

USING RADIO
IN
SALES PROMOTION

A BOOK FOR ADVERTISERS, STATION MAN-
AGERS AND BROADCASTING ARTISTS

BY

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PREFACE

The field of service of commercial radio broadcasting has not been clearly defined by practice or by experience; the technique of its utilization is still in the embryonic stage. We are still in the flicker-film days of radio presentation.

He who possesses sufficient ability in radio showmanship makes numberless faithful and enthusiastic friends by his contact with the radio audience. But pitfalls await the hasty trespasser who invades hundreds of thousands of firesides with an unsuitable radio program.

No advertising manager or sales-promotion expert, doing his part to encourage the sale of his product to the American public, can afford to disregard the new medium. He must be prepared to decide whether his product lends itself to successful use of the radio medium and, if it does so, how that medium may be used effectively to achieve the desired goodwill. Is the commercial broadcaster's program welcome in the listener's home or is it an intrusion? Does a popularly accepted commercial radio program really help the sale of goods? This is the final test of the value of the medium. How may the greatest goodwill be secured to the sponsor of a program without jeopardizing the patience of the radio listener? How may the returns from a commercial program be measured so that the cost of broadcasting can be justified?

These questions and many others are becoming of increasing importance to the sales-promotion expert. Since commercial broadcasting is still in a formative stage, these questions cannot be answered with the definite finality to which the advertising profession has become accustomed. But, with four years of commercial broadcasting, with more than three hundred commercial stations in operation and

more than a thousand radio advertisers on the air, considerable experience has been gained. Commercial radio broadcasting has been established permanently as a tool in the maintenance of public relations between producer and consumer.

Determination that the new medium is of value to an individual concern leads only to the threshold of another, perhaps even more difficult, set of problems. What kind of program material shall be presented? Who shall select the artists and manage the presentation of the program? How shall its acceptability to the public be judged? What radio stations shall be utilized to accomplish the best results?

Advertising managers and sales executives, who overlook no possibility for more effective promotion of their products, must learn the powers and limitations of the broadcasting medium. Is there any useful service which broadcasting can perform in helping their sales problem? What determines whether a product is suited to radio exploitation? How is the broadcasting presentation managed? How is broadcasting linked up with other sales efforts?

When the medium is adapted to the needs of their clients, advertising agencies must be prepared to advise them as to the service which may be performed by the new medium. Whether or not the direction of goodwill broadcasting is a proper and logical activity for the advertising agency is open to question. How the broadcasting expenditure affects the advertising appropriation and what kind of organization is required to give its clients adequate service in the direction of broadcasting programs are subjects which must sooner or later be carefully considered by every progressive advertising agency.

Owners of broadcasting stations, whether commercial or non-commercial, are faced with the problem of meeting a constantly mounting cost of broadcasting. They turn naturally to commercial broadcasting for relief. To succeed in this field, station managements must know

exactly what commercial broadcasting offers to the advertiser client. They must be competent to suggest what kind of program prospective commercial clients can present to secure the best results. They must know how to curb their client's natural tendency to misuse their stations by direct-advertising efforts. They must establish a new personnel organization, charged with the task of making contacts with advertisers and their agents on the one hand, and temperamental radio artists on the other.

The radio-program manager, without a grasp of the problems of the advertising and sales manager, as they relate to broadcasting, is likely to find himself faced with criticism from his client. How much shall he yield to the client's desires in sacrificing program acceptability for sponsor mention? How is the nature of the program type related to the goodwill attention won by the commercial sponsor? Where and how may new styles of radio presentation be developed? What is the experience of commercial broadcasters with various kinds of programs? How is audience reaction obtained? How are scripts and announcements prepared to secure the best results?

The sales department of the broadcasting station has its share of problems. What are the arguments applied against commercial broadcasting by publishers? What are the principles which determine a logical user of the broadcasting medium? What can commercial broadcasting accomplish for concerns suited to the medium?

Publishers of newspapers and magazines sometimes view with apprehension the possible inroads which the new medium may make into the advertising appropriation. To what extent does the service of broadcasting parallel that of printed advertising? Do some sponsors of commercial broadcasting overrate the value of broadcasting and thereby reduce the publisher's income? What arguments may properly be applied to stem a possible flood of appropriations to radio which could be more effectively expended in printed advertising? How may the publisher use the new medium to his own advantage?

The effort in the pages which follow to answer these divergent questions for the benefit of national advertisers, sales managers, advertising agents, publishers, and broadcasting-station managements, has been compiled with the aid of suggestions and advice of many of the author's former associates on the staff of the National Broadcasting Company and of N. W. Ayer and Son, as well as many other authorities in and out of the broadcasting field. The author is particularly grateful for the photographs and data secured from G. W. Johnstone and Carl Dreher of the National Broadcasting Company, Dr. Alfred N. Goldsmith of the Radio Corporation of America, Paul F. Stacy of N. W. Ayer and Son, O. H. Caldwell, editor of *Radio Retailing*, and Willis K. Wing, editor of *Radio Broadcast*. To Prof. Arthur Dickson of the College of the City of New York, the author is indebted for helpful criticism as to the arrangement and structure of the manuscript.

It is hoped that the many misusers of the new medium, who attempt to make it perform the function of advertising, may be aided by this volume in securing more effective results by a better understanding of just what radio broadcasting accomplishes.

EDGAR H. FELIX.

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CONTENTS

	PAGE
PREFACE	v
CHAPTER	
I. RADIO BROADCASTING, THE NEW GOODWILL MEDIUM	1
The Boom Period—Commercial Broadcasting Arose out of Necessity—Failure of Radio as an Advertising Medium—Its Goodwill Use—Value of Goodwill Influence—Why Broadcasting Is Not an Advertising Medium.	
II. LOGICAL USERS OF THE RADIO MEDIUM	11
Wide Sales Appeal Essential—Radio Industry as Broadcasters—Frequency of Purchase—Competitive Markets—Accumulated Appeals—National Advertisers—Introducing Innovations—Distribution and Broadcasting—Special Uses—Products Suited to Demonstration by Ear—Amusements, Municipalities, Cooperative Organizations, Motion Pictures, Producers, Railroads and Steamships, Newspaper and Book Publishers—Those Broadcasting Does Not Serve.	
III. BUILDING A BROADCASTING STATION	30
Problems of the Station Owner—Talent—Ether Congestion—Copyrights—Winning an Audience—Advantage of Experience—Few Stations Have Large Audiences—Buying Time from Commercial Stations—National Broadcasting Chain—Advantages of Chain System—Local Stations Serve Local Needs—Wire Lines Used in Broadcasting.	
IV. THE POTENTIAL AUDIENCES OF BROADCASTING STATIONS	50
Broadcasting Stations Have Definite Audience Followings—Value of Long-distance Listeners—True Service Range of Broadcasting Stations—Blue-sky Claims Made by Station Solicitors—Transmission Irregularities—Estimating the Service Range—Determining the Potential Audience in the Service Area.	
V. ESTIMATING A FEATURE'S AUDIENCE	78
Mail Response Gives only Secondary Evidence—Program Standards Determine Station Popularity—Stations of National Appeal—The Local Appeal—Specialized Listening Groups—Transmission Volume and Quality—Audience Varies with Hour of Day—Cumulative Value of Consistent Broadcasting—Competing Features—Audience of Smaller Stations—Formula for Estimating Station's Coverage.	
VI. QUALITIES OF SUCCESSFUL GOODWILL PROGRAMS	97
Attention-compelling Power—Continuity of Program Theme	

CHAPTER	PAGE
—Attainment of Distinctiveness—Fitness of Program to Character of Sponsor—Adapting the Program to Station's Program Standards—Directing Attention to the Sponsor—Acceptability of Commercial Programs to Radio Audience—Announcer's Influence on Program Acceptability—Ridiculous Attempts at Spontaneity—Centralizing Program Management in Impresario.	
VII. SELECTING A COMMERCIAL BROADCASTING FEATURE	110
Sacrificing Attention Value for Goodwill—Amusement Stars often Radio Failures—Influence of Acoustical Conditions on Program Quality—Range of Volume—Special Qualities Suiting Instruments to Microphone—The Speaking Voice.	
VIII. WHAT THE RADIO AUDIENCE WANTS.	123
Futility of Basing Program Appeal on Mail Response—Relative Popularity of Dance Music, Song and Humor Programs, Continuity Features and Classical Music Programs—Submerging Distinctiveness in Search for Popularity—The Continuity Program—Popularizing the Classical.	
IX. INSTRUMENTAL MUSICAL FEATURES	136
Attaining Distinctiveness in the Dance Music Program—Symphony Orchestra Programs—The Coming Specialized Radio Symphony—Chamber Music—Novel Instrumental Combinations—Specialized Radio Technique of Successful Instrumental Soloists.	
X. THE VOICE IN BROADCASTING.	150
Importance of Voice Impressiveness—Special Training and Unusual Inspiration Make Good Radio Speakers—Examples of Successful Radio Voice Acting—Radio Stage Fright—How to Speak for Radio—Detrimental Voice Characteristics—Radio Humorists—Successes and Failures Analyzed—Singing for the Microphone—What Makes a Good Microphone Voice—Group Singing.	
XI. FORMULATING THE PROGRAM POLICY.	166
Regularity of Appearance—Definite Program Policy Essential—Meddling with the Impresario—Succession Form of Program—Introducing Distinctiveness in the Succession Form—Featuring a Dominant Personality—Educational and Informational Services—Using Showmanship to Make Informative Programs Attractive—Educational Features Must Be Unbiased—Requirements of the Radio Drama—The Radio Continuity—Examples of Successful Continuities.	
XII. PREPARING THE SCRIPT.	184
Form of the Script—Value in Securing Correct Pronunciation—Form of the Continuity Script—Introduction of Continuity Features—The "Show Boat" Program—The "Gala-	

