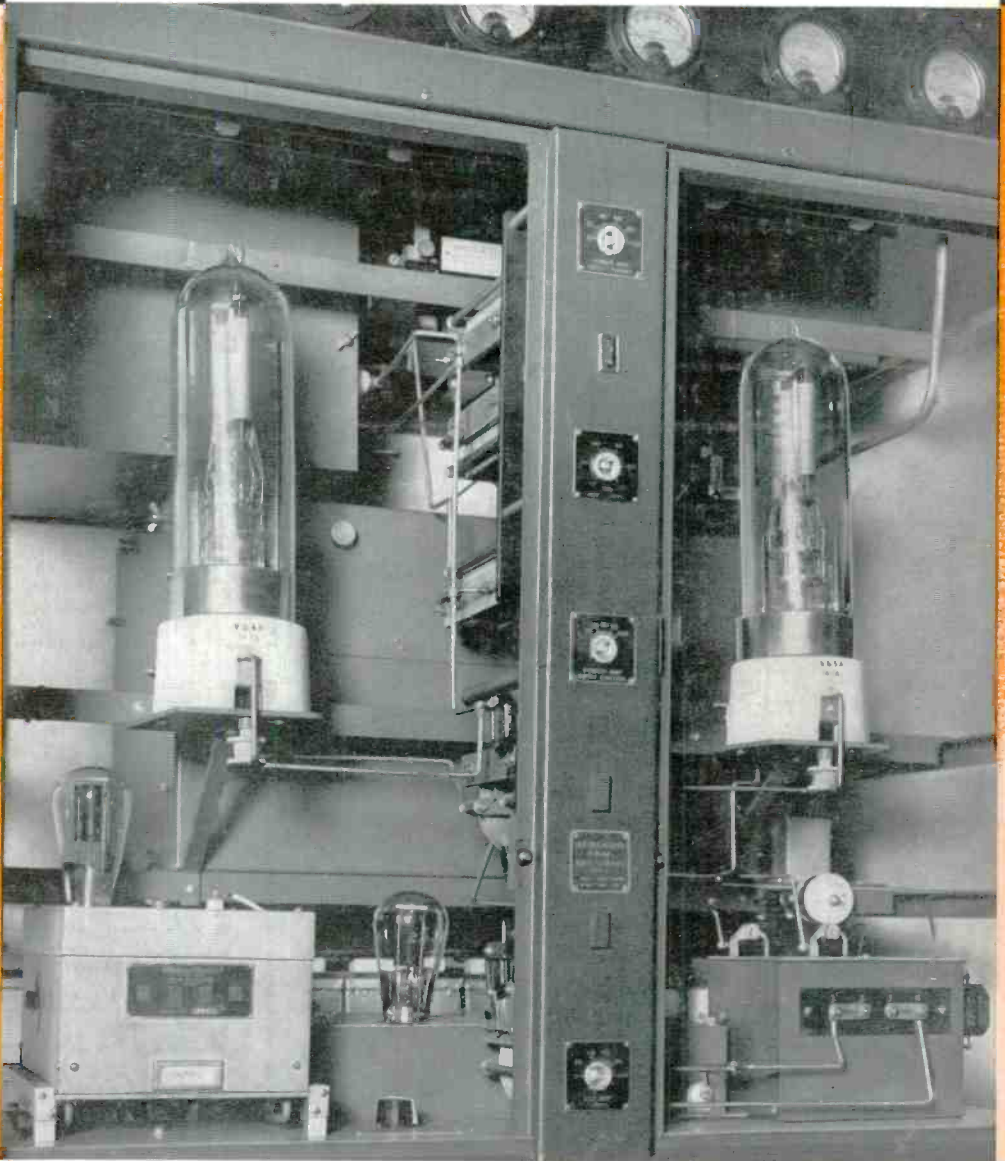


PICK-UPS

MAY • 1936



Oscillator-Modulator Unit of New 5 KW Transmitter

In This Issue

- Floods . . . and How the Broadcasters Came to the Rescue
- Crosley Radio Corporation Installs First All AC Western Electric 5 KW
- Police Radio Rides Ahead
- What's in a Station's Call
- Use Audiometers to Test Hearing of 700,000 New York City Children
- Station WHN Widens Voice Range With New 5 KW Transmitter



PUBLISHED BY

Western Electric

PICK-UPS

BEING A PERIODICAL DEVOTED TO DEVELOPMENT
IN SOUND TRANSMISSION. PUBLISHED BY THE

Western Electric Company

EDGAR S. BLOOM *President*
H. B. GILMORE *Secretary*
F. H. LEGGETT *Treasurer*

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MAY, 1936

Let's Go Calling

We grew up in a small town in an era when the horse and buggy was still the one medium of local transportation. In those days it was the custom for housewives to "go calling" on each other. Usually one day a week was religiously set aside for this ritual.

As a very small boy, we had to go along with our mother. These weekly calling days were days of torment for us. It meant dressing up in our Sunday clothes, sitting all afternoon in stuffy, hot parlors, listening to women talk about things in which we had not the slightest interest. The old maids, of which every small town seemed to have a goodly quota, usually insisted upon talking down to us, and what was worse, planting wet smacks upon our frowning countenance.

It was one of life's greatest mysteries why our otherwise sane, thoughtful mother insisted upon inflicting upon us these weekly calling expeditions. Why, we wondered does she want to go herself? Looking back, the answer is apparent and the reason a good one. My mother and the other women in town, beside keeping up their social duties, actually profited from those visits. They learned how Mrs. Jones made those wonderful sour-dough biscuits, and how Mrs. Lamb contrived to launder her curtains without shrinking them. They picked up all manner of useful information, recipes, household kinks that made work easier, and more pleasant.

What those women did every broadcaster in the country can and should do. There isn't a station in the country which does not have some little kink, gadget, method, or manner of doing something which would be of value to other stations. We have done a bit of calling ourselves recently and we have seen all sorts of unique things worked out by chief engineers to make operation simpler, or things which cut down costs. The ideas of one man can be used by the next.

The best way to learn what the other man is doing and thinking is to visit him. With summer coming, now is the time for you to "go calling." When you go on your vacation, it will pay you to drop in on the local station. Perhaps the chief engineer has licked some problem that has been worrying you. Perhaps you have worked out some idea that will be of help to him. "Go calling!"

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WIDE WORLD PHOTO

FLOODS! . . . and How the Broadcasters Came to the Rescue

Radio Demonstrates Its Value to a Nation in Distress

Never before in the history of radio broadcasts did broadcasting stations render such signal service to the people of the United States as they did a few weeks back when monstrously swollen rivers burst their channels and left a path of death and devastation from Maine to Kentucky. Regular entertainment programs were switched backstage or relegated to the wings to make place for the grim drama that was being enacted in the flood areas. Over the air flashed warnings of onrushing torrents, crumbling dams, toppling bridges, disrupted communication lines and crippled transportation intermingled with appeals that relief be rushed to the stricken communities.

In some instances isolated towns in the paths of the flood waters received their first word of impending disaster over the radio. Thus forewarned, inhabitants along the river banks or low lands were able to escape to higher ground before their homes were swept away or inundated. On the other hand hundreds of panic stricken people unduly alarmed by exaggerated scare stories were reassured of their safety or the safety of relatives and friends, by authentic radio reports.

In many localities broadcasting stations worked hand in hand with town or city officials, newspapers, police departments, the National Guard, the

American Legion, the Red Cross and other relief organizations. Thus the stations were transformed into clearing houses for information, rescue and relief activities. Extra telephones were hurriedly installed to receive the avalanche of calls pouring in for boats, food, medical supplies, trucks, drinking water, cots, blankets, and for news requested by individuals regarding members of families who were separated or marooned.

Radio operators, armed with portable transmitting equipment, were dispatched to the front lines. In cars, trucks, boats, or on foot they toured the flood districts, set up their improvised equipment and relayed to headquarters the latest reports of the battling waters. When power went out, engineers hurriedly rigged up emergency battery equipment to carry on as long as possible.

Operating and engineering crews, in fact the entire personnel of numerous stations, remained on duty day and night—many without food, water or even cigarettes. Some were marooned in transmitting stations making a frantic effort to keep messages on the air while yellow flood waters lapped the building's walls. Others worked in shadowy studios

(Continued on Page Twenty-two)

Crosley Radio Corporation Installs First All AC Western Electric 5 KW

By A. W. KISHPAUGH

Radio Development Department, Bell Telephone Laboratories

WSAI operated by the Crosley Radio Corporation and one of the early established broadcasting stations in the United States has changed the location of its transmitting station from Mason, Ohio, to Cincinnati, some 20 miles distant in a southwesterly direction. The new location is at Warren and Rhoes Streets, to the north of the downtown section of the city. The purpose of this change has been to permit the rendering of better service in the area the station is intended primarily to cover. In furtherance of this objective, new Western Electric transmitting equipment of the most advanced type has been installed in the new station which, with its vertical radiator, occupies a commanding position on a high bluff overlooking the surrounding territory.

Of particular interest is this new transmitting equipment for it is the first all AC operated Western Electric transmitter of its power rating to be placed in service. It is rated for a maximum output of 5 kilowatts though operation at this station is at a maximum of 2.5 kilowatts. The appearance and general features of the transmitter are similar to those of the transmitter described in the November 1935 issue of "Pick-Ups" as new equipment of Station WTCN. However, the WSAI equipment differs considerably in that only four cabinet units are employed (Control Unit, Oscillator-Modulator, Power Amplifier Tube Unit, and Power Amplifier Tuning Unit), and the

circuit has been arranged to permit AC heating of all tube filaments, thus eliminating the necessity for filament power motor-generator sets.

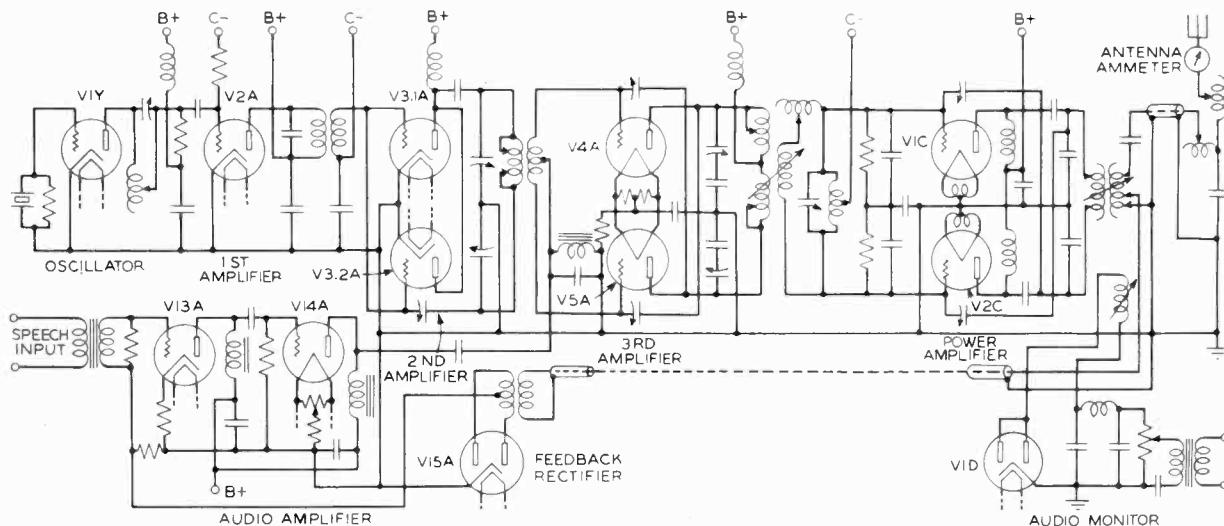
This forward step of producing a broadcasting transmitter employing water-cooled amplifier tubes with AC filament supply which can be depended upon to operate automatically without introducing objectionable hum into the carrier has been made possible through the use of stabilized feedback which has been recently developed by Bell Telephone Laboratories. By this means, a simple circuit is retained and hum suppression (as well as suppression of other noise and distortion) is entirely automatic and certain of accomplishment.

Referring to the simplified circuit diagram, it will be seen that there are only two audio stages, V13A and V14A, and four radio stages beyond the oscillator (V1Y) including the final power amplifier, V2A, V3.1A-V3.2A, V4A-V5A, and V1C-V2C.

The tubes used in these positions are as follows:

- V1Y, V2A, V3.1A,
- V3.2A, V13A No. 271A Vacuum Tube
- V14A No. 242A Vacuum Tube
- V4A, V5A No. 212E Vacuum Tube
- V1C, V2C No. 220B Vacuum Tube

(Continued on Page Twenty)

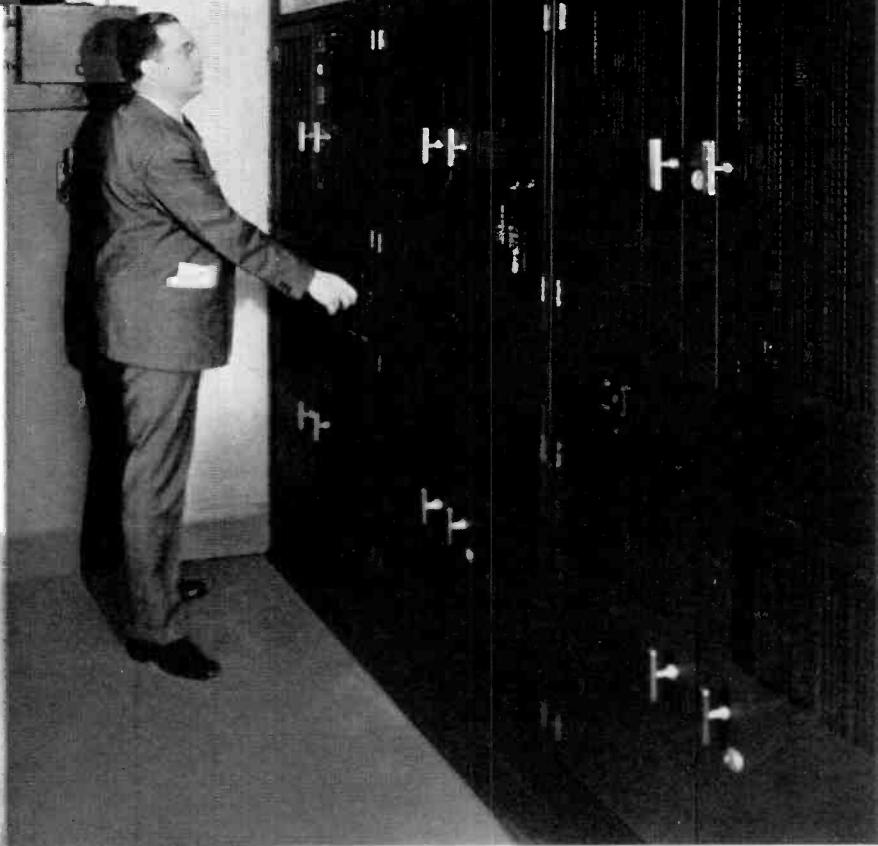


Schematic Diagram of 5 KW Transmitter showing feedback circuit.

