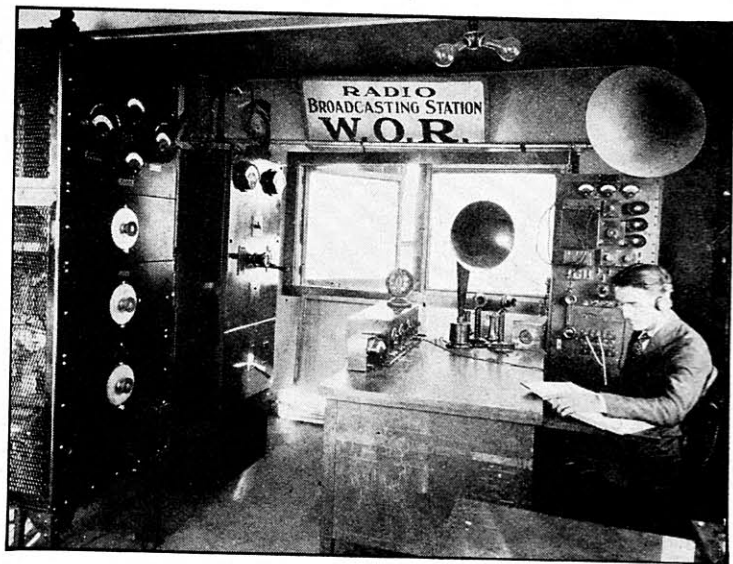


The Future of Radio

As Foretold by



BROADCASTING ROOM OF YESTERDAY

Photo shows the combination control and transmitting room of old WOR. These two functions are divided in present broadcasting layouts

TO the old-time radio operator QRD is a simple interrogation of destination—radio for “Quo vadis?”—whither are we bound? And the old-timer, by the way, is best able to answer as to radio’s future. He has seen it develop from its infancy, when its squawking voice was limited to the crackle of dots and dashes. He has faith in its science, but at the same time he has no illusions as to the rapidity with which it may advance, and his prognostications regarding its future are based on sober probability, not on the fantastic guesses that made Jules Verne an intriguing story-teller.

Quality in Program Material

Progress in radio evolves simultaneously along two paths—the technique of transmission and reception, and the program. We have already pointed out that this latter phase of radio is perhaps the more important, for therein lies the impetus, the stimulation to further technical perfection. Radio’s engineering status today must give credit to the program. The frequency bands covered in the modern receiver and transmitter are merely the answer to a demand to receive the frequencies actually existent in any orchestra. And though from a technical point of view radio has approached close to practical perfection, the importance of the program is by no means lessened, because the patronage of radio facilities and the ultimate fate of the industry still depend upon the pleasure which the listener derives from his set. Should programs, in their own way, approach as close to perfection as radio’s technical advance, the dollar will buy a better radio value, and the social, esthetic and political aspects of civilization will be materially benefited. The possible perfection of the radio program is therefore a matter of prime importance. As we pointed out in our preceding article, the radio program of today is little better than the typical presentation of four years ago, and many of the criticisms voiced against the programs of yesterday apply now.

The advent of the sponsored

Prophets have been prolific in their future. Their prognostications, often have brought small honor to their author endeavors to paint a truthful its development, comparing

By Zeh

program, about eight years back, opened the way to the utilization of genuine talent by providing a logical and simple means of recompense. Before that time, aside from phonograph records and piano rolls, radio presentations were dependent upon free talent, and, like most things obtained for nothing, it was worth exactly what it cost. Unfortunately, like Pandora’s box, the sponsored program brought with it an evil almost the equal of its blessing—the fact that the sponsor insisted upon receiving credit for the money he was spending. This, in itself, was fair enough, but he soon took advantage of the helpless predicament of

the radio listener to describe the merits of the product he was manufacturing, in all conceivable degrees of directness and subterfuge, which were equally nauseating and unpalatable. The head of a large advertising agency once said to me: “No advertisement can succeed if the advertising urge or the advertising effort is apparent. The test of a good advertisement is that the person should be unconscious of sales intent in reading the advertisement or listening to the sales argument.” An active movement is under way to regulate and reduce the advertising content of radio programs. This is the continuation of a consistent effort that has been acting in this direction for the last seven years.

