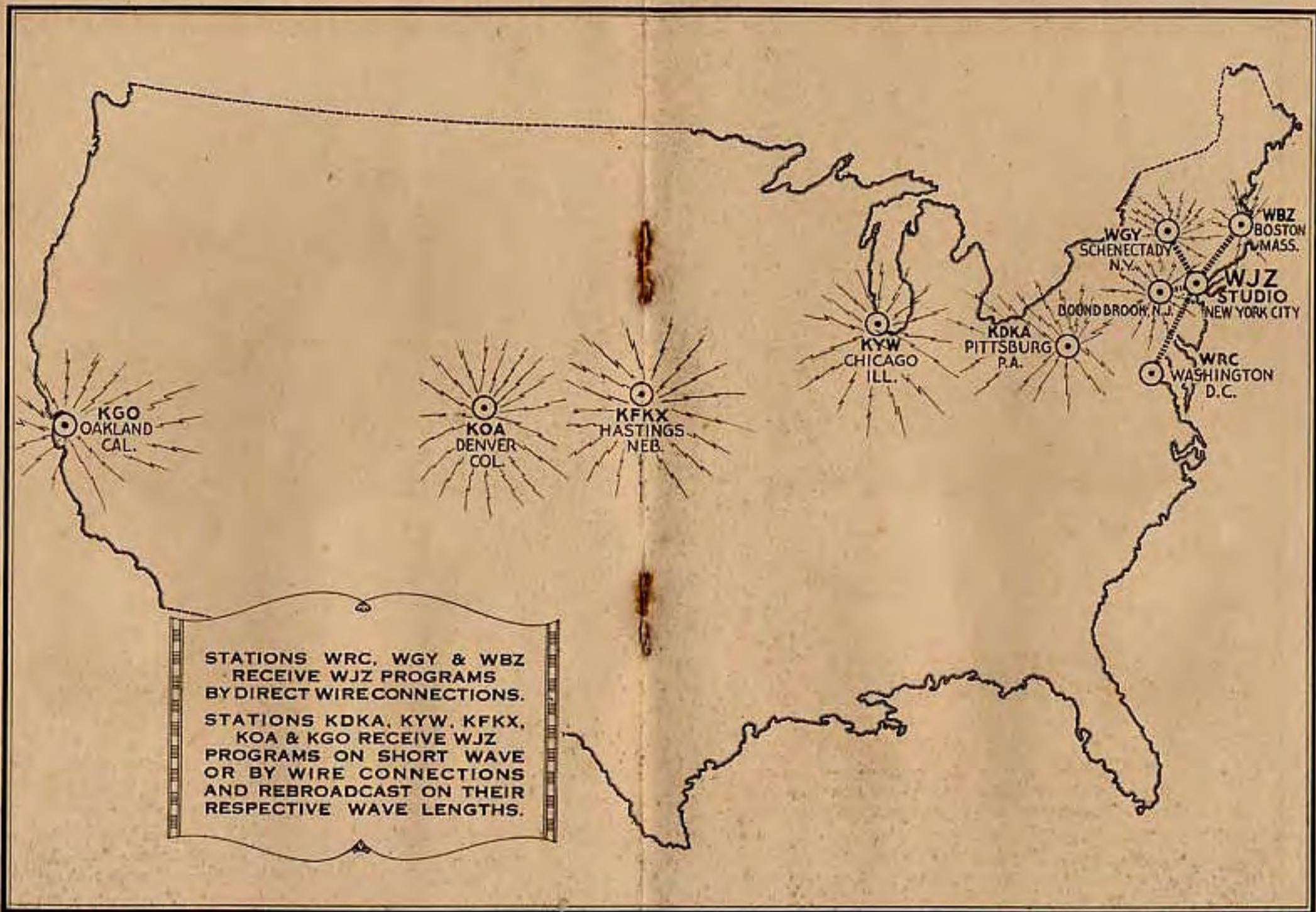
The incoming wire switchboard is seen in the left center of the above picture. From this board, wires lead direct to all theatres, hotels, music halls, churches, sporting arenas, baseball parks and any other places in New York City where material suitable for broadcasting might be obtained.