WSAI

C I N C I N N A T I

Surmounting one of the city's highest hills, the station and tower of WSAI command the surrounding territory; its signal brings new enjoyment to the people of Ohio.



R. J. Rockwell, Technical Supervisor of WLW-WSAI, at the new all AC operated 5 KW Western Electric Transmitter.

Transmitter house and antenna of the new WSAI.

Police Radio

40,000,000 People in Nation Given Added Protection by Western Electric Equipment

Since the first wireless message winged over the air no branch of radio communications has progressed more rapidly than police radio. From the outset it has proved one of the most effective weapons in combating crime that science has yet developed. It turned what had been the criminal's surest help-mate, the automobile, against him for it charged with alarms the very air through which he was speeding. In the short space of six years police radio systems have flung their powerful networks over vast areas of the country and given added protection to millions of citizens.

Back in 1930 in Detroit, Western Electric installed the first police radio system in this country. Today more than 70 municipal, county and state police departments are using Western Electric equipment to help safeguard 40,000,000 people—approximately one-third of the country's population.

The immediate success and increasing popularity of these systems brought a pressing need for continued development in this field of radio application. As city after city joined the ranks of those using police radio, the medium frequency band, reserved for police communication, was taxed to capacity in many sections of the country. To remedy this condition the Federal Communications Commission authorized experimentally the use of additional channels in the ultra-high frequency band. Western Electric then introduced ultra-high frequency equipment which in every respect more than met the Commission's requirements.

This was a more elaborate form of police radio which permitted two-way communication—from headquarters to patrol car and back again. Transmission on these frequencies has a decided advantage as it tends to avoid interfering with other systems operating in this band of frequencies. Another advantage is the freedom from atmospheric disturbances.

Newark, New Jersey, using one-way, was the first city to put Western Electric ultra-high

Reading down: Fifty watt ultra-high frequency transmitter and receiving equipment, Nashville; radio patrol car, Westfield, N. J.; radio patrol cars, Nashville; dispatcher's room, showing Western Electric 50 watt transmitter, Westfield, N. J.

Six



Rides Ahead

New Systems Are Developed For Small Cities and Towns, Also State-Wide Networks

frequency equipment into operation. When the system had been in service one year the city's motor patrol fleet had chalked up to its credit the return of 682 stolen automobiles valued at \$170,448, had made 2,240 arrests, answered 35,777 police alarms and 2,683 fire alarms and had patrolled 763,029 miles.

Evansville, Indiana, the first city to use Western Electric ultra-high two-way equipment, also has an interesting story concerning police radio activities, which appeared in the November, 1935, issue of *PICK-UPS*.

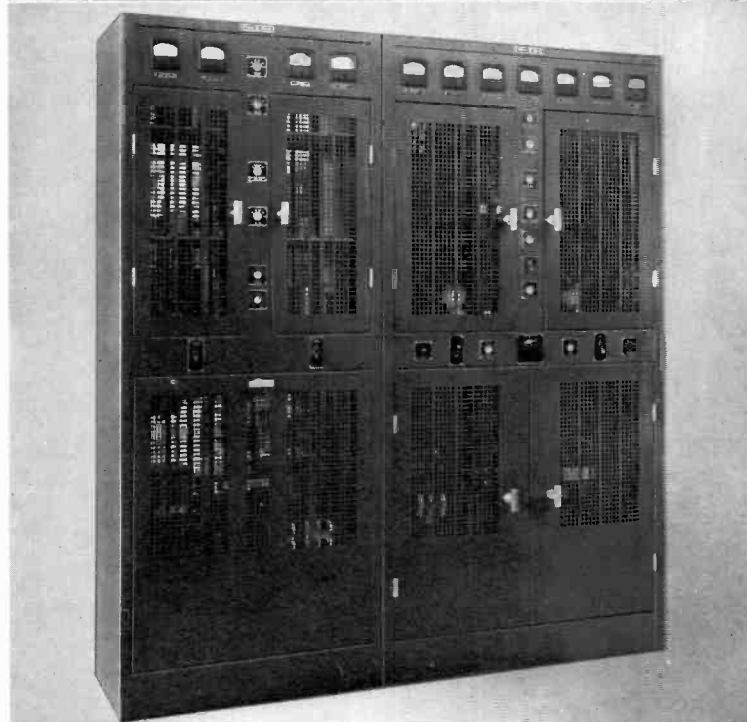
Recently the largest Western Electric installation of ultra-high two-way equipment in the country went into operation in Nashville, Tennessee. The system includes 11 two-way cars and 10 one-way cars. Two automatic receivers installed at remote locations further augment the efficiency of the system. Exhaustive tests have shown that all locations inside the city limits have highly satisfactory signals both from the main transmitter and car transmitters.

Other cities using the ultra-high two-way system are Wheeling, West Virginia; Elgin, Illinois; Manchester, New Hampshire; St. Joseph, Missouri; and Westfield and Morristown, New Jersey. In addition to Newark, New Rochelle, New York, has been operating one-way (ultra-high) for about a year.

When the Live Wire Group of the Wheeling Chamber of Commerce turned over to the city the police radio system on February 1, city officials and members of the police department lauded the new equipment. According to Chairman S. R. Morrow the group made a comprehensive study of practically every other type of police radio manufactured before deciding upon the Western Electric system. The motor patrol fleet consists of three two-way cars and four one-way cars.

Westfield, New Jersey, which has three patrol cars equipped for two-way communication uses three receivers all remotely operated. Morristown is
(Continued on Page Nineteen)

Reading down: Calling Headquarters from a Nashville patrol car; Western Electric's new 1000 watt transmitter for State, County and Metropolitan centers; Western Electric's new Headquarters equipment for small towns; car transmitter.





What's in a Station's Call

Is There Meaning Behind a Station's Call Letters? Pick-Ups Investigated; Results Will Surprise and Amuse You

By MADELEINE MOSCHENROSS

What lies behind those three little letters that roll so glibly from announcers' tongues? Like WOR, for instance, or WOW or WOV? Or those four little letters like WIND and WAVE? And WOOD and WASH and WILL and WHAM? (And who knows somewhere there may be lurking a WARP and even a WOOF?)

Roughly speaking, the reasons behind the call letters of your favorite station may be found under six general classifications:

- | | |
|--------------|-----------------|
| Civic Pride | Purely Personal |
| Universities | No Significance |
| Newspapers | Miscellaneous |

And the miscellaneous takes in anything from old ship call letters, a church and a joke, all the way to slang and an incubator manufacturer's memory.

Many and varied are the reasons given, but none so frank as that offered by Station WSAZ—the *Worst Station from A to Z!*

"About twelve years ago an ambitious young fellow by the name of Glenn E. Chase applied for a license from one Hon. Herbert Hoover, then Secretary of Commerce, to operate a radio station in

his home town of Pomeroy, Ohio," writes Fred Burns, Program Director at Huntington, W. Va.

"In his application Mr. Chase jokingly stated that due to the fact that he was making most of the equipment himself, it would probably be the Worst Station from A to Z and asked that appropriate call letters be assigned."

His request was granted promptly.

Some years later when the station changed hands and new equipment was installed, the call letters remained the same but not so the significance. Station WSAZ became *With Service from A to Z*. After all, there's that new equipment.

In Alabama there is a strip of fertile land running through the center of the state known as the Black Belt. In the center of the Black Belt is the city of Selma. And in the center of the city of Selma is Station WHBB. Upon the occasion of its initial broadcast, Judge Samuel Hobbs, Congressman for that district, referred to the station as the *Whole Heart of the Black Belt* . . . and that's how slogans are born.

The letter W preceding call letter combinations is a government prefix which indicates that

generally such stations are located in the east, while stations in the west are usually identified by the government prefix K. Therefore, often as not, civic-prideful stations find the *W* a wonderful help. So we find a *Wonderful Charleston, S. C.* (WCSC) . . . a *Wonderful City of Asbury Park, N. J.* (WCAP) . . . *Wonderful Dynamo of Dixie* (WDOD) which is in Chattanooga, Tenn. . . . WCOA is Pensacola, Florida's *Wonderful City of Advantages* . . . and typically topical is the *Wonderful Isle of Dreams* (WIOD), whose transmitter is located on an enchanting tropical island in Biscayne Bay directly off Miami Beach.

Station WEBR says "*We Extend Buffalo's Regards,*" but "*Why Stay Up North?*" asks WSUN in the Sunshine City of St. Petersburg, Florida. Its more staid sister station is content merely to give its geographic position, which happens to be West Florida. Thus, we have Station WFLA.

WFLA is the result of an early dream of a Florida real estate developer — one George H. Bowles. In 1925 he got the broadcast fever, purchased a second hand 500 watt transmitter and opened a station bearing his initials, in Clearwater. Later he sold the whole business and it became WFLA.

The old 500 watter (W. E. 1-A), now replaced by the present 5,000 watt 105-C transmitter, occupies a place of honor in the Smithsonian Institute at Washington.

We are advised to *Watch Akron Develop Commercially* by Station WADC, and to *KUM TO HOT SPRINGS!* by KTHS, the famous Arkansas resort's station. KTHS were originally ship call letters, but so potent has been the success of the slogan that it is said to be one of the most shining examples of cogent slogans on or off the air.

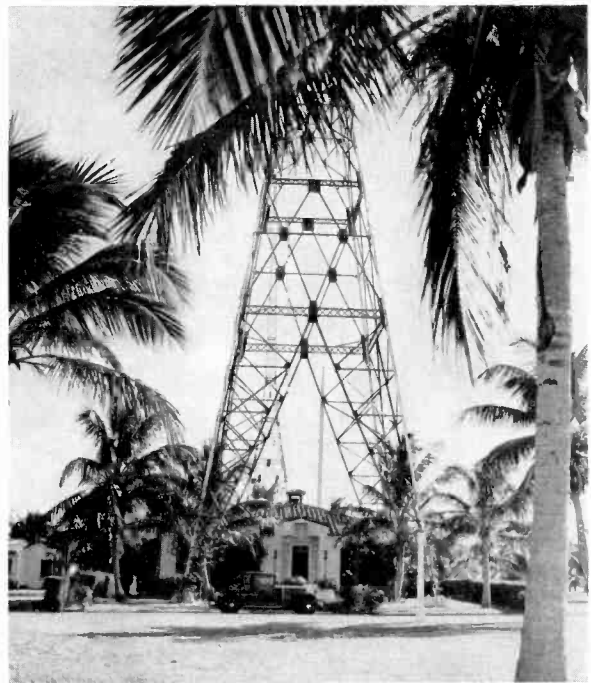
With true Southern hospitality, Station WIOC, in Savannah, Ga., flashes *Welcome To Our City* at regular intervals during their daily broadcasts, while WIL cries *Watch It Lead!* in St. Louis, Mo. Its favorite slogan "The Biggest Little Station in the Nation" however, has considerably more appeal. Who wouldn't listen in?

Aptly identified is the *World's Play Ground* through Station WPG in Atlantic City.

And in the uptown section of New York City, WLWL broadcasts over a limited area on a *We Listen We Learn* basis . . . a short distance away WFAB goes over the ether via the Fifth Avenue Broadcasting Corporation . . . while WNEW is identified in a three-fold manner: stations are maintained in NEWark, N. J. and NEW York and the combination is NEW on the air. This does cover the whole thing pretty thoroughly.

But what WNEW does not bring out is the fact that this particular station is the milkman's delight. It broadcasts twenty-four hours a day!

WTNJ is located in the state capital of New Jersey and simply indicates Trenton, N. J. . . . while fiery little Mayor Fiorello LaGuardia's pet, Station WNYC (and are those police quartettes honeys!)



When a station is built upon a beautiful tropical island and its call is WIOD, who could help but slogan it—"Wonderful Isle of Dreams."

means just what it says.

Although sloganless, Station WRR of Dallas, Texas, has long cherished a compliment paid by a blind listener who stated WRR, as far as he was concerned (and that went for other shut-ins, too) meant "*Worries' Ready Relief.*"

Two popular Maryland stations are WBAL for Baltimore (what? no Wonderful?) and WFBR, Maryland's pioneer radio station. WFBR is unique in that it was formerly owned by the Fifth Regiment Maryland National Guard, the first radio station in the country so owned. The call letters stand for *World's First Broadcasting Regiment.*

A sort of Tale of Two Cities story involves Station KSFO, in San Francisco. It maintains complete studio facilities in both metropolises—San Francisco and Oakland.

Is there a station in the audience yearning for increased power? Then let it take heed of the words of Paul Oury, General Manager of the Cherry & Webb Broadcasting Co., Providence, R. I., in connection with WPRO.

"In our early efforts in merchandising the station, we used this fact to back up our contention that WPRO was designed to render a service to the people of Providence and we made every effort to tie up all activities, civic, educational, charitable, etc., which would bring out the significance of this service. Through these efforts, we collected enough data, such as letters of appreciation from our listeners, from civic, educational, religious and charitable bodies, to enable us to present a formidable case to the Federal Communications Commission for increased power, which

(Continued on Page Twenty-one)

KGDM Builds a Home for a New 1000 Watt Transmitter

Late in 1935 Station KGDM at Stockton, California, changed over from its old power of 250 watts when the new Western Electric 304B 1000 watt transmitter went on the air.

The modern building which houses the transmitter is a white stucco structure 25 feet wide and 50 feet long. A room at the right, measuring 15 by 20 feet, serves as an emergency studio and also gives space for future expansion. The center room, 15 by 17 feet, contains the transmitter. Directly in front of this is a 6 by 17 foot lobby. Next to the transmitter room is a small 7½ by 15 foot room for records, parts and tube storage. A workshop, measuring 8 by 20 feet, completes the layout.