Concerning Sponsored Programs

An editorial in the May, 1929, issue of *Radio* devoted some space and considerable intelligence to the problem:

“Who would erect a billboard in his back yard so that his family might have the pleasure of seeing the pretty picture of a girl smoking a cigarette or a bull standing behind a fence? Yet that is practically what the purchaser of a radio set is asked to do today. Is it any wonder that the people who have invested billions of dollars in receiving sets are critical of the kind of programs that are sent into their homes? The marvel is that more people have not thrown away their sets in disgust.

“The blame rests squarely on the shoulders of the broadcasters who do not censor the length and character of the advertising which is interlarded in their programs.



UP-TO-DATE TRANSMITTERS

Above, the transmitting room for station W.E.A.F., located in Bellmore, New York, and, below, the transmitting room of W.J.Z., located at Bound Brook, New Jersey. Studios for both of these great stations are located in the heart of New York City



in Broadcasting

Past Development

guesses as to radio broadcasting's made with little scientific background, apostles. In this second article the picture of radio's future, by studying the present with its history

Bouck

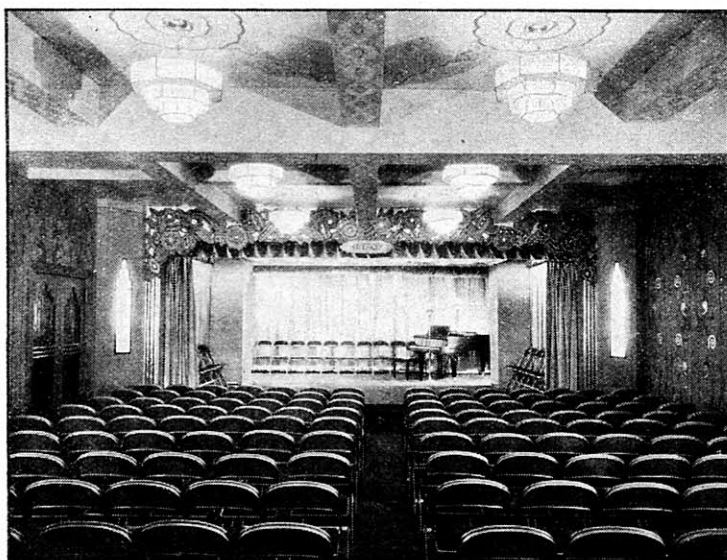
Formerly there was a great deal of justifiable talk about the debt that radio manufacturers and dealers owed the broadcaster. Without broadcasting, no radios could be sold. But now there should be just as much talk about the debt that the broadcasters owe the manufacturers and dealers. Without radios, no programs could be sold. . . . Broadcasters have frequently taken business that any reputable newspaper or magazine would refuse.

"It is to be hoped that the broadcasters and offending advertisers will realize these truths before it is too late. Radio advertising, to be effective, should be palatable and non-obtrusive. Anyone will remember and commend a good program and those who made it possible, while they will condemn the attempts that are being made to cram long-winded talks into their ears. Radio is just as effective a builder of ill will as it is of good will. This is an evil that deserves the attention of the radio industry whose business is threatened if the evil is not stopped.

Classifying Advertising Programs

Publicity or sponsored programs may be roughly split into five classes, according to the manner in which the publicity is introduced:

1. The simple mention of the sponsor.
2. Programs incorporating a few unobtrusive words concerning the sponsor or his product. Such programs are rarely objectionable.
3. The theme song type. The publicity is generally incorporated in the theme song. The publicity is seldom half as objectionable as the silliness of the songs.
4. Programs accompanied with a long harangue about the



TODAY'S STUDIO THEATRE

A completely modern touch in the development of the studio is that of Station WMCA in New York. Comfortable chairs are provided for visitors, who may watch the artists as they perform

generally mythological merits of the product. These are certainly objectionable.

5. Programs in which the product is mentioned repeatedly throughout the hour, and often worked into the program itself. Household programs are perhaps the most flagrant offenders in this way.