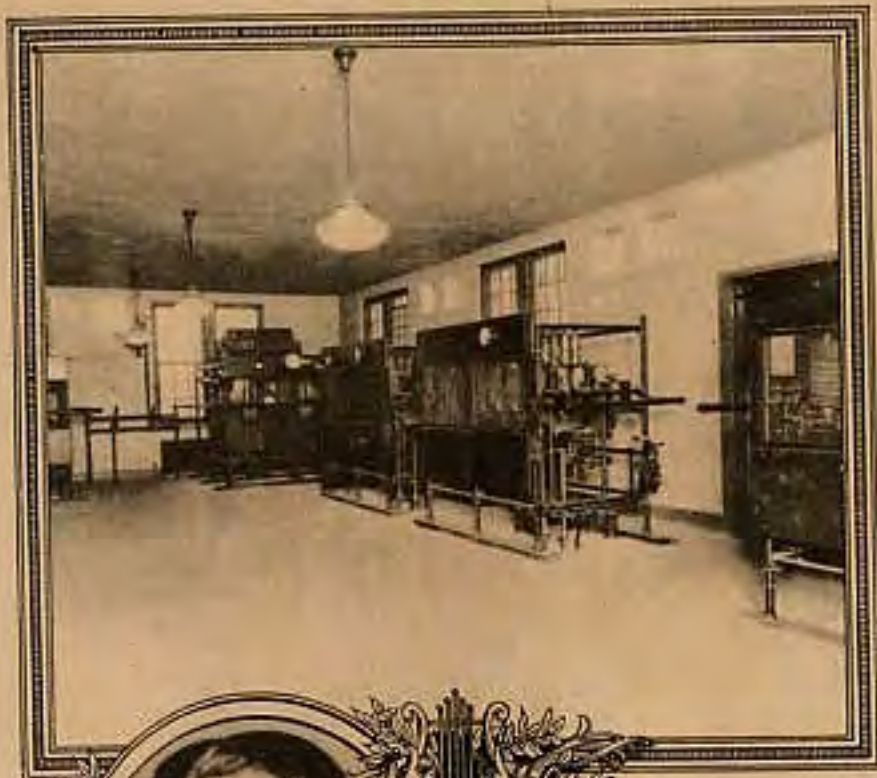


MILTON J. CROSS  
WJZ's Senior Announcer

Exterior of W J Z's  
Transmitting Station  
Bound Brook, N. J.

In this stucco building of Colonial design is housed practically all of the apparatus necessary to operate the most powerful broadcast transmitter in the United States. The site was chosen by preliminary calculation to give maximum service to New York and Philadelphia with minimum interference to the congested centers of population.