CHAPTER	PAGE
"pages" Program—Director's Duties during the Continuity— Microphone Limitations—Using Two Studios Simultaneously— —Conducting the Rehearsal—Radio Presentations of the Future.	
XIII. DIRECTING THE BROADCASTING EFFORT.	203
The Sponsor's Broadcasting Representative—Duties of the Program Director—The Musical Director—The Com- plete Broadcast Presentation Organization—Selecting a Program Director—Technical Musical Knowledge.	
XIV. OPENING AND CLOSING ANNOUNCEMENTS.	211
Radio Audience's Attitude toward the Commercial Program —The World Owes the Listener His Programs—Justification for the Listener's Attitude—Centering Attention on the Sponsor—Slogans in Announcements—Offering Booklets and Souvenirs—Results Attained by Commercial Broad- casters—Prize Contests—How to Title Booklets—Announc- ing the Succeeding Program—Sending the Listener to the Retailer.	
XV. PROGRAMS FOR EVERY HOUR	228
Fitting the Feature to the Hour—Early Morning Hours— Programs for Later Morning Hours—Direct-advertising Programs—Morning Programs Not Limited to Household Talks—The Noon Period—Early Afternoon Programs— Unrealized Possibilities of Late Afternoon Programs— The Evening Educational Period—Winning the Evening Audience—Showmanship in Time, News, and Weather Reports—Long-distance Hours—Seasonal Variations— Building on Consistency.	
XVI. GAGING THE VALUE OF BROADCASTING.	245
Intangibility of the Medium—Relation of Broadcasting Appropriation to Advertising Appropriation—Excessive Expenditure for Broadcasting—Why Exact Value of Broad- casting Is Indeterminate—Obtaining Proof of Program Acceptability—Who Writes Applause Letters—Special Offers to Stimulate Response—Questionnaires—Expert Program Critics—Testing the Sales Influence of Broadcasting— Comment Cards with Packaged Products—Questioning the Trade—Booklets for Determining Direct-sales Influence of Broadcasting.	
XVII. THE RELATION OF BROADCASTING TO ADVERTISING AND PUBLICITY	259
Broadcasting Should Not Decrease Advertising Appro- priation—Broadcasting Has Paid Its Newspaper Debt— Competition of Radio with Newspapers—Why Broad- casting Cannot Displace Advertising—False Criticism of	

CHAPTER	PAGE
Commercial Broadcasting—The Advertising Agency and Broadcasting—Broadcasting for Publicity Reasons—Abuses of Radio Publicity—Advertising the Radio Program.	
XVIII. THE BROADCASTING STATION	273
Services the Broadcasting Station Should Render the Sponsor—The Program Department—Its Guidance in Feature Selection and Appraisal—Contact with Artists—The Personal Appearance—The Operating Department—Its Efficiency Determines Quality of Transmission—The Microphone—How Input Operator Can Make or Unmake the Program—Judging Transmission Quality—Wire Lines in Broadcasting—Studio Signal Lights—How Chain Broadcasting Is Done—Meaning of Modulation—Technical Terms Used in the Studio—SOS Calls.	
XIX. SUPPLEMENTARY SERVICES OF THE BROADCASTING STATION.	298
Sponsor Entitled to Accurate Sales Data—Mail-response Figures Used in Sales Solicitations—Value of Field-strength Measurements—The Publicity Bureau—Data Required from Commercial Sponsor—Advertising Support to Commercial Broadcasting by Station Advertising—Censorship by Station Executives.	
XX. THE CHANGING STRUCTURE OF COMMERCIAL BROADCASTING	310
Dangers of Broadcasting Monopoly—Congestion of the Ether—Radio Industry's Lack of Leadership in Determining Standards of Broadcasting—Freedom of Speech and Freedom to Broadcast—How Freedom of the Air Works in the Chicago District—Dangers of Extending the Broadcast Band—Excessive Stations Foster Monopoly in Broadcasting—Legislation Cannot Bring Ideal Broadcasting Conditions—Extension of Chain System May Bring Undesirable Program Uniformity—New Basis for Chain Service Possible—Government Monopoly of Broadcasting Supported by Listener Taxes—Public Opinion Infallible Safeguard against Monopoly of Broadcasting.	
XXI. THE FUTURE OF COMMERCIAL RADIO BROADCASTING.	334
New Methods of Charting Ether—Developments in Studio Equipment—Possibilities of National and International Coverage—Influence of Wire Costs of Extension of Program Chains—Developments Permitting More Stations in the Broadcast Band—Receiver Improvements—Telephotography—Commercial Uses of Telephotography—The Coming of Television—Radio as a Rival to the Phonograph and the Motion Picture—Radio's Future Place in Human Society.	
APPENDIX	352
INDEX.	379

USING RADIO IN SALES PROMOTION

CHAPTER I

RADIO BROADCASTING, THE NEW GOODWILL MEDIUM

When radio spread its wings in 1920 and radio enthusiasm took hold of the American people, advertisers were quick to recognize it as a means of gaining goodwill. Here was a countless audience, sympathetic, pleasure seeking, enthusiastic, curious, interested, approachable in the privacy of their own homes. What a glorious opportunity for the advertising man to spread his sales propaganda!

The Boom Period.

The first broadcasting stations were erected to promote the sale of receiving sets, an advertising purpose. When KDKA began operating in Pittsburgh in 1920, radio sets, primitive in comparison with present-day products, were sold within its range by tens of thousands. WJZ followed a few months later and soon the ether was agog with radio. Newspapers devoted valuable pages to chronicling the events of the studios and to describing the building of receivers. Receiving sets were sold in vast quantities through every normal and abnormal outlet, even including barber shops, grocery stores, and undertaking establishments.

Radio, in those days, was little less than a mania, the object of wonder in every broadcasting center. Thousands of fly-by-night concerns of every kind devoted their facilities to making radio products, which the gullible

public bought without any understanding of their merit. Coincident with this mushroom expansion of the industry was the mad rush to erect broadcasting stations by every kind of concern having products to offer for public sale. All sought the goodwill and the word of mouth and newspaper publicity resulting from any and all broadcasting

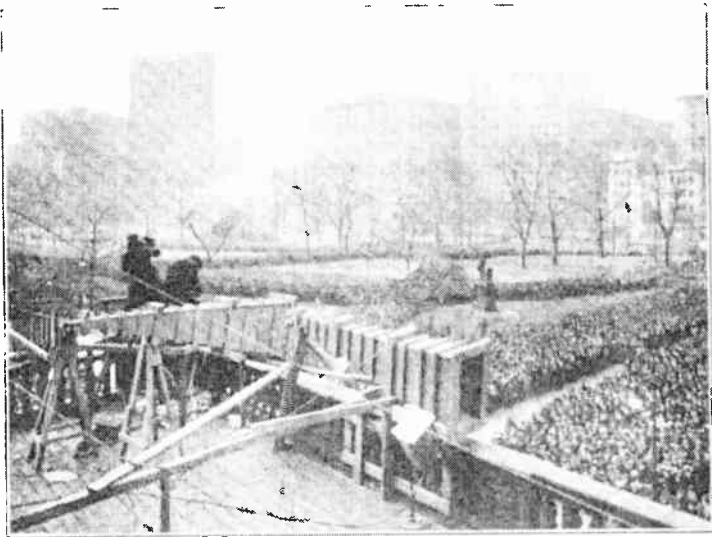


FIG. 1.—When, on Armistice Day, November, 1921, 155,000 people were enabled to hear President Harding's address at Arlington Cemetery, through public address systems, connected by wire lines at Arlington, New York and San Francisco, the world was amazed. Commercial radio programs reach ten times such numbers nightly in their own homes. (Courtesy of Radio Broadcast.)

efforts, however crude and inexpert, and hundreds of concerns made strenuous demands for the immediate delivery of broadcasting equipment.

Commercial Broadcasting Arose Out of Necessity.

The manufacture of broadcasting transmitters, properly licensed under all essential patents, was concentrated in the hands of the Western Electric Company, the manu-

facturing subsidiary of the American Telephone and Telegraph Company, by reason of its fundamental development work and patents in radio transmission, and the patent-licensing agreements which it had consummated with other important manufacturers. Realizing the hopeless confusion which would result from the simultaneous and unregulated operation of scores of broadcasting stations in each of the various population centers of the country, the telephone company erected Station WEAF in New York and offered it for hire for ten-minute or one-hour periods to all who wished to offer acceptable goodwill programs. Here commercial radio broadcasting was born out of confusion, to meet the pressing demand for radio facilities.

One of the first users of the new medium was the Queensboro Corporation, engaged in the business of erecting and selling cooperative apartments. An official of the company gave a ten-minute talk through WEAF on the advantages of cooperative apartment ownership. The broadcasting toll bill for that talk was \$50. Three weeks later, the Queensboro Corporation reported sales amounting to \$27,000, directly traceable to that one speech.

Rapid Change of Commercial Broadcasting Standards.

Were that talk delivered today, through the same station, either there would be an outcry of indignation on the part of the radio audience, or the talk would be promptly tuned out in favor of more enjoyable program material. The excellent results obtained from radio advertising talks during the pioneer days of commercial broadcasting were due to the fact that the radio audience was ready to applaud, with mail bags of enthusiastic letters, anything whatever which came through the air. But now, commercial broadcasting has become a specialized art; the radio audience has become discriminative; it does not tolerate educational lectures, however well delivered and authoritative, if their sole purpose is to promote sales.

The Failure of Broadcasting as an Advertising Medium.

When radio passed out of the wonder stage into the realm of accepted things, the art of radio showmanship came into being. Broadcast listeners now have their choice of a wealth of acceptable program material. They prefer the offerings of the Philharmonic Symphony Orchestra, the United States Marine Band, and Vincent Lopez' Orchestra to the address of the sales manager of a nut-cracker concern or an insurance vendor. Interest in the so-called educational talks has diminished so rapidly that their futility, during evening entertainment hours, has become recognized.

In spite of this, the influence of the early radio advertising lectures has not yet been completely eradicated. Hundreds of smaller stations still cater to the advertiser and broadcast his blatant eulogies to a well-nigh vacant niche in the ether.¹ More than two-thirds of the commercial programs offered are futile efforts at advertising. Scores of stations are discredited by their persisting policy of radio advertising. The difficult search for revenue from commercial broadcasting by some of the smaller stations has precluded discrimination as to the kind of material offered, with the result that they have an audience of insignificant proportions. Many thousands of dollars are wasted in presenting programs which do not engage the listener's interest. Only by patient listening in on all wave lengths in an ideal radio location is it possible to realize to what degree the radio medium is misused and how much it is misunderstood.²

The Goodwill Service of Broadcasting.

Recognition of the inefficacy of programs which antagonize the listener or which do not engage his attention has led to vast improvements in the standards of the successful commercial broadcasting effort. The objective of the sponsor is no longer a flood of letters or the accomplishment of a direct propaganda purpose. He concen-

trates his effort upon pleasing his listener, upon bringing to him features he wants to hear, for the sake of winning his goodwill.