From the roof rises the 204 foot self supporting Blaw-Knox antenna. So solidly is KGDM's home constructed that it is well able to support this towering structure. The entire framework of the building is of steel, electrically welded to insure perfect bonding. The foundation, floor slab and piers for the tower support are heavily reinforced concrete. All steel in the concrete is electrically welded to form an electrically solid net-work.

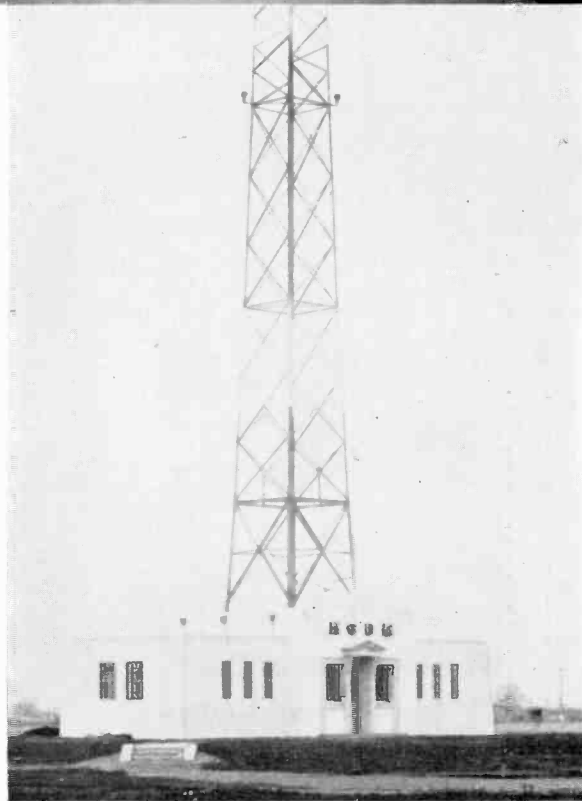
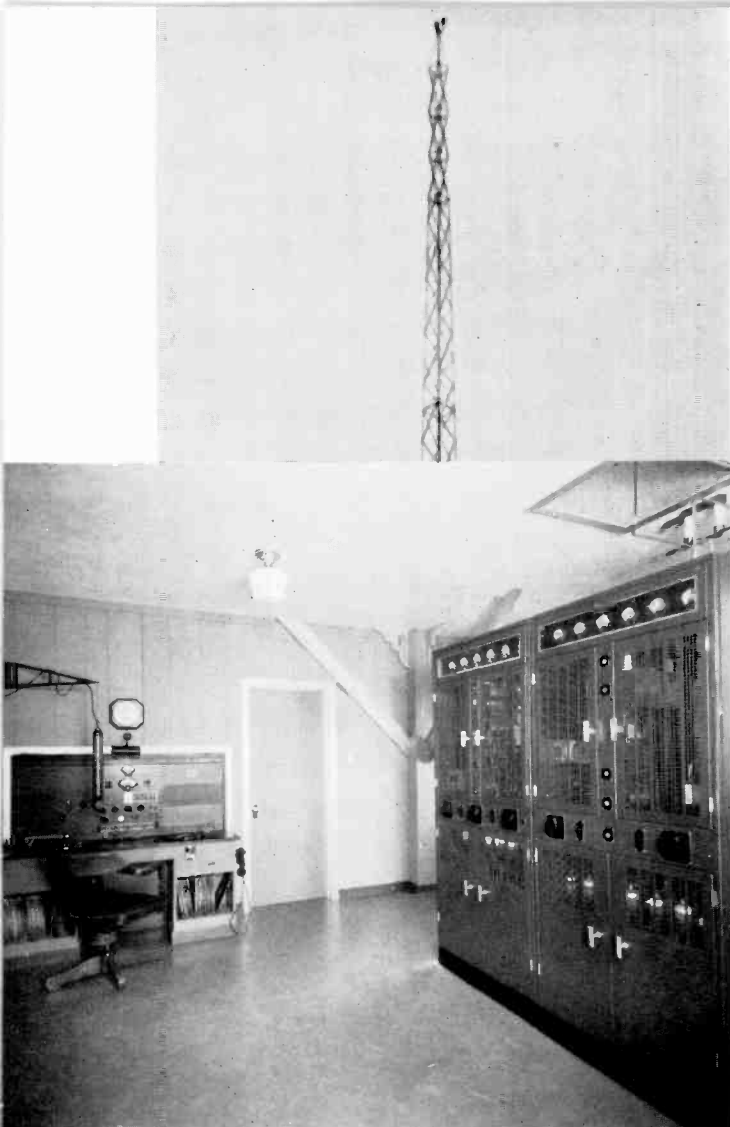
Illumination of the tower is accomplished by using a specially designed motor generator set. The generator is mounted on four 10 inch Isolantite insulators with an Isolantite coupling shaft.

Visiting engineers have been particularly enthusiastic about the operating console because of its space saving features and flexibility of operation. It is set in a wall with a lift panel in the adjoining room giving easy access to the rear of the equipment.

In the console are input amplifiers, power supply, input controls, circuit patching jacks, line equalizers, talk-back and monitor speaker and microphone switching relays. Two turntables are installed on the desk for phonograph records and sound effects. Slow speed turntable equipment is mounted on a carriage which may be wheeled about at the operator's convenience. A Western Electric 82A Amplifier, 700A Volume Indicator, 8A Rectifier, 263A Voltage Regulator and a 262A Metal Panel are installed on the rack in the console.

Programs from Station KGDM are released from its uptown studios which are located in the Peffer Furniture Store. When the new equipment first went on the air only three test programs were released after 1:00 A.M. (Pacific Standard Time) as the station is licensed for daylight broadcasts only. However, the voice of KGDM travelled far and wide. Reports were received from all the states as well as Canada, Mexico, Alaska, Hawaiian Islands and New Zealand.

The entire framework of KGDM's home is of electrically welded steel—a solid foundation for the 204 foot Blaw-Knox antenna rising from the roof. The Western Electric 304B Transmitter is shown at right of picture.



Use Audiometers to Test Hearing of 700,000 New York City Children

In a classroom on the lower east side of Manhattan 35 children using head-sets are "playing telephone." A phonograph record in an instrument on the teacher's desk slowly rotates but the only sound is the faint scratching of pencils. Through the earphones a voice is reciting a list of numbers which the children record on paper. To them it is a fascinating game. In reality a scientific test is being conducted by means of an audiometer to determine the acuity of each child's hearing. To those interested in the welfare of children this "listening game" represents a part of one of the most important programs ever introduced into the school room. Within the past two years over 700,000 children in New York City have been tested by this method.

These tests constitute a major part of a project started in 1934 under the Civil Works Administration, to conserve the hearing of New York City school children. Its aim was to ascertain hearing conditions of all children enrolled in classes from the third through the ninth grades and to make provisions for the medical care and education of those needing such service because of hearing defects.

It was a gigantic undertaking which would have been practically impossible to achieve before the advent of the audiometer. Formerly hearing tests were made by having the children listen to the ticking of a watch or to some one whispering. To test accurately over half a million children in so short a space of time by this antiquated and unreliable method is inconceivable in this day when scientifically correct apparatus is available. Before the project started the audiometer had been used in some of the city's schools with highly satisfactory results. Not only can the instrument test as many as 40 children at a time but also it shows the percentage of hearing impairment.

The project has had the enthusiastic backing of educators and medical men who have long

realized that accurate hearing tests for school children, conducted periodically, are fully as important as sight and dental examinations.

Daniel Caplin, assistant director of health education in the schools, assisted by Miss Estelle E. Samuelson, supervisor of educational work of the New York League for the Hard of Hearing, mapped out the program. A staff of 240 was organized including technicians trained to conduct the tests, lip-reading teachers, case workers, otologists, statisticians and clerks. Thus the stage was set and the project swung under way.

Testing teams composed of four members covered the schools of the five boroughs. One prepares the audiograms or test sheets for the children, another takes care of the administrative work, such as notifying the teachers and arranging the groups of children. A third conducts the test while the fourth member alternates with the tester and assists the others on the team when necessary.

Tests are conducted with the 4A and 2A Western Electric Audiometers. The 4A, which can test from 8 to 40 children at a time, is used first to determine the hearing of conversational or speech tones. The children record numbers which they hear spoken by both a male and a female voice. Those discovered in the first test as possibly having impaired hearing are given a second test with the same machine. By this time any psychological element of fear or unfamiliarity with the equipment is eliminated. Thus the second test gives a fairly accurate picture of the child's hearing. Those with below normal hearing are then

(Continued on Page Sixteen)

How the Western Electric 4A Audiometer is used to test hearing of New York City children.



Electrical Stethoscope Aids Heart Diagnoses

One day about three years ago a student attending the Louisiana State University Medical Center discovered that he could not hear heart beats with the ordinary acoustical stethoscope and thereby faced the possibility of shattered plans for his career. It was not until he had entered the third year of training and had started the study of the heart that he became conscious of a hearing defect. The discovery came as a decided shock for he could hear ordinary conversational tones perfectly. Seeking some means of overcoming this handicap, so disastrous to a doctor, he finally visited Bell Telephone Laboratories.

And that is the story behind the development of the Western Electric portable stethoscope.

The problem of the medical student immediately aroused the interest of the Laboratories' engineers. If they could devise a portable instrument which would amplify heart sounds and yet be small enough for practical use the problem might be solved. With such a model in mind they set to work.

In constructing the device, the engineers found they could build a small instrument that would not only amplify heart beats but could also be used to cut down on normal heart sounds and tune in by means of a "filter" on any murmur sounds which might be present.

Their success meant success for the student doctor. With the aid of the electrical stethoscope he was able to complete his training. Meanwhile his story came to the attention of numerous medical men throughout the country. Not only those having the same handicap but others wanted to know more about the new apparatus.

A number of doctors put it to the test with highly satisfactory results. The filter device proved to be a decided aid in difficult diagnoses as it emphasized faint murmur sounds which are so significant. The stethoscope also worked to good advantage where doctors were called upon to listen to heart sounds in noisy places.

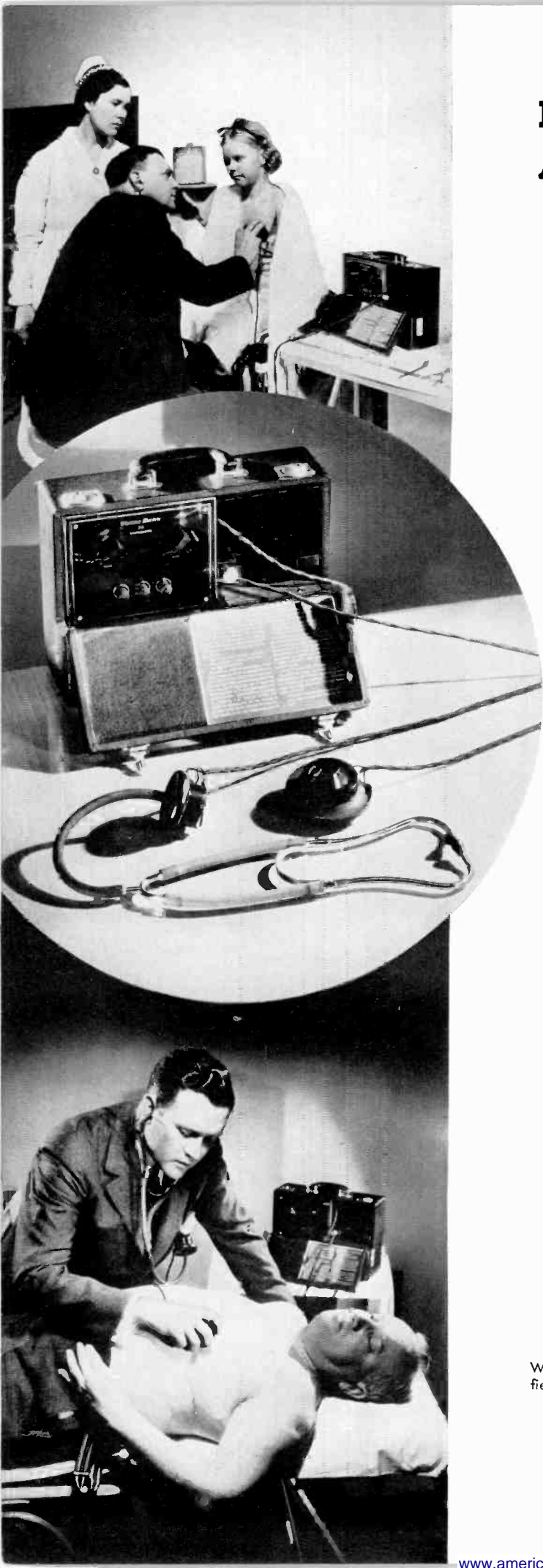
Before long the stethoscope began going the rounds of various hospitals. When requests for the new instrument started pouring in from all sections of the country Western Electric decided to manufacture it on a commercial basis. It is known as the 3-A Portable Electrical Stethoscope.

The instrument is completely contained in a fabrikoid bound case, smaller than a doctor's instrument bag. It measures 12½ inches in length, 8¾

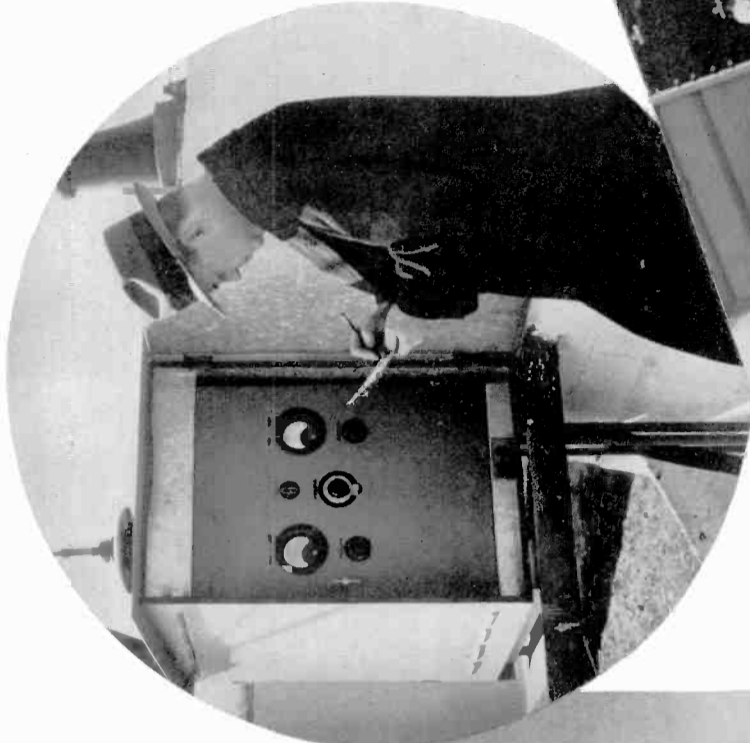
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Western Electric's new portable electrical stethoscope greatly amplifies the sounds of the heart—a boon to all doctors and particularly to those who have impaired hearing.