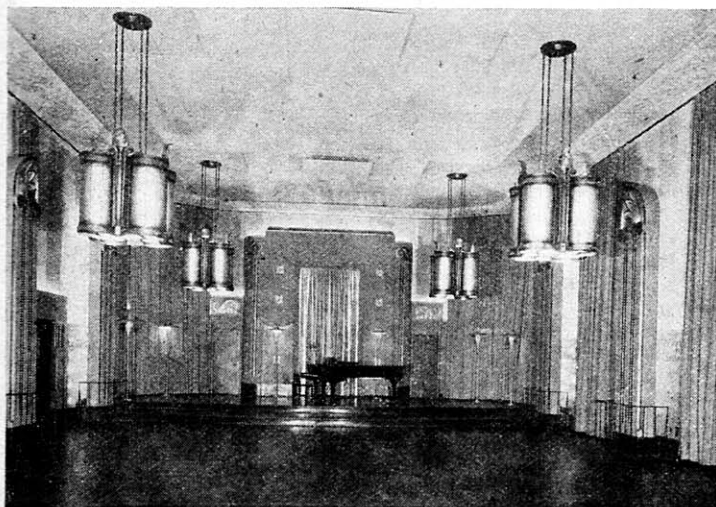
We have so far considered the esthetic development of radio broadcasting. While the possibilities for program progress were almost limitless during the last half of the first decade of broadcasting, we have observed that little has been made of the potentialities. The inclusion of a nauseating amount of advertising in the sponsored programs has not abated in the least. A few changes have been made, anatomically and in trade-marks, but the plugging, like the complacent little brook, goes on forever. What was once good for a slim waist is now recommended for the Adam's apple. True, the programs themselves are a little better, as radio technique has developed, and as the sponsors gained enough faith in the new medium to justify large appropriations for finer talent.

Technical advance, though limited in its possibilities, has progressed definitely, narrowing the distance between its past attainments and the theoretical limitations of perfection. The main goal of engineering development, simple to define, is to reproduce in the home the sound impinging on the microphone in the studio. Radio, in this respect, was perhaps seventy-five percent perfect in 1926. A secondary aim of engineering perfection is to increase the number of homes in which this reproduction can be effected. As this last consideration depends somewhat upon economic factors, the degree of attainment as an engineering accomplishment cannot so readily be expressed numerically.

Technical Developments

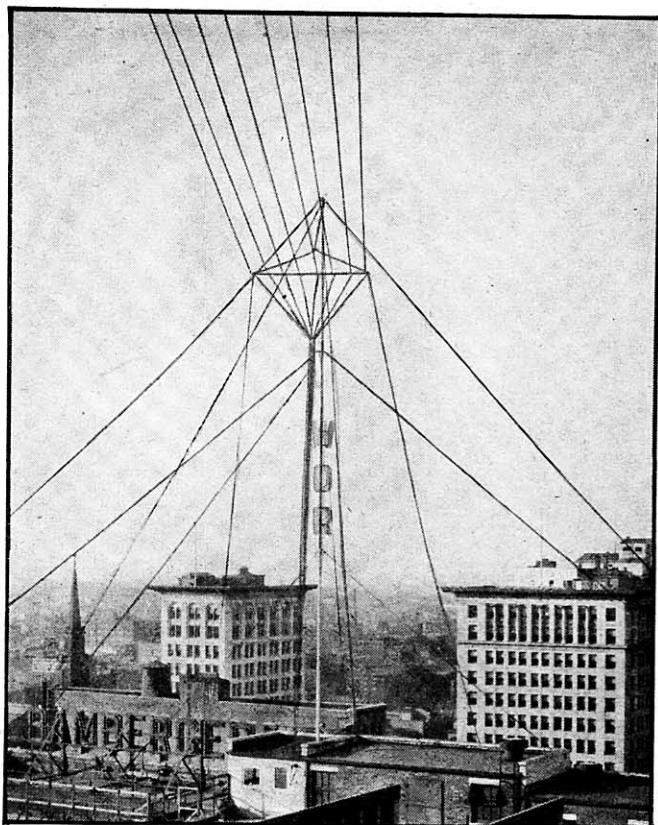
It is possible today, within the service area of a modern broadcasting station, to reproduce a studio program in the home with a degree of perfection that is practically above criticism. In this respect it may be said that radio-telephone development has achieved its ultimate aim.