Nothing is quite so difficult to appraise as the intrinsic value of goodwill. The broadcaster who spends thousands of dollars in a single hour's entertainment, which vanishes into a vague ether to an uncountable number of homes, may well pause to wonder what results he is accomplishing. The returns from broadcasting, however, can be measured and the effectiveness of the medium is slowly but surely being determined.

Problems of the Commercial Broadcaster.

Successful use of the broadcasting medium requires somewhat more than a mere understanding of its prime function, the winning of goodwill. The means the program sponsor uses is, fundamentally, the broadcasting station; the method, the nature of his program effort. The station or stations to be used must be selected with the same care as advertising mediums and the character of the program offered has the same effect upon the results achieved as the nature and wording of printed advertising copy.

The commercial broadcaster must consider not only the entertainment and interest-holding value of the program he offers and the competition it must meet, but also the reputation of the station from which it is radiated. He must determine how effectively he can capitalize the goodwill which he gains by his radio presentation in promoting the sale of his product. To win goodwill is not enough; the goodwill gained must justify itself in sales.

Appraising the Value of Commercial Broadcasting.

Advertising went through its growing pains just as commercial broadcasting is doing today. The first criterion of advertising value was the number of orders in the mail or the number of customers at the bargain counter

following the publication of an advertisement. Direct financial return was the barometer of advertising effectiveness.

The development of advertising did not reach its fullest effectiveness until the vaguer and more indefinite contributions of prestige, goodwill, and consumer acceptance were recognized. These intangible contributions of advertising influence are now so generally appreciated that many advertisements appear without the exact name or address of the manufacturer. Inquiry production is no longer the sole function of advertising. So long as an advertisement makes a trade-mark familiar and arouses curiosity, modern distribution takes care of securing returns for the investment. Yet, when a concern with this broad view approaches the microphone, it is likely to demand letters from the radio audience unceasingly and with almost insulting persistence, in order to obtain what is considered as tangible evidence of the value of the medium.

Heartbreaking pleas for mail response are offered by tearful announcers in the effort to abstract letters from the weary radio audience. The goodwill effect of many a program feature has been eradicated by strained efforts to direct attention to the sponsor. The public's radio applause has rapidly diminished because of artificial efforts to build it up. Applause is spontaneous, but many an inept broadcaster believes it can be obtained by persuasion or coercion.

The Value of Goodwill.

Capitalization of the broadcasting effort is a fine art. The broadcaster must devote considerable thought to the method by which he directs the satisfaction of his appreciative radio audience into the channel of sales influence. The more intensively cultivated the sales field, the more delicate and fickle is the buying impulse. The closer the competition, and the smaller the demarcation in price and quality between rival products, the more potent the influence of accrued goodwill. Here trade-name publicity,

high broadcasting gives so effectively, exerts its most productive influence.

If one John Clayton announces a thousand-dollar airplane for the American family, a few people read and forget. When Henry Ford does so, telegraphs will hum orders and postmen will carry in inquiries in flooded sacks of mail. There are fifty-eight makes of iceless refrigerators on the market at this writing, all making about the same claims for their products. One of these is made by a subsidiary of the General Motors Corporation. Because of name goodwill, it has a great advantage over its competitors. Experience in making automobiles, however, is of no great assistance in launching a new enterprise in a totally different field. The prestige of such names as Ford and General Motors is a tremendous asset.

The reputation of the big names in industry is the outcome of years of successful manufacture, which has built up an influential group of satisfied customers. It is the cumulative result of painstaking effort and of vast expenditure.

Goodwill Associated with Trade Names.

Radio broadcasting gains a different brand of goodwill. It builds goodwill in potential customers. It directs sympathetic attention to the conventional means of promoting sales, the appeal of advertising, the solicitation of the retail storekeeper. It attaches a friendly interest to what may be otherwise a meaningless trade-mark. It impresses, pleasantly and unobtrusively, a trade name upon vast numbers of people. It is a card of introduction to the general public.

Some commercial broadcasters have been remarkably successful in cultivating familiarity with their trade names through the agency of radio. They have accomplished this by a happy choice of program feature and commendable restraint in keeping their selfish interests in the background. The Happiness Boys, the Gold Dust Twins, the Goodrich Silvertown Cord Orchestra are household

words in the American family. Their names have never been coupled with an offensive advertising appeal. On the evenings the broadcasting artists constituting these groups are not busy before the microphone, they are filling engagements before audiences who pay to see them in person. How does such effective name publicity affect the buying impulse?

Gratitude and Curiosity as Buying Motives.

Gratitude is rarely considered as a buying factor, because the public is not supposed to possess it; yet its influence, as a result of acceptable goodwill broadcasting, has been demonstrated in a number of instances. Eveready Hour, broadcast each Tuesday evening at nine, Eastern Standard Time, for a number of years, through nearly a score of stations in the eastern half of the United States, is a radio fixture which has built up a tremendous following. No Eveready Hour has ever ended with an appeal for letters. Yet fully 100,000 letters have been received as a result of this feature. Several hundred writers have stated that they are users of Eveready products solely in appreciation of their broadcasting programs. Undoubtedly, a much greater number have not taken the trouble to write this interesting information to the Eveready people and a still greater number have been partly influenced by this appeal when asked by a dealer whether they wish an Eveready or a rival battery.

Curiosity is a strong buying motive. Broadcasting of a goodwill program arouses curiosity regarding a product. It invites attention to trial, particularly with goods having great frequency of purchase and close quality and price competition. Cigarettes, tooth pastes, shaving creams, collars, packaged grocery products, and cosmetics are examples of such products.

Why Broadcasting is Not an Advertising Medium.

Apparently, we have a supplementary medium; clearly it is not an advertising medium, useful in disseminating

sales arguments and selling points. We have not far to seek for the reason why it is not an effective advertising medium. Radio receivers are purchased for educational and entertainment purposes. The listener has his choice, almost invariably, of a number of stations from which he may seek the entertainment which appeals to him. If his particular desires are not met by one program, it is a simple matter to seek another. Any persistent violation of good taste in a program results in an immediate disappearance of the radio audience.

The microphone extends an invitation to thousands, tens of thousands, and hundreds of thousands of homes. The commercial broadcaster is nothing less than a guest and he should conduct himself as a guest. However excellent his program offering, if it be interrupted by a direct-sales appeal, he invites unfavorable reaction. He does not earn the right to inflict selling propaganda in the midst of a broadcasting entertainment any more than an agreeable week-end guest may suddenly launch into an insurance solicitation at Sunday dinner. If the broadcaster maintains his status as a guest, his advertising solicitation, at the proper time, is assured preferred consideration and attention.

How to Secure Effective Results from Commercial Broadcasting.

Embarkation upon a commercial broadcasting venture may be an orderly process. Fortified with a knowledge of what the medium can accomplish and a full understanding of how these ends may be obtained, the prospective user need not approach it with the courage of a gambler. Specifically, these are the questions he must answer:

1. Does the nature of the product, of its distribution, and of its buying appeal, justify goodwill and trade-name publicity?

2. Does the station or stations through which it is proposed to broadcast meet the requirements of program

standards and listener following to assure effectiveness of a goodwill appeal?

3. Does the nature of the program to be broadcast assure listener interest in competition with other features and is it of a nature which will win attention to the sponsor?

4. Is every means being utilized in advertising and sales helps to take advantage of the goodwill gained through broadcasting?

5. Is the broadcasting effort being effectively directed and is its acceptability systematically checked to assure adequate goodwill return?

CHAPTER II

LOGICAL USERS OF THE RADIO MEDIUM

The radio audience has been made the subject of thousands of experiments to appeal to its program desires. Concerns in almost every line of industry have sought to win its goodwill. Yet, some very logical users of the medium have ignored it, while some with little or nothing to gain by broadcasting have presented most pleasing programs. Apparently, the principles of what makes a logical user of the medium have not been generally recognized.

The fundamental fact that must be realized is that the radio audience is a cross-section of the American people. Wherever broadcasting stations are heard—in great cities, in small towns, in country villages, in rural districts—antennas stretch to form the bond between the broadcasting station and its audience. The listeners are not drawn from any particular class or walk of life. Radio receivers are sufficiently inexpensive to be within the reach of families of modest means, while expensive sets are available for the most fastidious. Evidence to prove this diversity of social strata in the radio audience is found in every questionnaire circulated to radio listeners on a large scale.

Wide Sales Appeal Essential.

The commercial broadcaster, therefore, who produces goods or renders service appealing to every class of society is likely to secure an adequate return for a well-planned broadcasting presentation. On the other hand, the smaller and the more specialized the buying group, the less effective the radio medium. The usual considerations which make

products unsuitable to radio goodwill appeals are high cost or specialized and limited function of interest to only a few.

Most Stations Appeal to All Classes.

The audience quality of a station is a subject requiring some study when a commercial broadcaster selects the station or stations through which he is to broadcast. In the solicitation of accounts for commercial broadcasting,



FIG. 2.—Radio's first appeal to the farmer is its utility, but its entertainment value soon leads him to displace his earphone equipment.

sales representatives are inclined to claim a definite audience class all their own, fitting exactly the sales needs of the particular concern being solicited. But practically no broadcasting station appeals to a limited and specialized class. The general character of a station's audience is the direct reflection of its program policy. A station making numerous and consistent efforts to win a farm audience, for instance, well located to reach large farm areas, attracts a larger percentage of farm listeners than one broadcasting

only jazz orchestras. But no one station has a corner or any special class of the public.

The program policies of nine-tenths of the broadcasting stations of the country are planned to appeal to all tastes. Dance music, singers, speakers, classical orchestras, and entertainers are balanced in a manner that gains a mixed audience. Individuality in most stations is largely confined to artistic standards and varying degrees of formality and informality in announcing. Aside from a few university and church stations, all broadcasters seem to have identical program policies, designed to corner as large a share of the audience as possible. Some have achieved excellent results by securing the best talent of each kind and presenting it in a dignified and pleasing way. Such stations have large audiences. Other stations have had to content themselves with mediocre features and second-rate commercial broadcasters. These have small audiences, recruited largely in their immediate vicinity, where preponderance of signal strength gives them an advantage over more distant and better-grade stations. This varying quality standard is the principal demarcation between the audiences of stations serving the same area rather than any marked difference in type of program offered, tending to appeal to entirely different classes of people. It is because of these conditions of generalized appeal that the radio audience of most stations is a cross-section of the American people.

Few Statistics Available.