Twelve



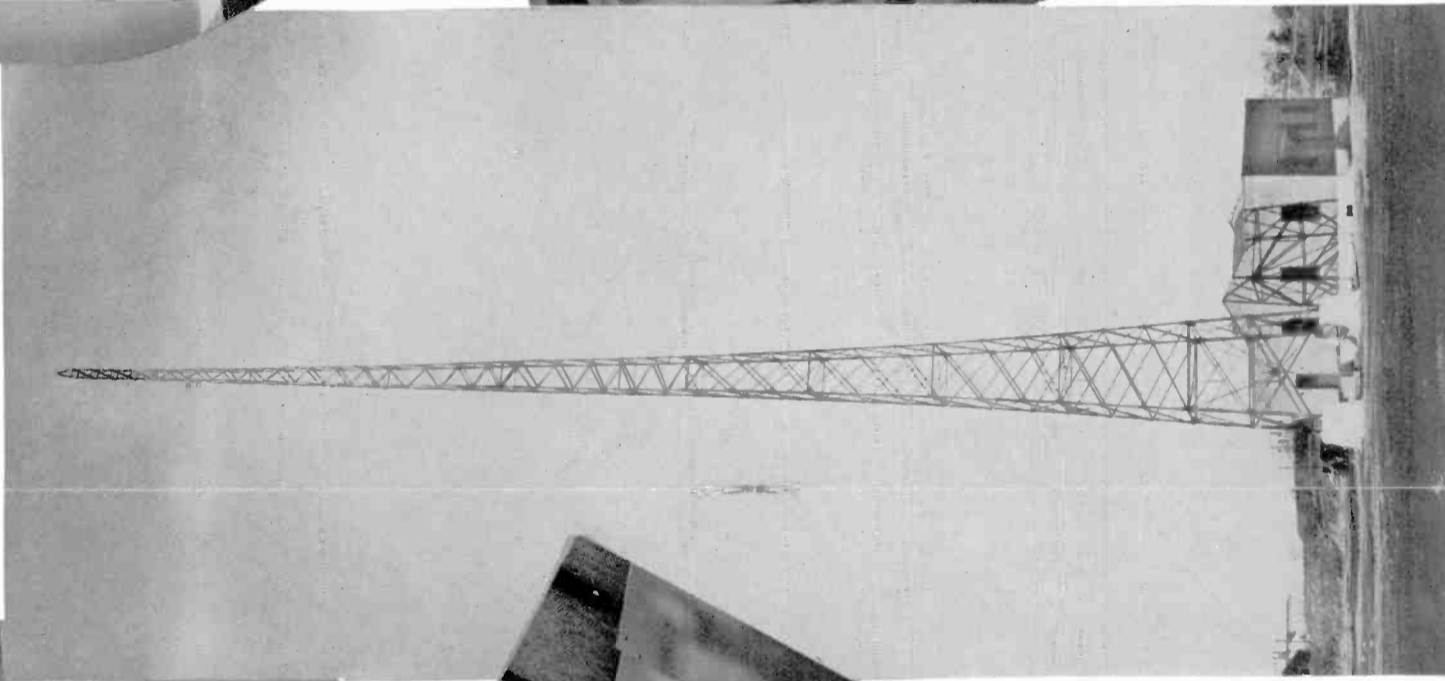
Owned and operated by Loew's, Incorporated, WHN, New York, has started many beginners on the road to stage and radio fame. Its studios are in the very heart of "The Great White Way"; the Western Electric transmitter is ideally located in Astoria, L. I.



The antenna coupler unit—
Windham checking antenna
current



Vertical Radiator and transmitter building

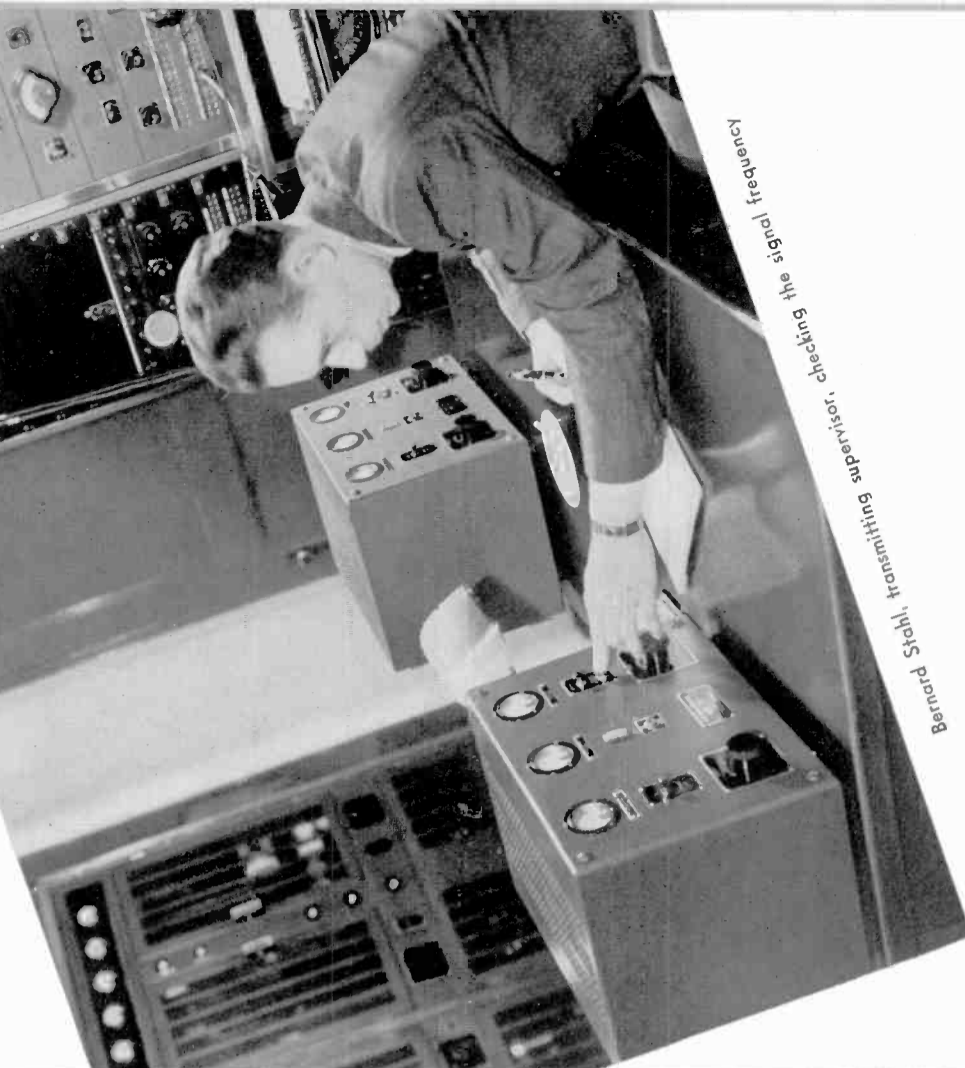


Gordon R. Windham, Chief Engineer, at the panels of 5 KW Transmitter. The two panels at the right comprise a Western Electric 1 KW Transmitter used for standby

Western Electric Station Speech Input Equipment



Motor-Generator Room



Bernd Stahl, transmitting supervisor, checking the signal frequency

700,000 Children Tested

(Continued from Page Eleven)

rested individually by the 2A Audiometer which measures the hearing at all tone levels. Such a thorough examination leaves little chance for error.

The next step in the program is contact with the parents to gain their permission for otological examinations and for cooperation in carrying out recommendations. These examinations include a complete check-up on ear, nose and throat conditions.

The otological examination service does not include treatment. However, those unable to afford private physicians are assisted by case workers, who follow up the recommendations in arranging for treatment in various clinics throughout the city.

After the diagnosis some children are referred to lip reading classes in the schools on recommendations of the otologists. Others are sent to the school for the deaf. In this latter group are those between kindergarten age and eight years, whose hearing loss is 35 per cent or more, and those over eight years of age with 50 per cent loss. Still others have been recommended as front seat cases or for speech training, hearing aids or medical care. Children who are under treatment are retested at certain intervals to check on the progress made.

Since the project started tests have been given to 645,467 pupils in 709 elementary and junior high schools and to 57,720 in 28 high schools. In parochial schools 6,667 tests have been made. The tests in the public elementary and junior high schools showed 20,845 children or 3.2 per cent to have impaired hearing in both ears, 26,567 or 4.1 per cent with impairment of the right ear and 24,915 or 3.5 per cent with defective left ears. Of the 57,720 high school pupils tested 1,035 or 1.8 per cent had impairment in both ears; 1,798 or 3.1 per cent in the right ears and 1,373 or 2.3 per cent in the left ears. As a result of the survey lip reading instruction has greatly increased and is being taught in 373 schools to 6,139 children.

Dr. Harold G. Campbell, Superintendent of Schools, City of New York, as well as his associates who have observed the results of the survey, have highly commended it. As the work has progressed the audiograms and otological reports have revealed some extremely interesting data. For instance, colored children and those attending parochial schools show less impaired hearing than white children in the public schools. Why? Perhaps the answer to this and to other more fundamental questions regarding hearing defects will be forthcoming since the survey is encircling broader fields. Research work has been started on comparing hearing deficiencies of boys and girls. Nationalities are likewise being studied. Also audiometer and otological reports have been turned over to Teachers' College of Columbia University for psychological studies along these lines.

PICK-UPS

Station WHN Widens Voice Range With New 5 KW Transmitter

One of the Nation's Oldest Stations
Increases Power Three Times in Three
Years; Western Electric Each Time

This program comes to you on your dial at 10-10 WHN . . . New York.

For a decade and a half these call letters have winged over the air from the very heart of the Gay White Way. According to broadcasting archives WHN was one of the first stations in the country. During the early post-war days when night clubs were springing up like mushrooms and upper Broadway and its environs were known as the "Roaring Forties" radio fans were adjusting their earphones and listening in to WHN. Owned and operated by Loew's, Inc., and thus closely affiliated with the theatrical and motion picture world the station was at that time in a position to offer the public more varied and entertaining programs than any other New York City broadcasting station.

Motion picture stars on hurried visits East from Hollywood were brought before the microphone. The station was also one of the first to go in for night club broadcasting. From the stage of the Silver Slipper, swanky after-theatre rendezvous, came the voice of N.T.G. introducing his bevy of Follies beauties. Ruby Keeler, Harry Richman, Phil Regan and Whispering Jack Smith were among other celebrities on the programs. The idea of the amateur radio hour as it is known today and which has grown to be one of the most currently popular programs, originated in WHN's studio.

When new stations began springing up in and around New York and the big broadcasting networks swung into action WHN, being a local station backed by an organization primarily interested in the motion picture industry, made no particular effort to compete with stations having a national hook-up.

However, three years ago the station took a new lease on life and began to increase its broadcasting facilities. Bell Laboratories engineers were engaged to conduct a field strength survey for a transmitting site at Astoria, Long Island. Up to this time the transmitting equipment had been located on the roof of Loew's State Theatre at 45th Street and Broadway.

During the summer of 1933 the Astoria station was erected and on Thanksgiving Day of that year WHN went on the air with a new Western Electric 250 watt transmitter. In the meantime Loew's had

purchased two other local stations which were operating on the same frequencies to gain full time operation for WHN.

Since then the station has made rapid strides in power expansion. Within six months it was operating on 1,000 watts. This year WHN stepped up its power still further by installing a new Western Electric 5 KW Transmitter. Although the transmitting station at Astoria was constructed with the idea of going to a 5 KW at some later date, it was deemed advisable to make a number of building changes before installing the new transmitter. Broadcasting equipment developments have gone ahead so rapidly that it was impossible to foresee two years ago just what the lay-out requirements would be for the 5 KW of 1936. The equipment was officially dedicated to the radio audience on March 9th when Governor Lehman made an address over the air from the State Capitol at Albany, New York. Fundamentally, the transmitter is similar to that of Station WSAI, described elsewhere in this issue.

With increased signal strength the station not only adequately covers the greater metropolitan area but also lays down a consistently strong signal in the New England cities along the shore of Long Island Sound. Dead spots in certain sections of New York City were eliminated when the new system went into operation. WHN occupies one of the most strategic transmission sites in the city situated as it is in the geographical center of Manhattan, Bronx and Queens. According to WHN no other 5 KW station in the country serves as many radio receiving sets within a radius of ten miles.

That the station is growing in popularity is evidenced by the increasing number of fan mail letters which are received daily. The M.G.M. Movie Club draws from 6,000 to 10,000 letters a week. Recently the WHN Amateur Hour brought in 80,000 letters on a single hour program.

On the staff of WHN are L. K. Sidney, managing director; Herbert L. Petey, associate director; Mitchell Benson, program director; Gordon R. Windham, chief engineer; Paul Fueling, assistant engineer, and Bernard Stahl, transmitting supervisor at the Astoria Station.

PICK-UPS

Thirteen



Recording a bird song by means of a Western Electric Microphone attached to a sound concentrator.

Recording Songs of Birds

Electrical sound recording during the past five years has proved a valuable tool to the naturalist. It has made possible recording the sounds of wild birds on photographic film and the transferring of these recordings to phonograph discs. The records are now used extensively by bird students, Boy Scout and Girl Scout troops, nature study groups and in schools where they are proving invaluable as a means for learning to identify birds by their songs. Until records were available the study of bird song had been extremely difficult.

The film is also used for the intensive study of bird sound characteristics. Thus the frequency of the sound, its harmonic qualities, the speed with which it is produced, the length of the individual notes and other factors that go to make up bird sound, can be studied under a low-powered microscope. The perfection of sound recording devices alone has made this possible.