The progress, since 1922, has been convergent from several points of attack. We have first of all the microphone, the earliest type being an all-too-rapid adaptation of the regular telephone transmitter of dubious frequency characteristics. This was placed in a tin can, the cavity resonance of which contributed to



A STUDIO WITH A COLOR SCHEME

In this modern broadcasting room, in one of the N. B. C. studios, colored lights of changing qualities, to fit the moods of the broadcasting, are projected from the modernistic candelabra



THE OLD ORDER OF ANTENNAS—

When transmitters existed in cities, the antennas were put up on wood or tubular steel masts, such as this one of eight years ago on top of the Bamberger station in Newark

the background hiss of overloaded and frying carbon. The induction microphone was rediscovered simultaneously with the introduction of the two-button mike. The former was little more than a loudspeaker worked backwards, the vibrations picked up by the diaphragm or cone causing a dynamo action in the windings corresponding to the sound. The frequency characteristics of the induction mike were, for a short time, a trifle better than those of the direct-current types. From 1926 to 1930 the standard two-button mike, with its familiar gauze-opening can, did an excellent transmitting job—and is still widely used. Its characteristics fall short only of the condenser type which is very close to acoustic perfection.

Audio channels, already quite good in 1925, benefited by almost infinitesimal improvements, which, in accumulation, are definite and noticeable. Both the radio and audio-frequency characteristics of the transmitters have been improved by developments in the radio-frequency circuits and by the use of crystal-controlled oscillators. Carriers rarely wander more than fifty cycles off the frequency authorized by the Federal Radio Commission or the copyright owner, and this stability has made possible increased modulation without distortion, accompanied with a more powerful signal.

Science Applied to Studio Design

The acoustic properties of the studio have been subjected to engineering analysis, and the psychological environment of the artist has received similarly scientific investigation. Studio pick-up today is an exact science, with microphone placement and acoustic damping arranged to a nicety. Colored lights play in subtle diffusion, engendering in the performer a mood compatible with his emotional efforts. Some studios have been designed as miniature theatres, catering to the artistic temperament that demands a visible audience for its finest expression. And the technique of the outside or nemo pick-ups has been improved with simultaneous consistency.

The commercial radio receiver has been constant, although it has lagged a year or so behind the perfection of the transmitter. The customary economics of manufacturing were partly responsible for this. The makers of radios, automobiles or clocks invariably refuse to incorporate new improvements

until the consumer has been stuck with a hundred thousand or so antiquated models which the manufacturers necessarily have on hand.

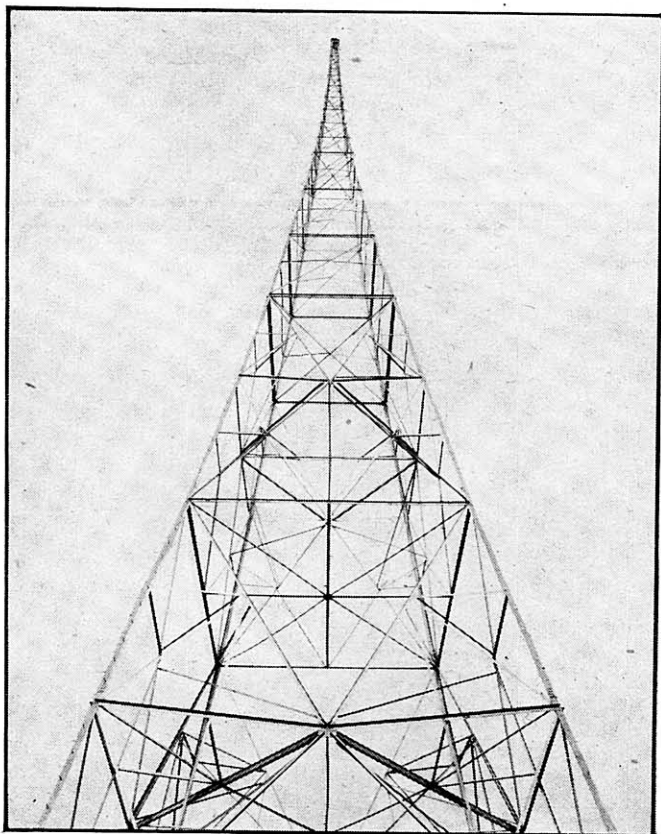
The secondary goal of radio perfection—the wider dissemination of broadcast programs—has made remarkable strides in the past five years through the continued perfection of receivers, the use of super-power, short-wave transmission and station synchronization. While the manufacturers, through a process of economic mayhem, succeeded in keeping the screen-grid tubes and the pentode in the background for a time, receivers incorporating these latest principles are at last available. Such receivers, in superheterodyne designs, and incorporating variable-mu tubes with automatic volume control, contribute much to the reception of distant stations. And the use of these new tubes, regardless of circuit, results in better receivers for the money than it has heretofore been possible to buy, with a naturally resulting expansion in receiving facilities.