Broadcasting stations can offer little evidence providing the character and extent of their listening audience. Many stations, solicited by the author for what information they had replied in the most general terms; many more ignored his requests entirely. It must be said that WEAf has made the only serious and accurate study of the radio audience. It maintains an extensive statistical department, larger than the entire personnel of most broadcasting

stations, to tabulate all the mail received. Questionnaires have been filled out by nearly one hundred-thousand of its listeners, a number sufficient to be truly representative. Of those addressed 64 per cent replied with filled-in questionnaires. Not all of the material so collected has been made available for publication, but an interesting sample follows: 51 per cent of those replying own their homes; 46 per cent, pleasure automobiles; 50 per cent, pianos; 74 per cent, phonographs; and 81 per cent have their homes wired for electricity. The figures quite clearly show an average cross-section of the public. Were the audience confined to people of moderately large and large incomes, more than 46 per cent would own their own automobiles. Were it predominantly people of small means, less than 51 per cent would own their own homes.

These figures, representing, as they do, the only conclusive investigation of the radio audience that has yet been made, indicate clearly that the prospective broadcaster should consider the effectiveness of appealing to the public in general with his goodwill message. He should look with suspicion upon any claims of a predominantly wealthy or predominantly professional audience, because such a claim is probably not founded on any convincing evidence. In short, the most successful commercial broadcaster is the one whose goodwill appeal is of sales influence with all classes of society.

Radio Manufacturers as Broadcasters.

Manufacturers of radio receivers, accessories, and supplies are usually considered ideal commercial broadcasters. Everyone who listens to radio is interested in the subject and therefore a potential purchaser. Radio batteries, for example, until the improvement of power-supply devices, were sold to very nearly 100 per cent of the radio audience. As an added inducement to the microphone, the radio industry has the obligation to support high-quality broadcasting because it is the life blood of its business.

Without broadcasting, there would be no radio business. Radio-set and parts manufacturers, moreover, have achieved excellent results with the radio medium, because of their better understanding of broadcasting and their intelligent program selection.

In addition to general prestige and the opportunity to call his trade name to the mind of those considering replacement of their present receiver, the radio manufacturer has the opportunity to gain the recommendation influence of broadcast listeners. These services are no more important to the radio-industry broadcaster than are certain other services of radio to a hosiery or a tooth-paste manufacturer. To limit commercial broadcasters to the radio industry, as some trade publications in the advertising field have attempted, is to exhibit a short-sighted estimate of broadcasting's potentialities. The argument that makers of radio sets and accessories are the only logical users of the radio medium is only the viewpoint of those who fear radio as a competitor to printed advertising.

The broadcast listener has already made his largest radio purchase, his radio receiver. He may be a prospect sooner or later for a better receiver or for maintenance accessories, but the turnover in radio sets does not approach that in motor cars. Ownership of an obsolete radio set is not nearly so distressing as possession of a worn-out and antiquated automobile. The great improvements in receiving-set construction of the last year or two promise the production of receivers having a lasting quality and permanence of satisfactory performance comparable to that of phonographs. The most active market for radio receivers, therefore, lies outside the present radio audience. The radio manufacturer is at no great advantage over manufacturers in other lines in his appeal to the radio audience.

Radio Audience Requires All Necessities of Life.

Every member of the radio audience is a purchaser of the necessities of life. Food, clothing, furniture, drugs, motor

cars, entertainment of every form are considerably larger items in the expenditures of the radio audience than are radio sets and accessories. L. Bamberger and Company, a Newark department store, has maintained WOR for about four years, and estimates its publicity value in that period at a million dollars, considerably more than double the cost of maintaining the station.

The first requirement which the prospective user of the broadcasting medium must consider is the extent of his sales appeal. For best results, the market for his products must be diffused through every class of society. The more specialized the buying group, the less efficient the medium. If appeal is limited to engineers, millionaires, bootblacks, cabinet makers, steam fitters, stokers, or any other class of specialists, forming a small percentage of the total population, he is likely to find broadcasting an unprofitable medium. He must regard his audience in the same light as the circulation of the large national weeklies, running in the millions. If mass appeal is not valuable, radio broadcasting is not valuable to the prospective sponsors.

Norman Baker, manufacturer of calliopes, is maintaining a broadcasting station at Muscatine, Iowa. Presumably it is building up familiarity with the name of his product at less cost than could be accomplished by any other method. But the buying decision in connection with such a product is so rarely made in the life of the average American citizen and broadcast listener, that, if his station serves no other purpose, it is a most wasteful method of approach.

Frequency of Purchase as a Guide to Determining Value of Broadcasting.

The goodwill appeal of commercial broadcasting is constant and persistent. For the present, spasmodic commercial broadcasting will not be considered, because events of such an outstanding character as to justify an individual goodwill presentation are exceedingly rare. Assuming a regular weekly or bimonthly program event, continued over

an extended period, as the only effective way of utilizing the medium, the more frequently in the life of an individual prospect an article is purchased, the more frequent is the opportunity of the goodwill attained by broadcasting to exert its sales influence. Frequency of purchase, then, may be set down as another criterion by which the value of commercial broadcasting to a prospective user may be judged.

Articles of great frequency of purchase also make the most effective subjects for advertising. The public is particularly responsive to new advertising campaigns for dentrifices and cigarettes, for example, switching readily to make a trial of different brands whenever a novel appeal makes its impression.

Broadcasters in Highly Competitive Markets.

There are large numbers of products in which the buyer does not have strong preference between brands. Many such products have high frequency of purchase and low unit cost. Competing lines are advertised intensively. Style and quality demarcations are not marked. Goodwill and established buying habit are the principal factors by which repeat orders are obtained. Brands are switched out of curiosity, and customer affection rests on a light foundation.

Here is a good field for broadcasting, and the manufacturers of products of this class are among the most successful broadcasters, as the Happiness Candy Company, the Goodrich Tire and Rubber Company, the makers of Gold Dust, Clicquot Club Ginger Ale, Maxwell House Coffee, Kinney Shoes, and Ipana Tooth Paste—to name only a few. One difficulty under which such broadcasters work is that their results are hard to trace. Buyers rarely reveal their buying motive when making small purchases. Only when special means are devised to determine the radio influence is the work of the medium identified.

Products Sold by Long Accumulation of Appeals.

Although large volume of sales in small units producing high frequency of purchase is an indication of a good field for commercial broadcasting, it by no means follows that its utility is restricted to such articles. Some goods are sold by a cumulative selling effort to which a prospect is subjected over a period of years. The first favorable impression of a make of automobile may have been acquired through an advertisement appearing years before actual purchase and renewed by repeated observation of advertising and the performance of the product itself. Constant reiteration of the trade name by every form of advertising exerts its cumulative influence. This applies to every large purchase made by the average family, where the amount of expenditure entails careful consideration to assure wise purchase, such as the purchase of a home or a motor car, or embarkation on a trip to Europe or a trans-continental journey.

Broadcasting is a favorable method of intensifying the cumulative influence by unobtrusive and pleasantly associated reference to such trade names. Broadcasting is the natural ally of the extensive advertising campaign.

Widespread Advertising Has Limited Consumer's Study of Products.

One of the influences of intensive advertising has been to reduce consumer study of technical qualities of products. Compare the attitude of the automobile buyer of ten years ago with that of the buyer of today. A decade past, the motor-car purchaser concerned himself with valve arrangements, timing gears, and drive-shaft design. Today he looks to manufacturer reputation and outward appearance. This is a logical development of continued advertising. Huge advertising campaigns cannot be continued from year to year without large sales of a product, and large sales over long periods depend upon consumer satisfaction. The power of technical appeals in advertising has slowly

diminished and greater emphasis is placed upon familiarity with a trade name. Consequently, the service which the broadcasting medium can render is proportionately increased.

Goodwill for Public Utilities.

Some businesses are subject to constant pressure from public opinion. In this class are the public utilities, telephone, traction, and power companies. Station WEAJ, while operated by the American Telephone and Telegraph Company, was a very helpful goodwill agent, although it was conducted solely as an experiment in commercial broadcasting to determine what bearing broadcasting has on the future of wire-communication interests.

Broadcasting has helped electric light and power companies by increasing their revenue. The New York Edison Company maintains a radio department, because the widespread use of storage batteries promotes the use of current for charging purposes. In testifying before the Public Service Commission, to justify his company's expenditures in radio programs, Arthur Williams, Vice-president of the company, explained that the annual income of his company has increased by an amount estimated at \$1,000,000 yearly through the frequent charging of radio batteries and the extra lighting used by late listeners. This frequently explains increased electric light bills brought to the company's offices for complaint.

Traction lines, faced with bus competition, railroads having active competition for excursion traffic, can use the radio medium to advantage. Only in those cases where public reaction to unnecessary expenditure has been active, due to rate cases before Public Service Commissions, is there question of the goodwill value of broadcasting to public utilities.

Goodwill Influence Brought to Bear on Large Numbers.

Some products do not have a high frequency of purchase nor a large proportion of buyers out of the general mass of the public, but their purchase is nevertheless influenced by large groups. For example, typewriters are not frequently purchased in the life of an individual, but the Royal Typewriter Company has found radio a valuable medium. There is no other efficient means of transmitting a goodwill message to large numbers of stenographers, who exert a favorable or unfavorable influence on purchasing agents. At the same time, name familiarity is of direct value in cultivating prospective purchasers. The only selling idea Royal gets over in connection with its programs is the phrase, "presented by the Royal Typewriter Company, makers of the easy-writing Royal typewriter." That idea, generally familiarized, is its compensation for the expense of broadcasting.

Bringing Attention to Innovations.

Another class of products, in which there is not necessarily great frequency of purchase, are innovations undergoing their introduction to the general public. These may be products which have been limited by cost or small production to a class appeal and are becoming sufficiently low in cost to warrant more general exploitation. Iceless refrigerators, at this time, are an excellent example of such products. The object of broadcasting, in this case, is to arouse curiosity and general interest so that the established methods of selling may be more acceptably received. The introduction of a new product is well under way if people generally are started talking about it. This objective radio accomplishes effectively.

Products of a mechanical or electrical nature, coming to the front in public attention, are handicapped because knowledge of their technical advantages is necessarily limited. Technical superiority is not understood as a selling argument and consumer satisfaction of past pur-

chasers is negligible. Commercial broadcasting's ability to win goodwill and attention among prospective consumers is utilized by concerns in this status to excellent advantage.

Distribution Should Precede Broadcasting.