At the Ornithology Laboratory, Cornell University, the pioneering work has been accomplished and the first set of bird sound records produced. Because birds do not sing normally in captivity, it has been necessary to make these recordings out-of-doors.

Since 1931, when these experiments were started, recordings have been made of approximately 200 species of North American birds. These are the first recordings of their kind ever made on this continent, and comprise the largest collection of bird sound recordings in the world.

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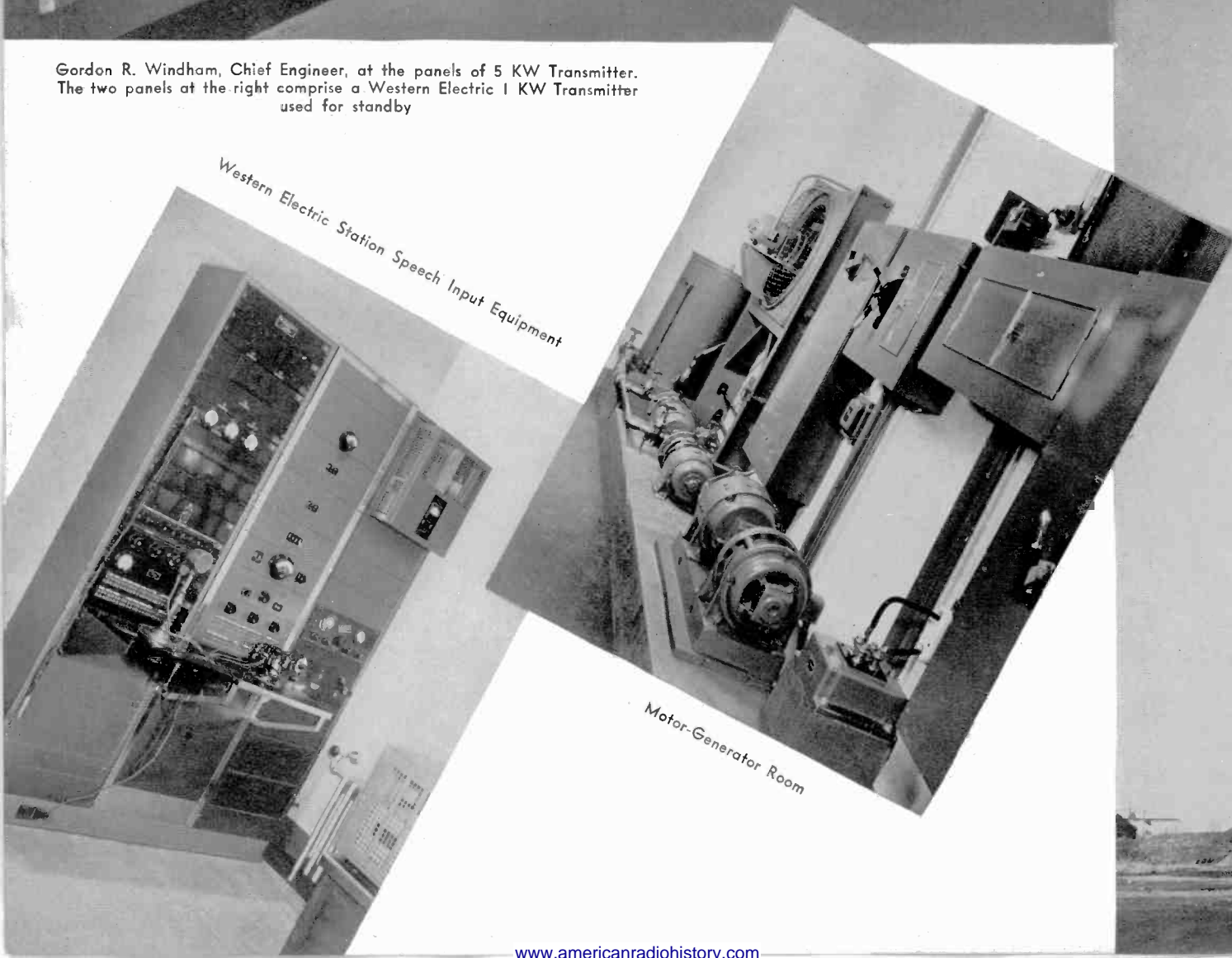
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Vertic

Gordon R. Windham, Chief Engineer, at the panels of 5 KW Transmitter. The two panels at the right comprise a Western Electric 1 KW Transmitter used for standby



Western Electric Station Speech Input Equipment

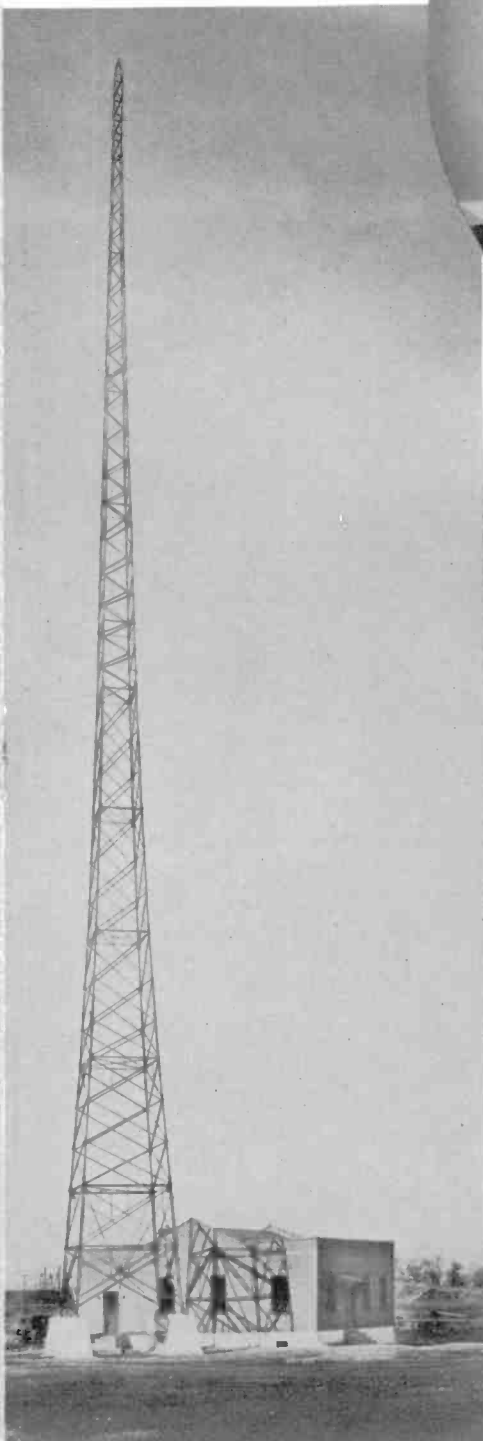
Motor-Generator Room

WHN

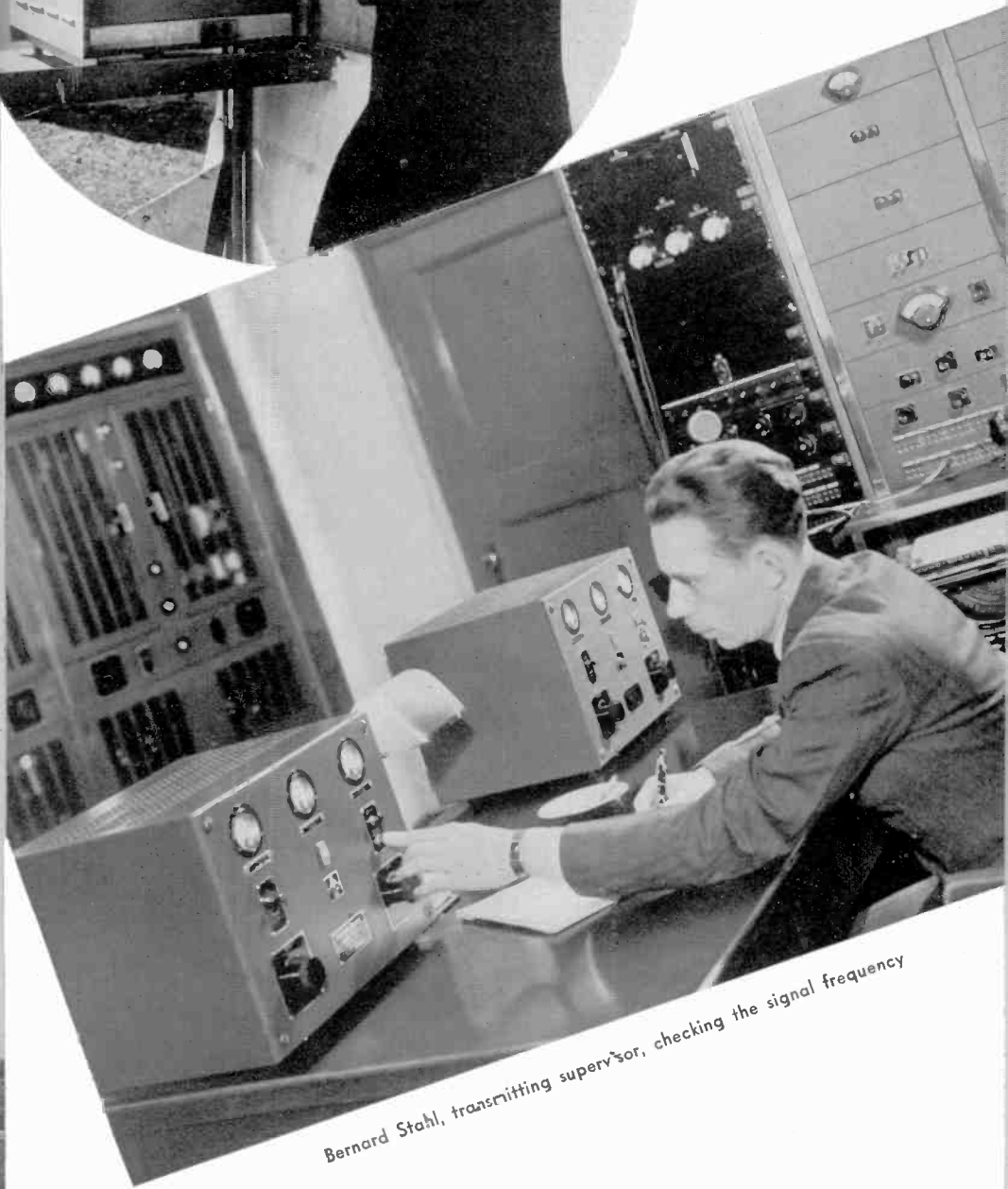
10-10

Owned and operated by Loew's, Incorporated, WHN, New York, has started many beginners on the road to stage and radio fame. Its studios are in the very heart of "The Great White Way"; the Western Electric transmitter is ideally located in Astoria, L. I.

Radiator and transmitter building



The antenna coupler unit—
Windham checking antenna
current



Bernard Stahl, transmitting supervisor, checking the signal frequency



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700,000 Children Tested

(Continued from Page Eleven)

tested individually by the 2A Audiometer which measures the hearing at all tone levels. Such a thorough examination leaves little chance for error.

The next step in the program is contact with the parents to gain their permission for otological examinations and for cooperation in carrying out recommendations. These examinations include a complete check-up on ear, nose and throat conditions.

The otological examination service does not include treatment. However, those unable to afford private physicians are assisted by case workers, who follow up the recommendations in arranging for treatment in various clinics throughout the city.

After the diagnosis some children are referred to lip reading classes in the schools on recommendations of the otologists. Others are sent to the school for the deaf. In this latter group are those between kindergarten age and eight years, whose hearing loss is 35 per cent or more, and those over eight years of age with 50 per cent loss. Still others have been recommended as front seat cases or for speech training, hearing aids or medical care. Children who are under treatment are retested at certain intervals to check on the progress made.

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JACK POPPELE—WOR

Mention WOR to any radio engineer in the country and the name Jack Poppele hops into the conversation—for WOR and Poppele are synonymous.

Fourteen years ago young Poppele and WOR joined forces. This partnership took place four days before the station made its debut on the air. The newcomer was not only chief engineer—he was in fact the whole engineering department. His first job was to prepare the small 250 watt transmitter for its initial broadcast.

Since that time Poppele has been the leading figure in all the developments which have brought WOR from its modest beginnings to the position of nation-wide prominence the station holds today. He has planned and maintained a research laboratory of his own in which many devices have been developed and are now in use at WOR.

During the passing years, WOR has enjoyed a steady rise in power and prestige. Poppele has seen and helped it grow from 250 watts to 500—5,000 and finally to its present rating of 50,000 watts. With this latest step upward WOR became one of the first commercial high fidelity stations in the country. The one-man department of 1922 likewise has expanded until today it includes 40 members.

Like many radio engineers Poppele started in his chosen field during the war as radio operator on commercial ships and in the army transport service. Turning back the pages still further we find that his interest in radio actually began at the age of 14 when he started tinkering with his first old spark coil set of the 1912 vintage.

Born in Newark, New Jersey, he attended schools there and studied electrical engineering at Newark Tech and later at Penn State before the war launched him on his first real radio job.

A tall, dark, keen, intense man, Poppele's life is his job. He is continually on the look-out for something new to improve and develop in radio. He has become known the nation over as one of the outstanding radio engineers of the day and has often been called upon to assist other engineers in all parts of the country. He has appeared before many technical organizations and engineering societies to speak on numerous phases of broadcasting. In June of 1935 he presented a paper on the new Western Electric 50 KW transmitter at WOR before the annual convention of the Institute of Radio Engineers in Detroit.

One of the most recent honors paid him was his appointment as technical advisor to the Police Radio Survey Commission of New Jersey. The Commission, authorized by the State Legislature and appointed by Governor Hoffman, was created to combat crime in New Jersey by means of a state-wide radio telegraph hook-up. He also served as consultant engineer on the Newark Police Radio System.

Poppele is a member of the Institute of



The Chief Engineer of WOR — regarded as one of the most prominent radio men in the country today.

Radio Engineers and several clubs in Northern New Jersey. He is the author of many articles on radio engineering and broadcasting practices. One of the best known articles which has appeared under his name in the past few years was titled "Studio Procedure and Microphone Technique."

He is the father of two girls. His one hobby is taking amateur motion pictures.