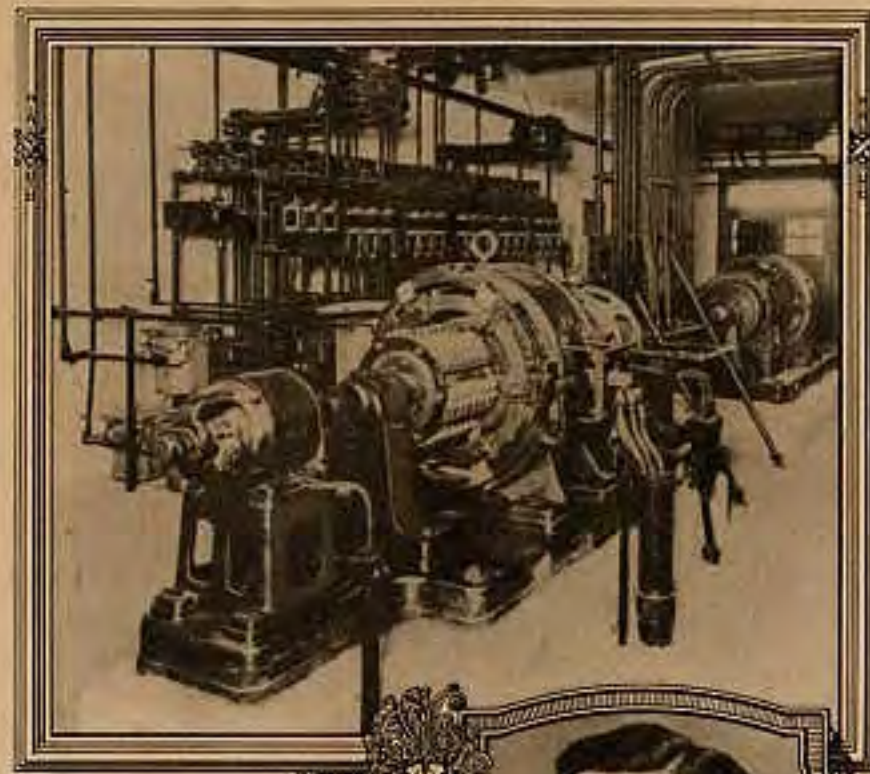




J. Lewis Reno  
Junior Announcer  
at W J Z

Interior of W J Z's  
Transmitting Station  
Bound Brook, N. J.

On these pieces of apparatus rests the responsibility of transmitting the programs to the listening audience. All of the equipment is duplicated so that in case of emergency, the transmission will continue without interruption to mar its beauty. It will be noted that screens and guard rails are employed to give the operators of the transmitters every possible protection against the powerful currents used in this work.

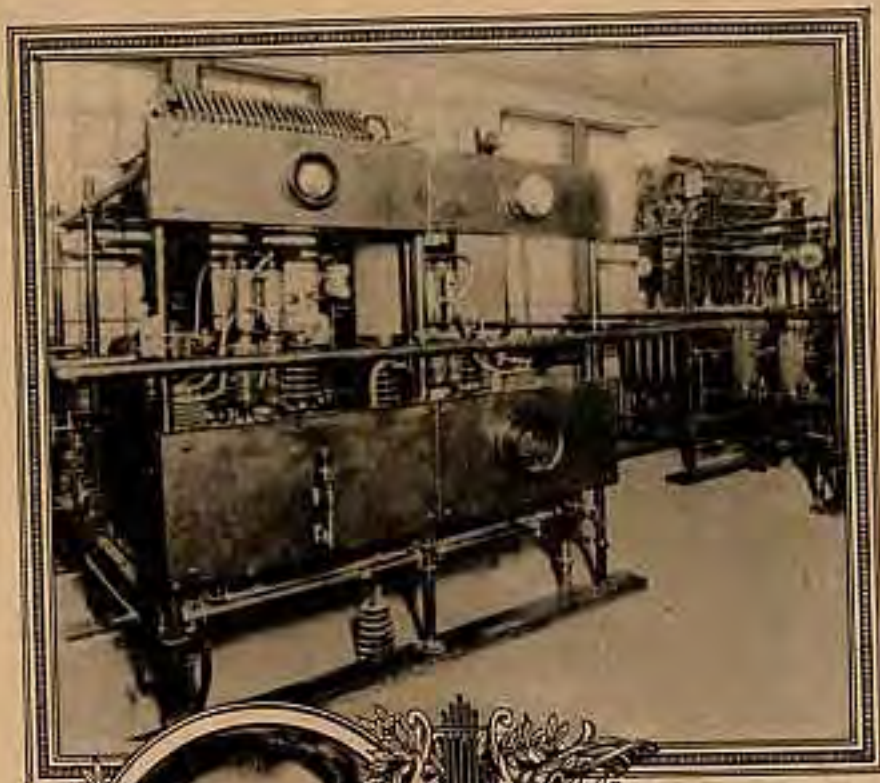


JOHN B. DANIEL  
Announcer at W J Z

Motor Generator  
Units of Station W J Z  
Bound Brook, N. J.

These motor-generator units supply the current to light the filaments of the transmitting tubes. The current output of these generators alone is sufficient to light the tubes of all the receiving sets in New York City. In the background is the incoming power control panel, from which point the currents are distributed to various parts of the Transmitting Station.