However widespread the appeal of a product, if its natural sales outlets are not established in the territory covered by broadcasting, goodwill contact may prove a detriment instead of an advantage. If a consumer is led to ask his grocer for a new brand of ginger ale or a breakfast food because his curiosity has been aroused by the radio medium, he must have reasonable opportunity to satisfy that desire. If he finds no grocer in his neighborhood stocking that brand, an unfavorable reaction is created. The buying desire has been thwarted through lack of distribution and it is not easily revived.

The stimulation of consumer inquiry is used sometimes to force dealers to stock goods because of consumer demand. With a large sales force covering a territory intensively and with facilities for rapid extension of distribution upon the first sign of consumer demand, this method of securing retail outlets may be excusable. But it is a well-established fact, through advertising experience, that distribution should precede the stimulation of consumer demand if it is at all possible to secure it.

In cases where the natural outlet is other than a local distributor, radio is useful in making known the address of the source of supply. Mail-order houses and direct-mail businesses of many kinds are using the radio medium successfully. Some organizations necessarily have but a single place of business, such as educational institutions of all kinds—business schools, trade schools, and health institutions. Program selection for such organizations is an interesting problem because it is usually difficult to reconcile the needs and desires of the radio audience with an educator's idea of what ought to be broadcast. The price of failure to size up the temperament of the radio audience

is an absence of listeners and a waste of broadcasting expenditure.

Radio and the Amusement Field.

Radio has already exerted a tremendous influence upon various kinds of amusement and entertainment enterprises. The broadcasting of dance orchestras from famous hotels, programs by theater symphony orchestras, eye-witness descriptions of all kinds of sporting events, have stimulated public interest in them to a marked degree. Vincent Lopez and his Hotel Pennsylvania Dance Orchestra, the Capitol Theater Symphony Orchestra, the Mark Strand programs, the Waldorf Astoria and Hotel Commodore orchestras are only a few examples of this kind of broadcasting. Dance programs have suffered somewhat from too much microphone attention, and lack of individuality has exerted a negative influence. But this is not an inherent fault of the medium so much as it is lack of ingenuity in program planning.

Selling Municipalities by Radio.

Still another utilization of broadcasting is that attempted by Chambers of Commerce and municipalities to make their cities known to the country at large. In many instances, lacking distinctive program features, they have done more harm than good. An exception is the work of WPG, Atlantic City, which is able to furnish programs rivalling those of New York stations in the very area from which the largest proportion of its visitors are drawn. WMBF, Miami Beach, Florida, did effective work during the Florida boom, both because it had fairly good program material and because by a strange freak of circumstances, it came through with very good strength in the New York area. Other Florida cities attempted to gain similar publicity but their programs did not reach the urban centers of the north.

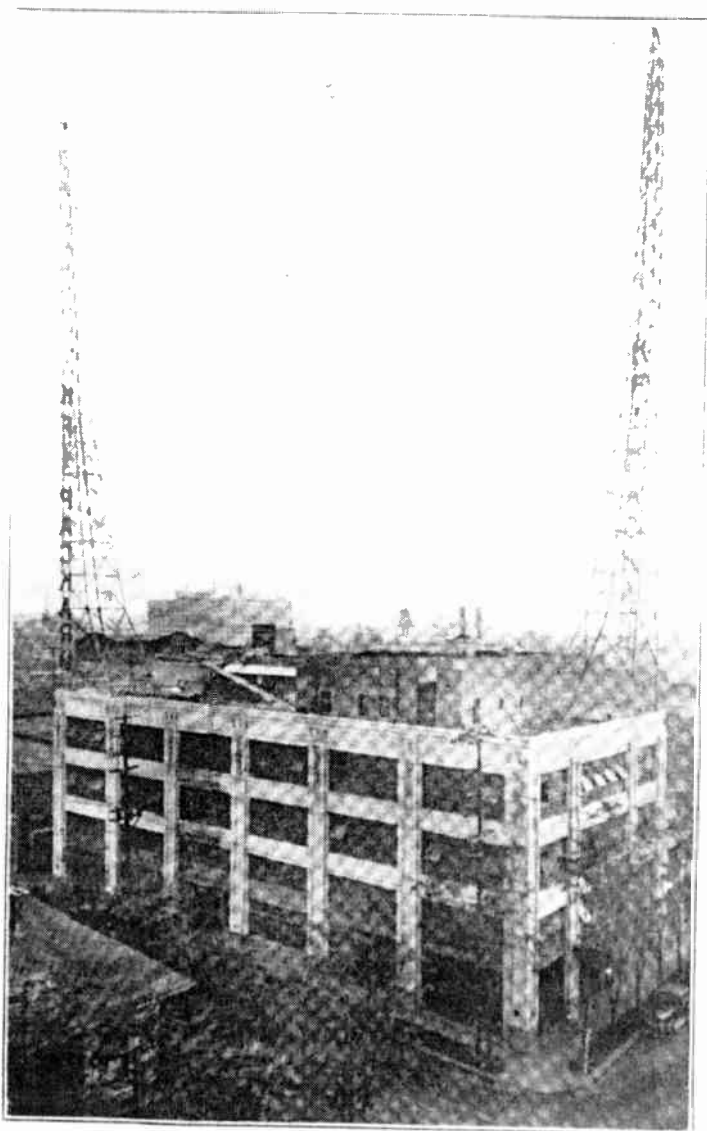


FIG. 3.—The antenna of station KFI, one of the leading commercial broadcasting stations on the Pacific Coast.

Cooperating Industrial Groups.

Cooperative organizations, representing groups of manufacturers with the purpose of promoting sales of an entire industry to the general public, are sometimes in a position to utilize broadcasting. It depends upon the degree to which goodwill, curiosity and general interest are buying motives in the case of that particular product. Organizations or groups are not in a position to advance familiarity with a specific trade name and, if their plea is not supported by advertising, broadcasting is likely to have only a minor influence. Exceptions are those whose products are of such a nature as to permit a direct presentation by radio. A "Greater Music Week," for example, could readily be aided by a radio campaign.

Products Suited to Aural Demonstration.

A class of goods effectively aided by radio are those best demonstrated through the sense of hearing. The Victor Talking Machine Company cleared the shelves of its dealers of slow-moving records by presenting its most famous artists in the numbers which they had recorded. The programs were planned with an eye to sales effect but, because entertaining aural demonstration was possible with this product, the attainment of that objective entailed no sacrifice in goodwill or program quality.

The Skinner Organ Company demonstrated its residence organ by radio so successfully that it more than justified the services of the country's finest organists. Although the piano had practically replaced the organ as a home musical instrument, radio brought the opportunity to demonstrate on a large scale the possibilities of the latest small home organs and to challenge, in the minds of huge numbers, the position of the piano as a home entertainment instrument. Direct sales were traced to the medium. Here was a case of rather limited appeal and the lowest possible frequency of purchase, using the medium successfully because of superior aural demonstration advantages.

Hohner's Harmonica Hours skillfully demonstrated how youngsters could use harmonicas, thus presenting their appeal to the most fertile market. Their commercial program consisted of solo and ensemble work by boys from ten to eighteen years of age, with an occasional feature artist who served to demonstrate the greatest capabilities of the instrument.

Motion Picture Production.

Several motion-picture concerns have been able to use the broadcasting medium with excellent results. Here the appeal is widespread, the frequency of purchase high, and the freedom of selection ample. One of the first motion-picture broadcasts was a talk by Jesse Lasky, Jr., twelve-year-old son of the motion picture magnate, who strode bravely before the microphone and told his adventures while camping out during the filming of "The Covered Wagon." He got over a vivid idea of the tremendous cast employed and the skill of the Indians in shooting and rope throwing, the herds of buffalos, and other elements of local color. The description aroused desire to see the film.

Travelogues and Travel Lectures.

Travel talks to promote railroad excursions or trips to foreign lands are ideal subjects for broadcasting. The product here, as in the case of motion pictures, makes its appeal to the eye, which can be satisfied only by actual visual experience. Consequently, presentation through the ear only stimulates the desire to see the reality.

Travel talks are particularly tempting subjects for the commercial broadcaster. Their success, in common more or less with every kind of program presented, depends upon effectiveness of presentation and recognition of the conditions under which radio labors. For the present, we are concerned only with what may be termed eligibility as a commercial broadcaster. Travel, presented by travel and touring bureaus, by railroad and steamship lines and hotels,

is a good possibility for broadcasting, provided that its appeal is not beyond the reach of a good proportion of the public.

One thing which aids such concerns in their use of the broadcasting medium is the fact that they have no means available of reaching huge numbers effectively and inexpensively in order to find that small percentage of prospects drawn from almost every walk of life. Unlike businesses serving particular industries, there are no specialized publications reaching great numbers of people particularly interested in travel, comparable with the complete coverage afforded by trade papers in such fields as the iron and steel trades and the oil industry.

Broadcasting by Publishers.

Certain books have been successfully exploited because their subject matter can be dramatized before the microphone. Not every book is suited to radio exploitation, of course, because the divulgence of plot interest necessarily destroys the desire to buy. On the other hand, if the plot is withheld and the subject merely dangled before the listener's eye without giving a satisfactory program, it is likely to be irritating or uninteresting. Again we have a class of product suited to the medium, but requiring expert program direction for successful radio presentation. By skilful program planning, the inherent difficulties can be overcome and attention can be directed to many kinds of works entertainingly.

Newspaper Broadcasters.

Newspapers, displaying their characteristic initiative, were among the first to erect broadcasting stations. The mere possession of a broadcasting station attracted so much attention in the early days that the maintenance of the station by newspapers was highly profitable in publicity return.

Smaller newspapers have dropped out of broadcasting recently in larger numbers because they could not withstand the program competition from large stations. Some newspapers are conducting radio stations giving excellent service, but are no longer receiving evidence that they are increasing circulations. Doubtless many newspapers would be glad to learn of a way to drop out of broadcasting without loss of prestige, because it is no longer serving the purpose which it originally served.

Newspapers, nevertheless, have a product appealing to a large group of the public, having great frequency of purchase and an effective trade name. Broadcasting someone else's dance orchestra, presenting a local soprano, and doing the various conventional radio presentations directs little attention to the newspaper itself, and it is for this reason that many newspaper stations are not actually paying their way. The successful user of the broadcast medium analyzes the buying desire for his product and adjusts his program accordingly. Newspapers must arouse curiosity as to their features, develop interest in their editorial policies, and give evidence of their superior news-gathering abilities in order to win readers. If their radio programs got such ideas over, they would be served effectively by broadcasting. However, this is a matter of program selection, which is not our consideration at this point. Suffice it to state that newspapers are excellent potential broadcasters because of the nature of their product.