Police Radio Aids in Floods

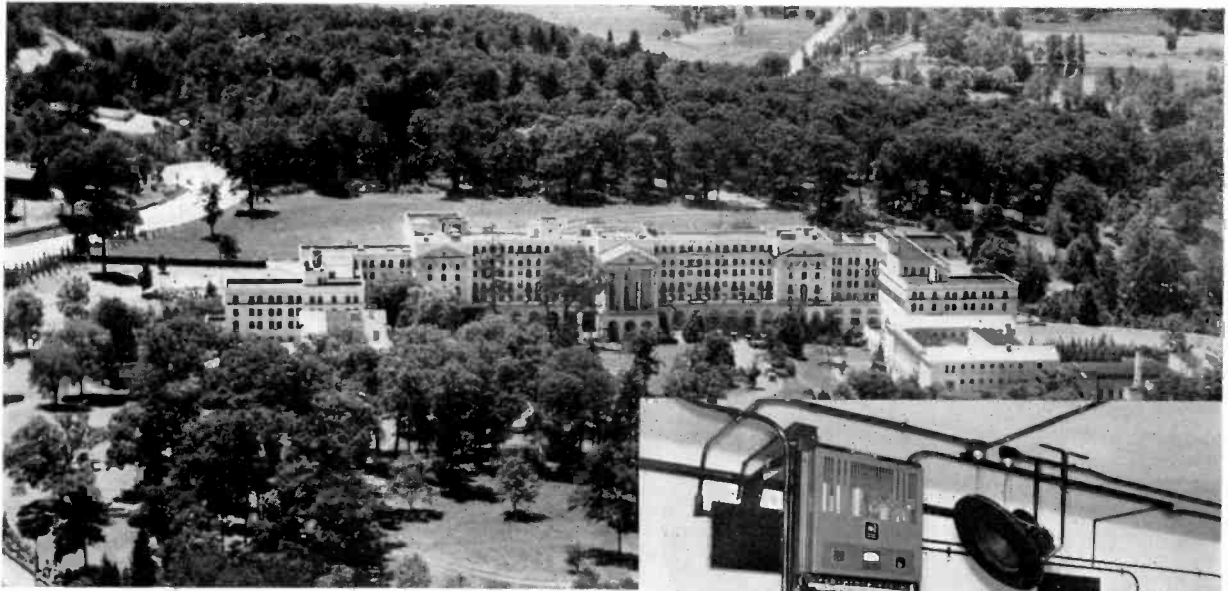
During the recent flood disaster in Manchester, New Hampshire, Western Electric two-way police radio system provided a fast and effective medium for gathering information, spreading warnings, and rescuing victims marooned on upper floors and house-tops.

Messages that flashed back and forth between headquarters and patrol cars involved locating missing persons, recovery of lost property, prevention of looting and even procuring employment.

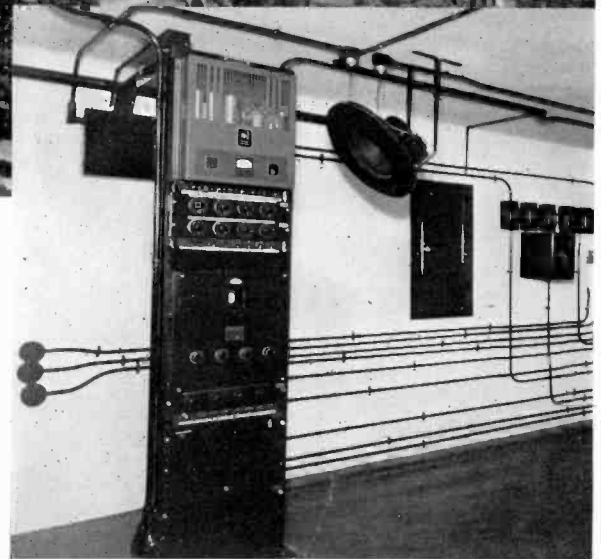
As the flood waters began to undermine part of the dam at Goffs Falls and it became apparent that it would require dynamiting to save the situation police radio sent out an urgent call for City Surveyor Frank B. Kennedy. In two minutes he was located and on his way to the dam.

When the local zoo was inundated and a lion and a leopard swam to freedom and joined a group of terrified refugees on a roof a police radio crew went to the rescue. They regretfully shot the animals. Later they lassoed a tame bear to safety as he was drifting complacently downstream on an ice cake.

After the waters receded radio motor patrolmen explored devastated areas and sent back warnings to prevent people from returning to their homes until precautions had been taken to check the spread of disease and pestilence.



Western Electric Public Address equipment installed in the Greenbrier Hotel, White Sulphur Springs, West Virginia. Above: Aerial view of The Greenbrier and cottages showing part of the 7,000-acre estate in the heart of the Alleghenies. Golf, tennis, riding, swimming, polo and archery are among the sports the resort has to offer its guests the year round.



Famous Resort Adds Public Address to Its Facilities

Early in the nineteenth century White Sulphur Springs, West Virginia, had gained renown as "that central and most famous of Springs," where "the belles, rather than the matrons, held sway." Long before those glamorous days the springs had become known for the curative properties of the waters. The first white person known to make use of the spa was a Mrs. Anderson, who was tortured with rheumatism. In 1778 she made a 15-mile journey on a crude litter and after being bathed in a hollow log filled with sulphur water was able to return to her home completely cured.

For 42 summers the resort improved its facilities, added to its popularity, and gained renown in the North as well as the South.

When, in 1867, General Robert E. Lee came to the resort to spend the summer in a cottage in Baltimore Row it had become "The great lion of the Virginia Mountains." Since the late 60's there have been many changes. The magnificent Greenbrier which replaced the famous "Old White" in 1913 was further enlarged in 1931 and has since been known as one of America's most beautiful resort hotels. The acreage of the property has increased from the original eight until today it is a vast estate of 7,000 acres.

With the installation of the Western Electric Public Address System the Greenbrier has again lengthened its list of facilities for the convenience and enjoyment of its distinguished patrons.

The system is similar to that used in the Waldorf-Astoria Hotel and was installed by the Graybar Electric Company under the supervision of R. H. Patterson, consulting engineer of White Sulphur Springs, Incorporated. The new amplification unit, consisting of one control panel, 11 speakers and a powerful radio, allows complete switching and tuning facilities for voice, orchestra, radio and organ.

Programs held in the auditorium of the Greenbrier may now be heard in the main dining room, and the daily organ recitals at 11:30 A.M. and 4:30 P.M. are now broadcast to the auditorium, the main dining room, the west terrace, the lounges and to the casino.

By means of this new amplification system the major sports contests may be heard by both those guests in the hotel and those lunching at the casino.

In addition to its use for broadcasting the music of the Greenbrier Meyer Davis Orchestra and radio programs, the public address system proved a convenient facility in broadcasting the programs which such prominent organizations as the National Wholesale Druggists and the Investment Bankers Association of America held in the Greenbrier auditorium last fall.

Police Radio Rides Ahead

(Continued from Page Seven)

using two two-way patrol cars at the present time.

Elgin has two squad cars equipped with radio but Marshal Joseph G. Huber, whose initial efforts were partly responsible for the city obtaining the two-way system, hopes to have two additional cruisers in operation later this year. During a series of tests two-way conversation with headquarters was carried on over a distance of 12 miles.

Since the system went into service the chief of police of Omaha, delegations from Joliet, Aurora, Evanston, Du Page County, Illinois, and visitors from other cities have travelled to Elgin to see and hear the equipment in operation.

St. Joseph, the latest city to put the system into operation, will use from 12 to 14 cars installed with two-way equipment. This is one of the many cities which has raised funds for its police radio system by popular subscription. The plan was instigated by Charles Enos, police chief. With the cooperation of the City Council, Mr. Enos organized a policemen's ball. Individuals were charged one dollar. Special patron's tickets sold for \$10 to the larger industrial organizations, banks and stores of the city. Because such institutions would receive greater benefits from increased police protection they were asked to bear a heavier share of the expenses. The City Council grew enthusiastic over the idea and offered to donate a sum equal to the amount raised. To the surprise of those sponsoring the affair, tickets brought in \$6,500.

In addition to the 60 cities scattered over the country and using Western Electric police radio systems, six states and five counties are similarly equipped. The states are Illinois, Indiana, Iowa, Minnesota, Ohio and Texas. Illinois, the latest state to join the list, placed its order with the Graybar Electric Company after making an intensive study of various police radio systems. The equipment consists of seven 1,000 watt transmitters together with speech input amplifiers, microphones, remote control equipment and other supplementary apparatus.

Counties using Western Electric systems are Denver County, Denver, Colo.; Nassau County, New York; Orange County and San Francisco County, California, and Winnebago County, Wisconsin.

Indicative of Western Electric's leadership in the field of police radio is their recent introduction of two new systems — the 309B radio transmitting equipment which operates on the medium frequency band and the 216A transmitter for ultra-high frequency broadcasts.

The 309B equipment provides all the latest improvements for police radio communication in cities, counties and states where large areas must be served. In this equipment the new 90A Amplifier is employed to increase the power output of the 15A (100) watt transmitter to 250, 500 or 1000 watts. Both the transmitter and amplifier are AC operated.

The 216A Radio transmitting equipment, A C operated, is designed especially for small towns as it allows them to utilize the most economical police headquarters' equipment for complete coverage of the requisite small areas. Larger cities may also use it in segregating each police district or section into a complete radio unit within itself — each operating on its own frequency. Sometimes better transmission is obtained by placing several low powered transmitting equipments throughout a large area than by using one high-powered transmitter at police headquarters.

Thus with the introduction of each newly perfected piece of equipment Police Radio moves steadily forward to give further and more complete protection to life and property throughout the country.

New Electrical Stethoscope

(Continued from Page Twelve)

inches high and $4\frac{3}{4}$ inches deep. It consists essentially of a sensitive microphone or transmitter of special design to pick up the heart sounds, a vacuum tube amplifier to amplify them and a high quality receiver which reproduces them.

The stethoscope is extremely simple to operate. The receiver is so arranged that the physician may attach it to the tubes of his regular stethoscope. He fastens the receiver to his coat with a clip and puts the set in operation by turning the volume switch around until the desired loudness is reached.

For heart examinations the microphone is held against the patient's chest. Most heart tones are relatively low in the scale of sound frequencies and the pick-up device is designed to transmit these low tones most efficiently. The heart sounds are electrically transmitted to an amplifier which multiplies the original sounds, as much as seems necessary to the physician. A potentiometer is provided in the amplifier to adjust the loudness of the sounds.

If a doctor is examining a patient for possible murmur sounds he turns a knob marked "filter" to its "in" position. The filter circuit is controlled by a key located on the amplifier panel and when operated diminishes the response particularly at the low frequencies. This cuts down the intensity of the normal heart sounds received but does not diminish the loudness effect of murmur sounds which may be present. Thus murmur sounds so difficult to detect by an acoustical stethoscope are isolated and accentuated. A rubber ring placed around the microphone reduces to a minimum any noises which may be caused by the handling of the microphone.

The amplifier has a maximum gain of 60 decibels and is of sufficient power capacity to operate an additional receiver. Provision is made on the amplifier panel for the additional receiver to be easily connected. Physicians in consultation work have found this feature extremely valuable as it enables them simultaneously to hear a patient's heart sounds from the same body location.

WSAI - Cincinnati

(Continued from Page Four)

It will be noted that there are also two small full wave rectifier tubes: V1D, the audio monitoring rectifier, and V13A, the feedback rectifier. Not shown in the diagram are the four power rectifiers which provide the plate and grid bias voltages indicated, nor the electron relay tube which is employed to control the temperature of the quartz crystal.

The power rectifier tubes (all mercury vapor type) are:

For Oscillator-Modulator

Bias and plate supply rectifier 2 No. 258B

High Voltage plate supply rectifier . . 4 No. 258B

For Power Amplifier

Bias supply rectifier 2 No. 258B

High Voltage plate supply rectifier . . 6 No. 315A

The total number of active power rectifier tubes is 14 which with 10 amplifier tubes and the 3 others make the number of tubes utilized in the entire equipment total only 27.

It will be seen that modulation is accomplished by the grid bias method in the next to final amplifier stage. The use of stabilized feedback to prevent the introduction of AC filament hum into the carrier is briefly as follows: A portion of the modulated radio frequency output of the power amplifier is carried to the feedback rectifier V15A where it is rectified. The resulting audio frequency is combined in phase opposition with the amplified speech input which is applied to the grids of V4A and V5A for the purpose of modulation. A sample containing all the audio frequency components, program, noise, and distortion, appearing at the output of the power amplifier is thus fed back to the input in a way to suppress in the transmitter all of those components in proportion to the amount of feedback voltage applied to the input. The suppression of program which is entailed is compensated for by increasing the level of the "speech input," which is, of course, entirely free from the noise and distortion generated within the transmitter. The net result is that the normal program output is obtained from the power amplifier while the noise, as well as the distortion, generated in both the 3rd (modulating) amplifier and the power amplifier are effectively suppressed. It should be noted that with this arrangement, all components of the noise are suppressed irrespective of frequency and without the necessity of any adjustment or balancing of circuits; whereas schemes for hum elimination which involve balancing and compensating adjustments are critical and unreliable in operation as well as limited in the number of components affected.

With the incorporation of the stabilized feedback principle and the operation of the tubes so as to minimize distortion, the performance of this new transmitter at WSAI is truly remarkable and of a character to permit the highest quality of program reproduction. Tests of the performance of the equip-

ment when operating at 5 kilowatts output reveal the following:

Audio Frequency Response

Flat within ± 0.5 db from 30 to 10,000 cycles

Carrier Noise

* Weighted noise 70 db below 100% modulation
(Unweighted—60 db below 100% modulation)

Audio Frequency Distortion

Modulating Frequency	RMS Distortion in Per Cent of Fundamental		
	At 30% Modulation	At 85% Modulation	At 100% Modulation
50 cycles	0.9	1.7	2.6
400 cycles	0.3	0.9	1.9
5000 cycles	0.4	1.0	2.4

* Measurements of noise weighted according to the sensitivity of the ear are the only ones which indicate the interfering effect and represent a figure of merit. Refer to "The Relative Importance of Frequency Components of Noise in Radio Broadcasting Equipment," page 8, "Pick-Ups," February, 1936.

It is apparent that over the entire range of frequency and modulation, the distortion is well below any requirement based upon practical considerations.