View of Oscillators  
and Modulators of  
Station W J Z at  
Bound Brook, N. J.

NORMAN E. BROKENSHIRE  
Announcer at W J Z

The huge proportions of this high power station can be readily gained from the size of the condensers, tubes, insulators and switches in the above photograph. The water cooling jackets on the vacuum tubes are easily visible, the water passing through the coils of rubber tubing at the rate of 3300 gallons per minute to prevent the tubes from overheating and cracking under the enormous heat.

## The Transmitting Station of WJZ

THE high power transmitters of WJZ are located on a fifty acre tract, owned by the Radio Corporation of America on the banks of the Raritan River, in the town of Bound Brook, N. J., thirty-five miles from the heart of New York City. This site was selected by preliminary calculation to give maximum service to New York and Philadelphia with minimum interference to the congested centers of population. Here a stucco building of Colonial design has been erected (an illustration of which appears on page 11.) to house the transmitting equipment. Two self-supporting steel towers reach three hundred feet into the sky to support the cage antenna, which is 700 feet long.

Within the Transmitting Station are two complete transmitting sets, with full spare equipment. One of these is used for the regular WJZ broadcasting wavelength of 454.3 meters, (660 Kilocycles), while the second may be used in short wave transmission of from 40 to 100 meters. Each of the transmitters is capable of delivering approximately 50 K.W. to the antenna, which is about 100 times greater than the average 500 watt or Class "B" broadcasting station, and is the highest power used by any broadcasting transmitter in the United States. The room which contains these powerful transmitters is entirely enclosed in a huge copper shield built into the walls of the building to prevent any stray currents from escaping and causing interference in neighboring receiving sets.

The transmitter is connected with the New York studio of WJZ in the Aeolian Building by means of four leased wires operated privately, which are entirely encased in lead cables to prevent any extraneous noises from entering into the broadcast program. From the Aeolian Building, direct wire connections are made with Washington, D. C., Schenectady, N. Y., and Springfield, Mass. Program material can be supplied to this station from New York City, Washington, Springfield, Schenectady, Rochester, Syracuse, Utica, Philadelphia, Baltimore, New Haven, and all intermediate points.

This station can also transmit European programs by means of a radio-wire chain. Programs broadcast from Daventry, England; Paris, France; Nauen, Germany, and other European stations are received at Belfast, Me., and relayed on a 50 meter wavelength to New York City, thence by land wire to the Aeolian Building and again by land wire to Bound Brook and any other station with which it is connected by wire.

Six oscillator and twelve modulator tubes are used in each set. These tubes are so expensive that when not in use they are kept in steel and concrete vaults. All tubes are water cooled and when the station is in full operation, 3300 gallons of water pass through these tubes per minute. Electrically driven centrifugal pumps keep this water in circulation, a spare pump being maintained in readiness at all times in case of emergency. Cooling apparatus keeps this water at the proper temperature constantly. The plates of the tubes are in direct contact with the water and in order to prevent grounding the plates, the water passes through scores of feet of rubber tubing to build up the resistance between the plates and the ground. The ground system consists of numerous steel wires about three hundred feet long, stretched fan shape and radiating from the main building, all of which are buried several feet in the earth. No counterpoise is used.

The filaments of the power tubes are operated on 22 volts, D. C., which is supplied by 23 volt, 1000 ampere motor generator units. (Illustration on page 15.) The plate supply is furnished by high voltage vacuum tube rectifiers at 10,000 volts, D. C. The antenna tuning equipment is housed in a separate building and a special method is used in coupling the antenna to the transmitting set. The tuning control and antenna tuning equipment are actuated by small motors controlled at the main switchboard in the Transmitting Room.

The station gives regular broadcasting service during daylight hours within a range of 400 miles and gives excellent local service to New York City and Philadelphia. After dark, the range of excellent local service is extended to include cities within a radius of 900 miles and to open country 1500 miles distant from the station.

## The Staff

THE force required to maintain a broadcasting station the size of WJZ is much larger than one would ordinarily expect. Between forty and fifty persons are kept busy continually attending its various needs.