Businesses Which Broadcasting Does Not Serve.

The demarcation of concerns which cannot broadcast successfully with the present development of the radio art is easier to define than those which are natural commercial broadcasters. Obviously, a concern which does not depend upon sales to the general public, but only to a limited group of specialists, is not an effective user of the medium. Nor is a concern making a product which is selected upon advice

and recommendation of engineers and technical experts, solely on the basis of technical merit. Where goodwill, reputation, and trade-name familiarity are dominant factors, broadcasting serves; but it is doubtful whether a truss bridge was ever built in preference to a suspension bridge because of reasons of sentiment or goodwill.

Goods which are not purchased by trade names are not profitable material for broadcasting, except by concerns which have a dominating position in the market for the product. Lumber, for example, is bought from the nearest lumber yard and there are no trade names known to the general public for lumber.

When the broadcasting medium does not reach the field of prospects, it is not a suitable medium. Chambers of commerce and municipalities, trying to draw attention to their cities throughout the country at large by maintaining their own stations, have already been cited as examples of such attempts at broadcasting which do not reach the desired audience.

Financial Limitations.

Another class of commercial broadcasters, although more properly considered under the heading of program-material selection, is composed of those whose limited available funds for broadcasting do not allow a program commensurate with the quality and dignity of their product. A dignified jewelry concern has been broadcasting through a New York station to the best of its ability. Being limited in its resources for advertising purposes, it could afford only a series of radio lectures by one of its own officers. The talks commanded attention only from those thoroughly familiar and interested in the subject of gems, and they failed to get over the dignity and standing of the concern. In fact, the general impression was that it was a low-priced jewelry house, appealing to every class of the public.

To recapitulate, determination whether broadcasting is suited to the needs of a concern is based on a few simple

considerations of buying impulse, distribution, and effectiveness of radio presentation. For convenience these factors are compiled in chart form.

FACTORS DETERMINING THE LOGICAL COMMERCIAL BROADCASTER

Factor	Considerations favorable to broadcasting	Special exceptions suiting product to broadcasting	Considerations unfavorable to broadcasting
Potential buying class.....	Every class of society a sales prospect	Special group but must be selected from general public	Small specialized buying group with definite demarcations by trade, line of business, social strata, or wealth
Frequency of purchase.....	Closely competing field with high frequency of purchase	Low frequency of purchase but brand selection based on numerous, accumulated appeals or special adaptation to aural presentation	Low frequency of purchase, especially when selection is based on technical considerations
Distribution	Normal outlets established in territory covered by broadcasting	Establishment of retail outlets depends upon consumer pressure	Broadcasting fails to reach territory where prospects reside
Buying impulse:			
Curiosity	Tendency of buying class to try out new brands	Gratitude a potential buying factor	Products sold on technical merit
Novelty.....	Innovations being introduced with aid of intensive advertising	Goods brought to mass price level for first time	Price limits sales field to wealthy
Goodwill.....	Close competition and similarity of competing products	Utilities and businesses dependent on public goodwill	Goods bought entirely upon specification and technical merit
Trade name.....	Easily remembered and associated trade name	Cooperative effort in behalf of an entire industry	Goods habitually purchased without reference to trade name
Suitability to aural demonstration....	Particular adaptation to demonstration by radio	Visual products, desire for which can be stimulated by aural presentation	Limited appropriation makes program inconsistent with dignity and standing of sponsor

CHAPTER III

BUILDING A BROADCASTING STATION

The first impulse of almost every prospective commercial broadcaster is to erect his own station. Before the present extensive facilities of commercial stations were available, this was the only course open to him. The capital outlay necessary to begin broadcasting was then quite moderate; there was no problem of paying for artists, because they appeared at radio studios in droves; the radio audience responded to all stations with prolific volume of applause; so that, from every direction came evidence supporting the advisability of erecting a new station. The usual estimate for the maintenance expense of a half-kilowatt broadcasting station was \$25,000 a year—quite reasonable, considering its publicity possibilities. It is no wonder that the number of stations multiplied rapidly until the ether channels were overfilled.

Problems of Building a Broadcasting Station.

Broadcasting, however, has now become a complex and specialized art. High power has been found necessary to serve large areas, and this has increased the initial outlay considerably. High power requires, also, that the transmitter be located some distance from centers of population in order to avoid blanketing of reception; while, on the other hand, the broadcasting studio cannot be successfully operated outside a large city. This entails permanent connection by special wire lines between the city studio and the broadcasting station some twenty or thirty miles away in the country. Wire lines for this purpose cost several thousand dollars a year.

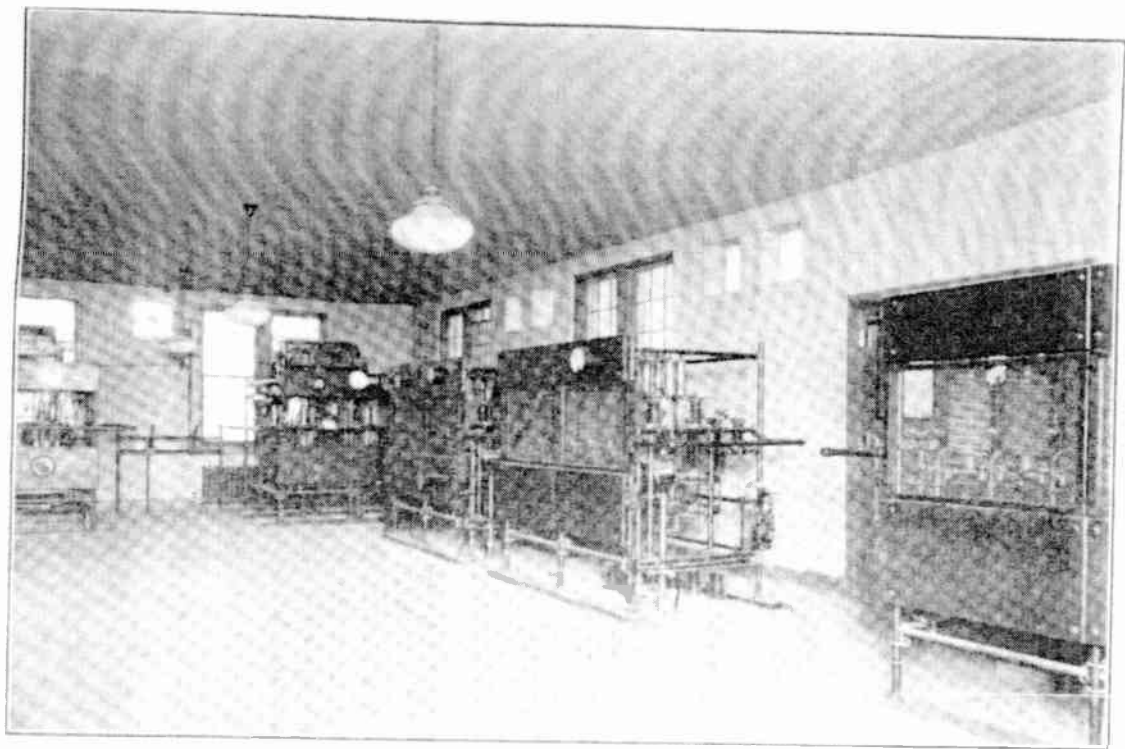


FIG. 4.—Some of the radio transmitting equipment at WJZ, Bound Brook, N. J., operated by the National

Under modern conditions, furthermore, reliance cannot be placed solely upon programs rendered at the station studio. The public demands varied programs. It centers its attention on stations having wire connections with concert halls, band stands, theatres, cabarets, dance halls, and opera houses. Stations in smaller cities, if they wish to attain any degree of popularity in competition with those of larger cities, must occasionally tap program features served by wire from the principal cities of the country. Amateur methods no longer succeed in modern broadcasting.

Other problems have increased in proportion to installation and maintenance costs. Artists no longer beg for broadcasting engagements. They must be invited, induced, cajoled, or paid to appear before the microphone. Which of these courses is most effective depends upon the reputation of the station and the position in the musical world of the particular artist being sought by the studio manager. Again that entails additional expense, both in program-department personnel and in actual payment for artists.

Depending on Voluntary Talent.

Some stations still depend entirely upon free talent for their program material. Usually the results are comparable to amateur night in a country vaudeville house. Artists of national reputation confine their broadcasting activities to stations which reach large audiences and upon the programs of which it is a distinction to appear. A new station, depending upon voluntary talent, is faced with an almost insurmountable difficulty in gaining a large following at the expense of established stations.

In nearly every large city, there are a number of small, struggling stations. The small-town station is usually one of this caliber. Aside from the audience in its immediate vicinity and occasional reception by long-distance enthusiasts, who hear it with no interest in the actual program being broadcast, such a station has practically no audience.

Congestion of Stations.

According to Department of Commerce figures, in four years of broadcasting, 63 per cent of the stations established have been closed down or sold by their original owners. This high mortality is an indication of the failing power of the smaller station. It may not please one of democratic sentiment to discover that radio is a big man's game, but the fact remains that listener attention is largely focused on a few powerful and experienced broadcasters.

The impression that all who wish may broadcast grew up out of the beginnings of broadcasting when wave lengths were available to all who applied. The ether is public property, but the number who may use it is limited because there is room for just so many stations. To quote from "The March of Radio," in the October, 1926, issue of *Radio Broadcast*:

There are 92 channels between 202.6 meters (1,480 kilocycles) and 545.1 meters (550 kilocycles) now available for broadcasting purposes. Fourteen of these are required for foreign stations, leaving 78 for American broadcasters. Two-thirds of this band, providing 52 channels, is needed for stations of 500-watt power or more, with exclusive channels for stations in the center of the country and those of 5,000-watt power or more; this allows for about 75 high-grade key stations. On the remaining 26 channels is ample room for small stations, serving only local areas, using 250-watt power or less. Five-hundred-mile separation can be maintained, giving room for 6 stations per channel, a total of 156 small stations.

"Freedom of the air" is a most tempting phrase to the professional agitator and persons of liberal tendencies who do not know the ether's limitations. They use the smashing phrase with grand effect, as they describe how great corporations and grasping monopolies have despoiled the people's ether, so that they may spread pernicious propaganda. They plead for a "free ether" which any one may use to spread his personal opinions at will.