While heating the filaments of water-cooled tubes from a suitably maintained and filtered DC supply offers the ultimate in freedom from carrier noise originating in the filaments, the practicability of AC heating as exemplified in this transmitter has permitted in the new WSAI station the elimination of all DC generators and the attendant maintenance difficulties.

There are other features of the equipment which also facilitate operation and maintenance of the station and contribute toward perfect and uninterrupted service. The major parts of the transmitter occupy four cabinet-type units, the interiors of which are readily accessible from the front through adequately protected access doors. Signal lights are provided on the control unit which indicate the functioning of principal circuits and the location of trouble conditions. A circuit reclosing device is arranged to restore the transmitter to operating condition automatically after a short interruption of power. In addition, a manual control allows the operator, in an emergency, to shorten the warming-up period usually required upon starting the mercury-vapor rectifier tubes; otherwise, a long power interruption would cause several minutes delay before the control circuit would permit reapplication of plate voltage. This feature will assist in minimizing loss of program time due to more or less extended periods of power interruption. In case of overloads or other similar causes of shutdown, the transmitter may be immediately reenergized by means of a reset push button. To facilitate changing power for day and night operation, controls are provided for instantaneous change-over which can be made without appreciable interruption of program. The usual arrangements for protection against loss of cooling water circulation, bias voltage supply, etc., are provided.

What's in a Station's Call

(Continued from Page Nine)

was granted."

An incident where pretty women rated higher than civic pride can now be told about Station WRVA, in Richmond, Va., and again we come face to face with the chivalry of the Old South.

In the early days, Station WRVA was just another Wonderful—Wonderful Richmond, Va. It wasn't long after that, volunteered Walter R. Bishop, Studio Director, when someone suggested the rather regal title "We Rule Virginia's Air." Before they had a chance to become haughty, however, some wag countered with "We Ruin Virginia's Air." So a contest was held—and when a slogan was submitted to the effect that *Women (of) Richmond Very Attractive* it appealed to the studio director, who is, or was at the time this goes to press, a bachelor.

From beautiful women to spinach is a broad jump but we take it in our stride and bring to your attention the Spinach Station, or rather, WIS. There's spinach in South Carolina, and there's iodine in them thar spinach. Likewise, there's lettuce, celery, cabbage, squash, etc., to say nothing of shell fish, all of which are plentiful and all of which contain oodles of iodine.

It was when an analysis of the natural iodine content of these vegetables was made, that the State Agricultural Department decided to promote the uses of such products, as particularly helpful in supplying the normal iodine requirements for the human body. This quality, according to the broadcasting station's vice president, was first noticed when statistics indicated the unusually low number of goiter cases among women of the state.

The S in WIS, however, does not stand for spinach. The call letters mean *Wonderful Iodine State*.

A quaint historical note is sounded by Station KDON in colorful Monterey, Calif. Most of the early settlers of California were Spaniards. They were either churchmen or fighters. Then came the wealthy land-owners, the Dons. Monterey, situated on a peninsula, is one of the earliest Spanish settlements. It is fitting and proper, therefore, to identify the station in such an interesting manner.

For years it has been the custom of all salesmen out of Jacksonville, Florida, to register in hotels as, for instance, "John Doe, Jax." Every room clerk was familiar with the meaning of Jax. It could mean nothing but Jacksonville, Fla. Consequently, when the station was first licensed, Commissioner Imeson requested these call letters—WJAX—which means *Wonderful Jacksonville*.

(This is the first of two articles on call letters of Western Electric equipped stations. In the next you'll hear about KOIN, KALE, WASH and WOOD, and many more.)

Gordon R. Windham — WHN

As radio operator aboard a freighter one has a splendid opportunity to see the world but it's no life to stick to, says Gordon R. Windham, chief engineer of Station WHN, New York. Windham tried it for a



Gordon R. Windham

few years before he settled down in the port he likes best—New York. It was ten years ago that he gave up roaming the seas and joined forces with WHN as assistant to F. W. Boetcher. Boetcher was transferred to another position in 1928 and Windham took the reins as chief.

Radio has been a hobby with him since 1914 when he started experimenting in ham radio with crystal detector sets of pre-war vintage. One of the greatest thrills of his life came one day when instead of the usual dots and dashes of a code message, he suddenly heard a voice for the first time through the earphones. "I was actually scared," says Windham, "It was so weird." He learned later that the strange voice out of the ether belonged to Dr. Lee De Forest who was conducting radio telephone experiments in his laboratory at High Bridge, N. Y.

He relates another unusual experience having to do with his seafaring days. Operators aboard ships plying the trade routes form unique friendships as they relay messages or press news and "chew the fat" back and forth across seas. Occasionally the men meet in ports of call but more often the touch of the radio telegraph key is the only link of comradeship. Recently Windham was swapping yarns with one of his assistants at WHN. During the conversation they discovered that they had become "radio friends" while sailing the seas years ago. It was like suddenly meeting an old friend yet the man had been working with Windham for months before their early association came to light.

Windham was born in Tarboro, North Carolina, in 1900. While still a youngster he moved to New York where he spent most of his school days. When the war started he signed up with the United States Army Signal Corps. After the armistice he took to the sea as radio operator. During his four years aboard freighters he touched practically every important port in the world.

"Windy" as his associates call him, has seen his department grow from 6 to 26 members in the short course of three years. He is enthusiastic over WHN's new Western Electric 5 KW transmitter and spent much of his time out at Astoria, Long Island, while the equipment was being installed there the first of the year. According to him the new system is running like clock-work so all is serene at WHN.



Operator Reginald Schow stood watch in WFEA's control room handling program service for three days without relief while Manchester, N. H., battled the flood waters of the Merrimac River.

FLOODS! . . . and How the Broadcasters Came to Rescue

(Continued from Page Three)

faintly illuminated by flickering candles.

WFEA

One of the most graphic accounts of the catastrophe comes from Station WFEA, Manchester, New Hampshire. Repeatedly sending urgent warnings to all people living along the Merrimac River advising them to leave their homes and seek higher ground, the station helped prevent the loss of a single life while police boats rescued over 30 victims from rooftops and second-story windows.

Says WFEA, "With the flood still rising and all telephone service between the eastern and western halves of the city out, we were called upon by the National Guard to get men up to the Amoskeag dam. By a series of announcements we secured 1,500 men and sufficient trucks to move sand to the dam and to carry on the bagging operations that prevented the complete flooding of the center of the city and disaster to the lower cities of Nashua, New Hampshire, and Lowell, Lawrence, Haverhill and Newburyport, Massachusetts. In imminent danger of descending upon these cities was a 60-foot wall of water 600 feet across—eight miles upstream."

Early in the flood, Governor H. Styles Bridges appointed the station as the co-ordinating center for emergency bulletins and flood information. WFEA organized a five meter set-up before the bridges either went out or were closed to traffic. One operator worked in the control room, another at Red Cross Headquarters (east side of the river), a third at the American Legion and a fourth at the Congregational Church (west side).

When the flood was approaching its peak, this five meter system, which was directed by Operator Vincent H. Chandler, was the only means of communication between the two sections of the city. These facilities were used for issuing instructions to the relief crews on the west side, with replies sent back on five meters. When a pair of oil storage tanks crashed down upon Granite Street bridge taking out a 600 pair cable crossing the bridge WFEA resorted to

short wave and 10 meters to transmit the program from control room to the transmitter at Reeds Ferry.

"Operators stood by for three days without relief," says the station. "E. Warren Frost on watch at the transmitter, was isolated by water, but rebuilt an old transmitter in an effort to signal us on 80 meters. By the time it was operating we had succeeded in getting Vincent Chandler, with a 10 meter transmitter-receiver under his arm, to the transmitter station under the guidance of police and the National Guard. He was the first man permitted to cross Queen City Bridge. All agencies asked that the utilities give us service first although two hospitals on the west side were without communication.

"Irving Moore, regular transmitter operator, stood watch at the 10 meter equipment in our control room, with Reginald Schow handling program service, for three days without relief."

As the waters receded WFEA scouts toured the flood districts with mobile short wave transmitters, describing the conditions and warning inhabitants of the danger of epidemic.

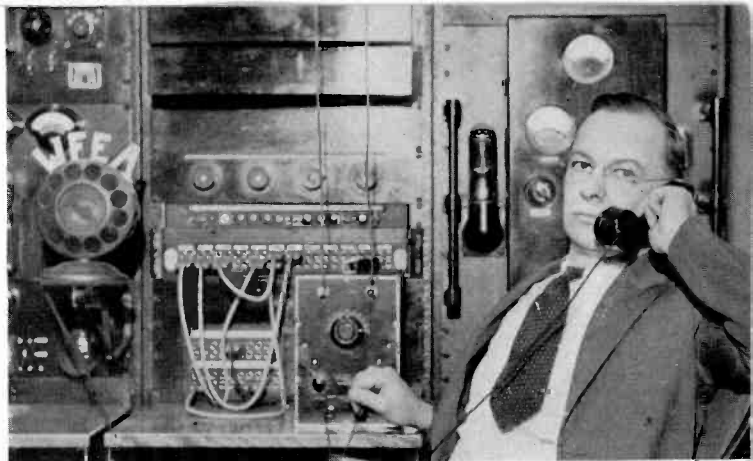
When the first emergencies subsided somewhat WFEA conducted a two-night subscription campaign for the Red Cross and received \$1,700. They also secured cots, blankets, food and kitchen equipment.

Throughout the disaster the station coordinated the work of amateurs in various sections of the state who relayed information from other towns and cities. In this way they managed to keep people informed of the closing of bridges, the placement of National Guard units and instructions concerning the



Donations received at Volunteers of America Headquarters after radio appeal over Station WINS, N. Y.

E. Warren Frost, operating short wave equipment at WFEA's transmitter. Transceiver was first used to communicate from transmitter to control room to advise of conditions at Reed's Ferry, N. H.



use of well water and reservoirs.

WEEI

Warnings of impending danger and repeated requests that motorists keep out of the affected areas went out over the air from Station WEEI, Boston. When Manchester, New Hampshire, was threatened with a shortage of milk and an official of a large company tried in vain to telephone his drivers and farmers to instruct them where to deliver their products WEEI broadcast his message for him. The station kept the public informed of what was needed for flood sufferers and where articles could be left for distribution.

Practically all of WEEI's radio operators are "hams" who operate their own short wave transmitters. After work they stayed up all night receiving and sending messages from and to people in the stricken areas. Among the busiest of these short wave scouts was Howell Cullinan, the station's news man.

THE YANKEE NETWORK

Gerry Harrison, Director of Public Relations for the Yankee Network, and an eye witness to many happenings in the flood areas of New England, tells a dramatic story of the part broadcast men played in that section of the country. When word came through that the dam at Westfield, Massachusetts, was threatened, controls were switched to the dam and a broadcast went out to the entire Yankee Network and the Mutual Network. Linus Travers gave the story from the studios of WMAS, Springfield, Massachusetts, and Neil Wallace and Bob Feldman, WMAS announcers, at the microphones, and Jimmy Spates of WMAS at the controls, gave the action at the dam.

During one broadcast Travers brought some of the refugees to the microphone to give word pictures of the flood conditions. Among these were an old couple who had lived beside the Connecticut River for over 70 years and a mother who made her own appeal for the return of her son.



Emerson Smith and Wally Warren, news scouts from KOIL, Omaha, telling the story from the banks of the Platte River.

As the Connecticut River started to overflow its banks in Springfield, with West Springfield completely inundated, reports were sent by teletype for broadcast over the entire Yankee Network News Service. WMAS turned its local facilities over to the Red Cross, the Police Department, city officials, the National Guard and other emergency organizations who made continuous use of the station.

One broadcast was scheduled to go over the Network and the Columbia Broadcasting System from the foot of the great Holyoke dam which seemed at one time about to give way. By devious detours, through mud and muck, the remote control group finally reached the dam. During the broadcast Travers almost lost his life. He was standing at the edge of the roaring river. In his enthusiasm to get the drama of the waters to the radio audience he leaned out over the bank not realizing it was being undermined. He was grabbed back to safety just as the whole bank gave way. Had the dam broken, announcers, operators and equipment probably would never have been heard of again.

WCAE

An equally thrilling account of the havoc wrought in Pittsburgh and Johnstown, Pennsylvania, winged over the air during the height of the flood from WCAE, Pittsburgh. Although the station was unable to transmit in its own city, engineers managed to get a program on telephone wires through to WOR by means of an auxiliary battery—their work carried on by candlelight.

From the WCAE studio on top of the Hotel William Penn, Norman Twigger, news commentator, told a dramatic story to the outside world (excerpts from his series of broadcasts are quoted).

"We can see the water surging up the streets of the downtown section. Millions of property damage has been done in the skyscraper district in the triangle formed by the Monongahela River on the left and the Allegheny on the right, both of which are over their banks.

"There are men with a rowboat going to the second story of a house—a woman is being lifted out. The boat is tipping and the men trying to steady her. Someone else is coming out of the window—a boy I think—and the boat pushes off. Here's an-

other rescue to the right. The police are removing workers—mostly girls, from a factory building.

"I have been talking with Marion Lightner, a Bell Telephone Company operator in Johnstown and here is her graphic picture of how it looks: 'At the height of the flood there were 18 feet of water. People are seeking safety in their upper floors and on rooftops. The city has been without light, heat or gas since early last evening. We have been trapped in the exchange since yesterday morning. High water has forced us to the top floor and we may have to go to the roof before long. Johnstown is under martial law—a city of darkness'."

WFBG

The Altoona Tribune describes Station WFBG's flood activities in glowing terms. In part the newspaper's account reads, "From the period of the flood emergency radio Station WFBG has been rendering service to the flood districts surrounding Altoona, Pennsylvania. For days the local station has been the only means of communication with the outside world.

"Roy F. Thompson, managing director and chief announcer, has kept his entire staff on the job day and night realizing the necessity of the station's service to relatives and friends of marooned victims. At the outset WFBG was the clearing house for calls for aid—soliciting boats, trucks and food.

"In a congratulatory letter to Mr. Thompson, Mayor J. Harry Moser says, 'In spite of fatigue and bodily discomfort you have stood by hour after hour to aid in every possible way. One cannot help but be thankful for the radio and capable personnel of our local station'."

WFBR

When waters of the Potomac broke over Cumberland, Maryland, Station WFBR, Baltimore, was the first on the air with news of the disaster. At one time the big power dam at Conowingo was reported in danger of breaking and scare stories were circulated that Baltimore would be under five feet of water. WFBR sent their remote control crew to Conowingo to investigate and in a special broadcast assured the populace that the dam was safe.