There are two large divisions of the Staff—The Administrative and Program Division under Mr. Charles B. Popenoe, Manager of Broadcasting, and the Operating Division under Mr. Carl Dreher, the Engineer in Charge.

In order to fully comprehend the scope of the work of each department, let us first examine the Administrative and Program Division. There are eight departments within this division under the following heads:—Executive; Program Booking; Studio; Musical; Auditions; Artists; Correspondence and Filing. In addition to the above there is the Publicity Department which is an independent department under the jurisdiction of the Manager of Broadcasting attached to the station for the purpose of maintaining public relations through the medium of the press.

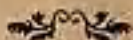
The Operating Division is also composed of several departments which operate under separate heads, all of which are responsible to the Engineer in Charge. There are eight of these units in all and they are classified as follows:—Field Force; Control Room Section; Transmitting Station Section; Repair Crew; Wire Department; Research Section; Construction Section and Test Department.

The duties of the two main divisions are entirely separate and distinct. The Program Division formulates the daily schedules, receives and examines applying artists, and when found satisfactory for broadcasting arranges their bookings. All broadcasting units are graded according to the quality of their natural ability and also as to their adaptability for broadcasting purposes. The maintenance of the studio personnel comes within the jurisdiction of the Administration and Program Division. Another important function of this division is the conduct of all correspondence between the station

and the radio audience and the tabulation of all data so obtained in such a manner that it is readily available for reference.

The duties of the Operating Division on the other hand are highly technical and deal entirely with the engineering side of broadcasting. The responsibility for the quality of reproduction is entirely theirs and it is also within their province to maintain all electrical and mechanical devices used for broadcasting from within and from outside the studio in proper working order. The pick-up of remote control events is another and one of the most important duties, as is the maintenance of all wire lines for broadcasting and communication between the station and outside points. The development of new apparatus for broadcasting use is one of the most important duties of the Technical and Test Department, for the art is still in the stages of development and efforts are being made constantly to improve on what has already been invented.

And so you see, these two divisions combine to produce the entertainment which you receive from your loudspeakers daily. Did you realize that behind the scenes there were so many people who serve unheralded—unsung—to make life just a little pleasanter for all the world? But they rejoice in their work for it is the finest one can do—to do good for others.



**N**OW that you have made this visit to the studio and seen how each unit functions, you will undoubtedly be more at ease when you tune into either WJZ or WJY and will be able to understand matters in the broadcasting which previously puzzled you.

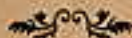
There is only one thing which the management of WJZ asks in return for this invitation which has been extended to you and that is your co-operation and an expression from you as to what forms of broadcast programs you care most to hear. Please bear in mind that WJZ and WJY are two of the few remaining "non-commercial" stations. By that it is meant that no remuneration is derived by the Radio Corporation of America from the use of the station for broadcasting purposes. Therefore, one can readily see that the only purpose in broadcasting is for the pleasure of the general public. It is the constant endeavor of the management of WJZ to please everyone, but it is indeed difficult to satisfy you if you do not let your desires be known. Letters of suggestion and constructive criticism are very welcome.

And do not forget the artists. They put their best efforts into their programs and the only recompense they receive is your applause in the form of mail or telegrams. You must realize that appreciative applause is an artist's greatest joy so when you like an offering, "do your bit" and make the performer happy by telling him or her about it. It costs you so little and means so much to them.

RADIO CORPORATION OF AMERICA

# WJZ's Schedule of Transmission

EASTERN STANDARD TIME  
Daylight Saving Time  
During Summer Months



## *Every day except Sunday*

1:00 P. M. to 2:00 P. M.

4:00 P. M. to 6:00 P. M.

7:00 P. M. to 11:30 P. M.

## *Sunday*

9:00 A. M. to 5:00 P. M.

7:00 P. M. to 11:00 P. M.



*Subject To Change  
Without Notice*

*Compliments of*

RADIO CORPORATION OF AMERICA

New York

Chicago

San Francisco