But this picture is much distorted. The ether *does* belong to the people, but it cannot be free to anyone who cares to use it. It is a highly circumscribed medium with a definite limit to the number it can accommodate. Its indiscriminate occupation without restriction spells its utter destruction and nullification.

New Broadcasters Unwelcome.

The overcrowded condition of the ether makes the opening of additional broadcasters quite unwelcome to the radio audience, because each new station increases the selectivity required to tune in programs clearly and precludes the reception of distant stations on near-by wave lengths. Thus, at the outset, the new broadcaster is faced with prejudice which only persistent and outstanding service can overcome.

Some prospective broadcasters are not easily discouraged. In spite of these unfavorable conditions, there are at this writing, some 500 applications for new stations on file with the Department of Commerce, which, if granted, would about double the number of stations on the air. Many of these applicants hope to attract a following by appealing to some special grouping of society, rather than competing directly with the expert efforts of existing stations.

Appealing to Special Interests.

There are few examples in broadcasting of successful attempts to win a definite class of audience. Church stations, for example, have a specialized audience of those religiously inclined. The few university stations, conducting extension courses, also have a particular kind of audience, but neither of these classes of stations is suited to the needs of commercial broadcasting.

Stations have been erected with the object of appealing to such special interests as religious, fraternal, and labor organizations. If these stations adhere closely to the interests of their particular followers, their audiences are limited to those followers. Only a varied and balanced program has widespread appeal. Many of these organizations labor under the impression that a few stations are sufficient to cover most of the United States with their programs, thus offering an effective way to communicate directly with a nationwide membership. But, although 500-watt stations are sometimes heard for distances well

over a thousand miles, their regular service areas are very much smaller than is generally assumed to be the case. A daytime range of fifty miles and a nighttime range of a hundred miles is a liberal estimate of the true service area of a 500-watt broadcaster. At greater distances, quality of reproduction suffers, causing the listener to prefer nearer stations for his entertainment.

Any attempt to obtain a special class audience by a limited program appeal diminishes the potential audience of a station. As this is realized by program managers pursuing such a policy, they begin to follow conventional program policies so as to increase their audience. In the end, they simply compete with the larger stations and, lacking resources and ability to attract famous artists and musical organizations, the smaller station ultimately contents itself with a neighborhood audience.

Securing a Wave Length and the Right to Use Popular Music.

There are other problems, also, which every broadcaster faces. With the overcrowded condition of the ether, it is practically impossible, in most locations, to find a wave length which does not cause interference. The purchase of an existing station in order to acquire its wave length is a hazardous investment. The principle is already established that the sale of the physical equipment of a station does not include the sale of its wave length.¹ Station licenses are non-transferable and the right to a wave length is merely a temporary franchise from the government for the use of a channel in the public's ether. He who purchases an abandoned station cannot be guaranteed the use of the station's accustomed wave length, because that is not a part of the station's property.

The new broadcaster must make his deal with the American Society of Authors, Composers, and Publishers

¹ See Appendix: Radio Act of 1927, Sec. 11, Par. B, p. 371 and Sec. 21, p. 374, for regulations concerning the establishment and licensing of a broadcasting station.

in order to be permitted to use the most popular musical selections, practically all of which are controlled by the society. This organization has not yet established a definite scale of charges to broadcasting stations and makes contracts, giving protection against copyright infringement, only for limited periods. A strained situation exists which constitutes one of broadcasting's most serious problems. By purchasing time on the air from an existing toll station all of these harassing difficulties are transferred to the broadcasting station management and lifted from the shoulders of the goodwill seeker.

Winning a Listener Following.

Even assuming the solution of all of the problems of installation, wire lines, wave-length and copyright license, the new broadcaster has still to win his audience. Presumably established stations in the same locality have been serving the public for a period of months or years. Their followings are the product of good and faithful service, of consistently high-standard program policy. The faithfulness of established audience followings is not to be lightly regarded. Winning a radio following is accomplished in face of real competition. It requires marked superiority for an extended period to make great headway in winning over listeners whose habits and preferences are quite firmly established. Ask any radio listener what his favorite stations are and he can give you his answer immediately. Every station has an indefinable personality, the product of program quality and announcing policy, which wins an established following among those who like its policy.

Advantages of Experience in Station Operation.

The opening of a new station nowadays attracts but little attention. Experience is a vital factor in broadcasting, and the advantages of the established station over the newcomer are very marked indeed. An established station

has its routine thoroughly developed, it knows how to get the best possible quality of transmission with every kind of musical combination, its announcers are familiar to the public, and the program preferences of its audience are analyzed and understood. These things cannot be gained in a day. It is an understanding of the kind which an editor gradually gains of his reader audience through long experience.

Now that there are more than enough broadcasting stations established in practically every section of the country, a beginner in broadcasting, appearing with his new station and seeking to establish a large audience at the expense of existing stations, must demonstrate a new and superior brand of radio showmanship. If a newcomer can accomplish this, he is indeed a broadcasting genius.

Building a new broadcasting station for goodwill purposes is equivalent to publishing a new magazine in order to have a place to advertise or building a private system of roads to enjoy motoring. The ownership of a broadcasting station is a grave responsibility better left to experts and specialists who have devoted time, study, and expense to solving the problems of broadcasting.

Few Stations Have Large Audiences.

Any statement about the listening audience is easily challenged, because no questionnaire or observation can be conclusive. Yet it is likely that a list of 50 stations could be compiled which consistently attract 90 per cent of the entire American audience. The other 550 or more stations now operating content themselves with the remaining 10 per cent.

At the present time, there are thirty-eight stations broadcasting in and near Chicago. Between eleven and twelve o'clock, one evening, listening near New York, I heard nine different jazz orchestras on the air from stations in the Chicago district. Yet to add one more

station to such a congested situation is the ambition of several Chicago concerns. In other parts of the country, where the situation is less critical, the ambition to erect new stations is even more in evidence. There are as many applications for new stations as there are stations in existence today.

In the list of applicants for station licenses is a predominance of small, unknown concerns. There are practically no leaders in any important line of business, known for their shrewdness in advertising expenditure and their ability to win goodwill. This is an indication of the opinion of men of careful judgment as to the futility of adding to the ether's congestion.

Comparison of Broadcasting and Newspaper Publishing.

Broadcasting has much to learn from the newspaper publishing business. Most towns of 25,000 to 50,000 population have two strong rival newspapers. But a city of 6,000,000 does not support 200 newspapers. *Editor and Publisher*, in its yearbook, gives circulation figures for sixteen New York week-day papers, morning and evening, totaling just under 4,000,000. The nine leading papers have 89 per cent of this circulation. As there is duplication in morning and evening circulations, perhaps a still clearer picture is gained by considering these two groups separately. Six of the nine morning papers have 97 per cent of the circulation; four of the seven evening papers have over 89 per cent. Apparently, the tastes of 4,000,000 people permit of only a few general methods of news presentation to meet practically all their preferences. Newspapers do not differ so much in the matter which they print. They deal with the same news events; they describe the same sports and the same political news and practically all use comics and humorous features to appeal to the entertainment element. Their principal differences lie in their method of handling the news, whether sensationally or conservatively, whether predominantly by illustration or by word description.

The distinction between broadcasting stations is somewhat along these lines. All broadcasting stations present solo artists, musical groups of various kinds, and educational lectures. The differences are in the grade of artists and in the methods of announcing. There is no extraordinary variety of program material; the differences lie in quality and standards. Three or four broadcasting stations, giving a clear signal, meet the needs of any community just as three or four general newspaper policies meet the desires of the most cosmopolitan group of newspaper readers.

There may be a few localities in which there is a shortage of broadcasting, but certainly not in any of the population centers of the country. The opportunity of the newcomer in broadcasting lies principally in the utilization of existing stations.

Buying Time Is Buying Audience.

The purchase of time from a commercial broadcasting station corresponds to an investment in white space of a magazine. When a contract for space in an advertising medium is purchased, the rate charged is determined by the established size of the audience or reader body of the medium. In like manner, the time of a broadcasting station obtains its value from its established following. Whether that following is retained for the particular program being broadcast depends entirely upon the merit of that particular program, just as an advertisement's effectiveness and the percentage of a magazine's readers which observe it depend upon the attractiveness and readability of the advertisement. But, no matter how fine a piece of copy is used, if a magazine has few readers, it cannot exert great influence. Likewise, the purchase of time on the air is of little value with a station consistently broadcasting mediocre programs because the potential audience is limited.

Recognition of this obvious principle has caused the more successful commercial broadcasters to maintain high program standards for both their non-commercial and their commercial features. The non-commercial programs are called sustaining programs because of their influence in determining the proportion of the total radio audience which listens habitually to the station.

The National Broadcasting Chain.

The National Broadcasting Company, with its starting point at Station WEAf, is the most perfected commercial broadcasting organization in the country. Its network of stations, linked by wire lines, thoroughly covers the eastern half of the United States to the foothills of the Rocky Mountains and the Pacific Coast. The network is divided into regional zones. New York is the center of the first; the second zone is a four-hundred-mile circle, including the Central West and New England; while the third zone is farther west, including Minneapolis and St. Louis; and the fourth covers the Pacific Coast.

The commercial broadcaster pays a specific rate for the use of each station included in his program. The details of the National Broadcasting Company's facilities are not given here, because the number of stations is growing and the rates are changing. In a general way, however, access to the third zone is extended only to those who purchase a certain number of stations in the second zone, and likewise the second zone is available only to those using a certain number of stations in the first zone.

Under existing arrangements, the most extensive available coverage, through an organized chain of stations, includes broadcasting stations in New York and Philadelphia; Providence, Worcester, and Boston in New England; Buffalo, Pittsburgh, Cleveland, Chicago, and Detroit in the Central West; Nashville, Louisville, St. Louis, Kansas City, and Minneapolis in the Mississippi Valley; Washington, Atlanta, Louisville, and Memphis, the South; and

Los Angeles, San Francisco, Portland, and Seattle on the Pacific Coast. Extensions and additions to this chain are projected in the immediate future.



FIG. 5.—The new building to be occupied by the National Broadcasting Company in New York in which the most elaborate broadcasting studio facilities will be installed for supplying its increasing number of station subscribers and commercial clients.

The number of stations combined in the National Broadcasting network is rapidly increasing, with the result that there is prospect of duplication of stations serving the same

area. By establishing two duplicating chains, the "Red" and the "Blue" networks, the National Broadcasting Company has instituted a degree of competition between the two chains. Being controlled by a single organization, however, they cannot offer true competition because an important client on one chain cannot be ignored, if he complains that a feature on the other chain is robbing him of his audience.