A special reporter was also sent to Port Deposit to cover the entire Maryland section along the Susquehanna by auto and foot to make hourly reports of conditions in that area. The station answered about 250 calls a day on flood situations. The calls included those from national automobile associations asking road conditions and from persons with relatives in the flooded communities.

WBAL

WBAL, also in Baltimore, kept abreast of the developments in Pennsylvania and Maryland and was one of the first to deny the erroneous report that the dam at Johnstown had broken. The station had a direct line to W3SN, the Army Amateur control station, which was in constant communication with

WHV, the CCC station overlooking the dam in the Conemaugh Valley. At the request of W3SN, WBAL gave amateurs hourly advice in regard to bands on which W3SN could be reached. When communication was broken with Pittsburgh, WBAL's news service contacted by telephone persons in the upper Allegheny and Monongahela Valleys. Requests for foodstuffs and medical supplies also were repeatedly broadcast from this station.

WIP

Last minute information came to Station WIP, Philadelphia, through two newspaper men engaged by the station to tour the Wilkes-Barre, Johnstown and Altoona areas. With such a volume of information flowing in extras were added to the station's information bureau to tabulate the reports for broadcasts and to answer telephone inquiries concerning casualty lists.

When Mayor S. Davis Wilson of Philadelphia decided to organize relief expeditions an announcer and an engineer were hurriedly dispatched to his office where WIP already had an installation for the Mayor's weekly address. At 1 A.M. March 19, the Mayor went on the air to make his first appeal. He was overwhelmed by the instantaneous response.

WIP continued on the air every half hour giving flood reports and using flashes as rapidly as they were received from Trans-Radio Press, its own correspondents and other news sources. One listener in Cumberland, Maryland, reported that the first intimation they were to get the full brunt of the flood came to them over WIP. An amateur operator in Sunbury, Pennsylvania, heard through WIP that food and medicine had been dispatched to that stricken city. He passed this information on to the authorities.

WHK

The primary function of WHK, Cleveland, was to give the public complete, authentic information from all flood zones as Cleveland itself was not endangered. Larry Roller of the special events department, succeeded in reaching East Liverpool, then Marietta and finally Portsmouth, Ohio. From the latter two cities the station carried a two-way conversation with Roller. In this way many false stories likely to create panic were corrected. Station Manager H. K. Carpenter travelled to Cincinnati and from there described the city preparing for the crest due to reach it later. Throughout their broadcasts WHK minimized reports of suffering except where there was some reason for including them. Automobile club road reports and warnings as well as requests by the Red Cross were broadcast regularly.

WADC

WADC, Akron, did an outstanding job in helping to raise funds for the Red Cross. After numerous broadcasts requesting aid, over \$27,000 was donated. One 15-minute program alone brought in \$1,000. This was a particularly noteworthy achievement when it is realized that Akron was in the midst of one

of the worst strikes in the history of the city and business far below normal.

WNEW

In Newark, New Jersey, WNEW was able to keep flood news on the air continuously because of the station's 24-hour broadcasting service. In addition to the New York Journal as a news source, WNEW worked in close contact with the weather bureau, the police and press radio.

WINS

As a result of a single appeal made by Lillian Ulrey of the Volunteers of America, in a broadcast over WINS, New York, close to 100,000 articles of clothing and other necessities were donated for sufferers in Pittsburgh.

WOKO

Although the area covered by WOKO, Albany, was not seriously affected the station kept inhabitants of Troy, Watervliet, Green Island and Rensselaer informed of the rising waters of the Hudson which threatened these cities. When some residential sections had to be vacated for a few days information winged over the air as to the location of emergency relief stations where food and shelter could be obtained. At the request of the State Health Department WOKO advised people to boil all drinking water.

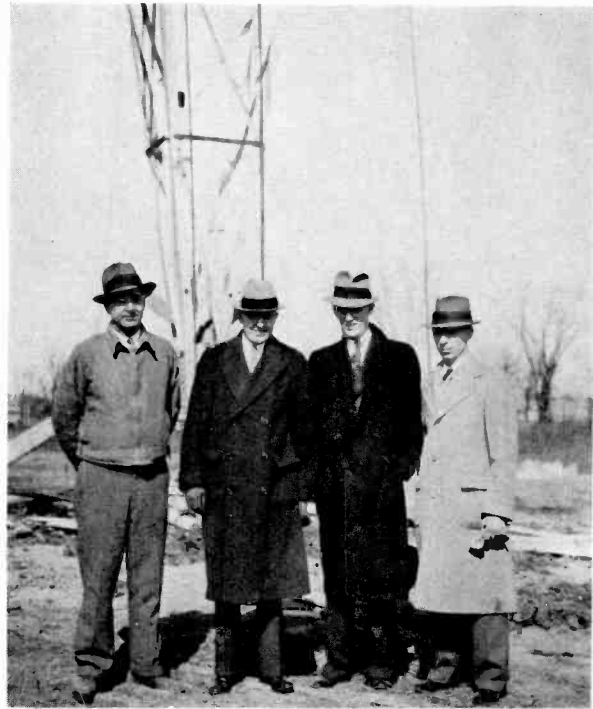
Messages were also broadcast for the Massachusetts State Police warning residents of high waters and flood conditions in the Connecticut Valley and nearby Massachusetts. Similar reports were sent over the air for the New York State Police.

KOIL

Although the flood waters took their greatest toll in the East word comes through from KOIL, Omaha, of the part that station played when the Platte and Elkhorn Rivers went on the rampage. KOIL dispatched three of its news scouts, Emerson Smith, Wally Warren and Chief Operator Al Bates, to cover the entire river area from Ashland to Plattsmouth. Dawn found them on the banks of the Platte at the little town of Meadow. Their car was perched near the bridge, whose northern approach was entirely washed out. Carrying their equipment overland they secured the only remaining telephone loop on the line in a little country store that was entirely surrounded by water. Here they went on the air with a complete first hand story. This was the third remote pick-up this weary crew had made in 24 hours.

Here, then, is a bit of the inspiring picture of how broadcasting stations throughout the country and their personnel met one of the greatest emergencies of recent years and in so doing fulfilled their obligations to community, state and the nation at large. It was a splendid opportunity for a real public service, fully realized.

PICK-UPS



On the site of the new Western Electric 5 KW transmitter being installed at KWK, St. Louis. The quartet of interested visitors are (left to right) tower contractor; O. E. Richardson, Graybar district manager, Chicago; Jimmy Burke, chief engineer; Nick Zehr, transmitting engineer. A Blaw-Knox radiator towers in the background.

Crime Drops in Nassau County

"Radio Drops Crime 20 per cent in Nassau County, New York," is the heartening news brought to readers of the American City Magazine (April issue). Under this flash head the following report of the county's police radio activities is quoted.

"Nassau County has 100 radio-equipped cars which patrol an area of 274 square miles. Headquarters radio is of Western Electric manufacture, cost \$12,500 to install in 1933, and requires \$24,500 per year for salaries, repairs and parts.

"What have been the results? During the first 12 months of radio operations arrests increased 20 per cent and crimes decreased 20 per cent in number as follows:

	The year before (1933)		The year after (1934)	
	Crimes	Arrests	Crimes	Arrests
Assault	132	38	28	30
Robbery	30	14	40	19
Burglary	549	51	512	74
Dangerous weapons.....	12	13	3	8
Larceny	805	109	919	144
Disorderly conduct.....	376	482	97	616
Juvenile delinquency.....	43	30	26	65
All other crimes.....	630	993	448	1117
	2577	1730	2073	2073

Nassau County, on Long Island, was one of the first counties in the country to install a complete county-wide radio system.

Products Manufactured by
Western Electric

RADIO EQUIPMENT

Broadcasting Equipment and Accessories

Radio Frequency Distribution Systems

Aviation

Transport Plane Two-Way Radio Telephone

Private Flyers Two-Way Radio Telephone

Ground Station Two-Way Radio Telephone

Police

One-Way Medium-Frequency Transmitters

Two-Way Ultra-High-Frequency Mobile and

Headquarters Radio Telephone

Marine

Two-Way Boat Radio Telephone with Radio

Compass and Direction Finder

Two-Way Shore Radio Telephone

VACUUM TUBES

Amplifiers

Oscillators

Modulators

Detectors

Rectifiers — High Vacuum

Rectifiers — Mercury Vapor

Rectifiers — Grid Controlled

Ionization Manometer

Thermocouples

Vacuum Switches

Photoelectric Cells

Ballast Lamps

Cathode Ray Oscillographs

PUBLIC ADDRESS EQUIPMENT

Paging Systems

Announcing Systems

Program Distribution Systems — Records, Radio

Portable Public Address Systems

HEARING AIDS

Individual Audiphones — Bone and Air Conduction

Types

Group Audiphones

Audiometers

CABLE

Lead Covered

(Quadded and non-quadded)

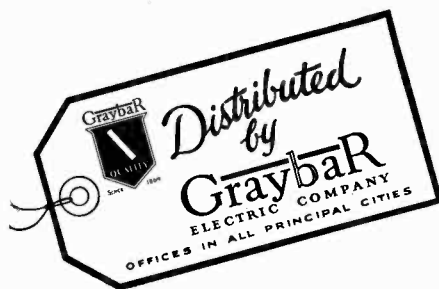
Tape Armored

Submarine

Textile Insulated

Switchboard

RAILWAY TRAIN DISPATCHING TELEPHONE SYSTEMS



Graybar Distributing Houses

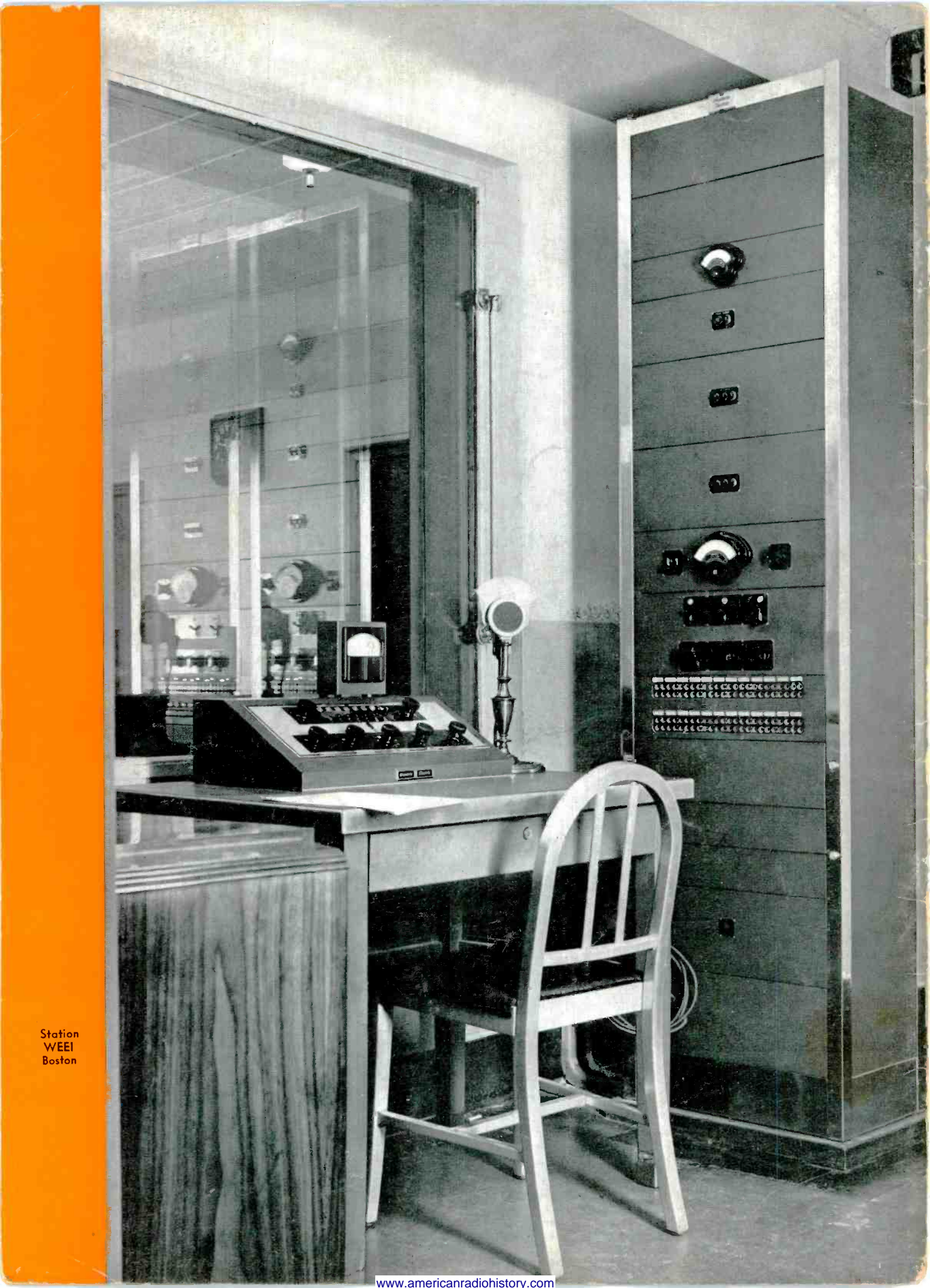
Akron
Albany
Asheville
Atlanta
Baltimore
Beaumont
Birmingham
Boston
Brooklyn
Buffalo
Charlotte
Chicago
Cincinnati
Cleveland
Columbus

Dallas
Davenport
Dayton
Denver
Detroit
Duluth
Durham
Flint
Fort Worth
Fresno
Grand Rapids
Hammond
Harrisburg
Hartford
Houston

Indianapolis
Jacksonville
Kansas City
Knoxville
Los Angeles
Louisville
Memphis
Miami
Milwaukee
Minneapolis
Mount Vernon
Nashville
Newark
New Haven
New Orleans

New York (2)
Norfolk
Oakland
Oklahoma City
Omaha
Orlando
Philadelphia
Phoenix
Pittsburgh
Portland
Providence
Reading
Richmond
Roanoke
Rochester
St. Louis

St. Paul
Salt Lake City
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Seattle
Spokane
Syracuse
Tacoma
Tampa
Toledo
Washington
Wichita
Winston-Salem
Worcester
Youngstown



Station
WEEI
Boston