Super-Power Broadcasting

Super-power is today a *fait accompli*—an accepted fact. Any attempt to reduce the power of our 50-kw. stations would probably face a protest equal to that which organized in 1925 to prevent broadcasting on power exceeding 1000 watts! Believe it or not, the "Citizens' Radio Committee"—composed of radio listeners, engineers and of course a couple of Congressmen—fought the increase of power with all the arguments and fallacies with which fanatics impede progress. The secretary of the Committee wrote to me in March of that year:

"Super-power cannot prevail or endure. It is diametrically opposed to the best interests of the art. It tends to foster a condition that will result in chaos and corruption. . . . The efficiency of stations would be destroyed if super-power went into effect. . . . Super-power? Why the need? Super-power will be attacked unmercifully by the theatrical interests, the church, the school and the public on account of the destroying influence! Super-power is the fog of broadcasting. It blankets the interest of the listener-in. Finally the mercenary intent and purpose of super-power will react against the sponsors."

Short-wave transmission has contributed much to the expansion of national and world-wide (Continued on page 615)



—AND THE MODERN STEEL GIANT

This is one of the gigantic towers that support the mighty antennas of station WEEF, located some thirty miles out of New York on Long Island

Future Broadcasting

(Continued from page 568)

radio—both directly, through short-wave receivers in the home, and through the medium of retransmission on broadcast wavelengths. Trans-oceanic broadcasts, however, are by no means of recent vintage. WJZ was in the habit of putting on such programs back in 1925, and under "What Are the Air Waves Saying," in the New York Sun for April the 11th of that year we wrote:

"On three occasions London has been picked up at the R.C.A. laboratory in Maine, retransmitted to New York on 102 meters and then transferred to the broadcasting wave of WJZ. This certainly is interesting. At last we New Yorkers are getting our English only third-hand, which must surely result in the betterment of speech."

Such retransmission has been made more direct and reliable in the last five years through the use of greater power and higher, selective frequencies. The time when one or more wavelengths between 15 and 40 meters is not effective for trans-oceanic transmission is the exception.

Experiments with the program synchronization of several distant transmitters on the same frequency is a relatively new endeavor, and to date it has been highly successful. The progress in antenna design, with definite variations for local and distant coverage has also contributed to the consistency of widespread reception.

As a delegate to the National Radio Conference in Washington, 1924, it was our pleasure to lend an attentive ear to C. Francis Jenkins, who told Secretary of Commerce, Herbert Hoover, and the conference at large, that television was "just around the corner," and that within six months the radio listener in his home would be able to see as well as hear the performer in the studio. Just one year later it was yet around the corner.

While progress has certainly been made in television engineering during the last few years—such as the projection of large images by means of the Kerr cell modulated arc, and the crater neon tube—the actual reproducible detail, the criterion of television success has not been increased materially.

All in all, I should say that, while television today can contribute somewhat in entertainment value to the average home, it is still "just around the corner."

Centralized Radio

(Continued on page 559)

installed without changes in the balance of the installation.

All in all, the idea of utilizing the framework and the normal wiring of a building for the distribution of radio and recorded programs is a furtherance of the broadcasting idea which is certain to grow in popularity. The Lincoln Hotel installation serves as a practical demonstration of the efficiency and practicability of an ingenious system of bringing greater radio entertainment to the people.

NEW LOW PRICES

—EFFECTIVE AT ONCE—

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Metallized

RESISTORS



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RESISTOR GUIDE
PRICE—\$1.**

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	Former Price	Now
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1 Watt Resistors ...	50c "	30c
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The well-known I. R. C. standards in both materials and craftsmanship will be absolutely maintained as heretofore.

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Philadelphia Toronto

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☐ Please send complete information on *Metallized Resistors*. I wish to purchase assortment of ten, entitling me to Resistor Guide Free.

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