Rival Broadcasting Chains.

A number of networks are now being established, some of them duplicating a part of the territory covered by the National Broadcasting Company. It is not unlikely that ultimately there will be three or four available networks, each covering at least the eastern half of the country. Eventually, some of these newer chains may become of sufficient importance to earn substantial audiences of their own, so that the commercial broadcaster will have available a number of possible groupings of stations. There is a limit, however, to which profitable regrouping of stations can continue, because the radio audience has no desire to listen to more than one program at a time. There may be two or three successful competing chains, but there will never be ten or twelve, all of which have the attention of large audiences. The saturation point, which limits the number of successful newspapers in a community, applies to the number of different appeals by broadcasting.

The smaller chains, however, will serve a useful purpose. Every now and then, an ambitious broadcaster hazards a frankly uncertain program venture over an expensive network. But, in general, a commercial broadcaster, spending from \$4,000 to \$6,000 an hour for the privilege of broadcasting through a substantial string of stations, is not likely to go very far afield in his experiments with program material. The amount of expenditure involved makes necessary concentration on the more conventional methods of program presentation of assured acceptance

by the public. Here is the constructive field of service for the smaller chain. By means of try outs on smaller competing chains, the effectiveness of a program can be determined in advance. We may look forward to two or three major leagues of broadcasting and a large number of minor leagues, the latter serving principally local interests and developing broadcasting for the major chains. Thus, valuable experience, which may contribute significantly to the rapid advancement of radio presentation, can be gained without jeopardizing the goodwill of the most sophisticated and extensive audience groups.

Advantages of the Chain System.

The chain system has advantages and disadvantages. It lays broadcasting open to charges of monopoly. But a broadcasting monopoly is based entirely upon popularity or an ability to do things better than do rivals.

To quote again from "The March of Radio," in the October, 1926, issue of *Radio Broadcast*:

The ability to do a thing better than anyone else is a very sound foundation for an unrivaled enterprise. Anyone who wishes to rival this (the National Broadcasting stations) chain, having sufficient capital and brains, will find it possible. Broadcasting stations can be combined and wire lines hired to link them. It is true that commercial broadcasting has not yet developed to the point where two competing chains can be profitably maintained; but, when that day comes, the rival chain will come into being promptly. Broadcasting monopolies can be retained only by cornering goodwill with clean and desirable features. On that basis, we may welcome monopolies, real or fancied.

The ascendancy of any one chain or system of broadcasting stations is not only the outcome of successful analysis of the public's desires and consistent service to its interests, but is also a power maintained only by constant vigilance and improving service. The broadcast listener has but to turn his dial and four or five other stations offer their program service to him. While the initial

attention of the listener may be naturally focused upon his favorite station, if any particular program effort fails to win his attention, he at once samples the offerings of other stations until he finds a program which he considers desirable.

Consistent failure to please the audience gradually diminishes the audience of any station. When WNYC was established in New York City by the administration then holding office, the publicity which attended its opening aroused considerable newspaper attention. Its first programs served a large audience. Within a year after that station was in operation, it would have been possible to make a group picture of its usual audience on the City Hall steps.

The facilities of a broadcasting station, then, are the means by which a fairly definite audience is reached. The extent of this audience is limited not only by the radio population in its service area, but by its general program attractiveness and its acquired reputation for the presentation of appealing features. Good programs attract more good programs, and the leadership of a station in an area is not easily taken away. The chain station has advantages over the station placing reliance on local talent because it has the choice of the best program material available in the largest cities, while the commercial broadcaster who operates his own station must overcome great obstacles in winning audiences in the face of established followings.

Local Needs Must Be Met by Local Stations.

A national broadcasting chain, however, cannot serve a local point of view. This assures a permanent field to the small broadcaster, serving the special interests of a community. Local talent and local events have their appeal, just as the local newspaper competes successfully with large national newspapers. A monopoly of the ether is impossible, unless the number of available frequencies for broadcasting is greatly reduced, because a

large combination of stations cannot serve a particular regional interest.

It may be argued that a national broadcasting chain may gradually increase the number of stations linked with it until all the good stations of the country are absorbed. But the limit of growth of a national chain is reached when every area of the country is being served by one good station included in the chain. Duplication of stations in the same area, except for a few national events of transcendent importance, is an uneconomical process, just as two street-car lines running in the same direction on the same street do not double the service. If station licenses are granted with the same care that they have been in the past, there will always be three or four stations in every area as well as a score or more of stations at a moderate distance.

Services of the Chain Stations.

A chain of broadcasting stations, concentrated in the hands of a powerful broadcasting organization, expands the service and value of broadcasting. Frequent inter-linking of stations eliminates the unreliability of wire services used only occasionally for broadcasting purposes. Experience in continued chain broadcasting results in a smooth flow of program without frequent "stand-bys" or announcerial ineptitudes. There is a finished showmanship which is the product of long experience in every phase of the broadcasting art.

The complexity of chain broadcasting is little appreciated except in technical circles. A wire line connecting broadcasting stations is no average talking circuit, used for ordinary telephone conversations and loaned to broadcasting stations for their use.

Special Wire Circuits Used in Broadcasting.

In ordinary telephone conversation, the two parties are satisfied as they can understand each other clearly. It is not necessary that the reproduction shall have full naturalness and perfect likeness, difficult to distinguish from the

reality. For this reason, telephone circuits are designed to transmit only voice frequencies lying between 500 and

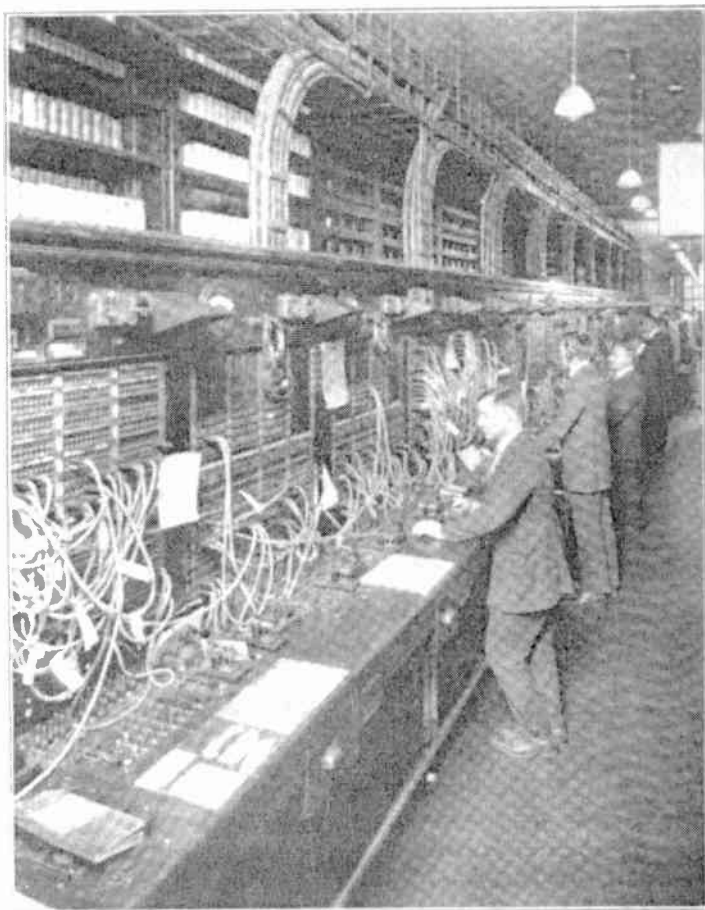


FIG. 6.—Test boards at the Walker Street Building of the American Telephone and Telegraph Company, through which radio programs to all parts of the country are routed.

2,000 vibrations per second. This gives understandable but not perfectly natural speech. Because of long practice .

in speaking over the telephone, it does not often occur to the habitual telephone user that only a part of the voice sounds are transmitted. But one using the telephone for the first time can hardly understand the sound because it differs so from the sound of natural speech.

In ordinary speaking, we use frequencies ranging all the way from 150 to 10,000 vibrations per second. To make a pair of telephone wires responsive to such a wide range of frequencies, it is necessary to install considerable extra equipment. A line used for broadcasting purposes, handling both speech and music, receives considerable engineering attention, making it considerably more costly than an ordinary toll circuit used for conversation purposes. Numerous tests and measurements are made to determine the carrying qualities of the line to be used for broadcasting throughout the range of frequencies to be handled. Upon the basis of these measurements, special balancing equipment, comprising inductances, capacities, and filters, is installed until the line is adjusted to transmit the entire range of frequencies necessary to faithful musical reproduction without appreciable distortion. It is for this reason that telephone circuits used in connection with broadcasting are somewhat more costly than ordinary commercial "talking" circuits.

The commercial broadcaster who utilizes a chain of broadcasting stations does not have to concern himself with such technical problems. These are the business of the station, just as a magazine publisher must worry about paper, printer, and engraver. He who erects his own station takes these responsibilities upon himself.

Sustaining Programs of Chain Stations.

With the facilities which a nation-wide broadcasting chain offers, also comes opportunity to handle outstanding broadcasting events which would not be offered to smaller stations individually. World's Series baseball games, championship prize fights, Philharmonic concert orchestras,

programs by operatic stars, and all the outstanding features of radio are offered first to the group having superior broadcasting facilities.

Combined handling of important broadcasting events builds a reputation for important broadcasting chains of greater extent than any single station can hope to achieve. The commercial broadcaster profits directly from the establishment of such listener followings. But, with this advantage, he also gains a responsibility to make a program effort worthy of the medium and its following. Just as the opportunity to make a good impression is enhanced by high program standards of broadcasting chains, so also is the unfavorable reaction resulting from inexpert presentation through them.

The cost of broadcasting through the recognized commercial chains is based upon actual cost plus a reasonable profit. The size of the listener audience cannot easily be determined because there is no reliable way of finding its extent. Consequently the matter of station selection is not a thing which can be reduced to simple terms of calculation. At first sight, the purchase of time on the air is purely a matter of chance. The number of potential listeners can be estimated, but just what number listen habitually to a given chain of stations is a variable quantity and will probably remain so for a long time to come. No magazine can give assurance to an advertiser that his particular page of advertising will be seen and read by any definite proportion of its readers, yet this offers no barrier to the sale of advertising space. The question of reader attention is answered from the experience of other advertisers using the same medium. The same method is applied in judging the value of a commercial broadcasting station. This subject is considered in subsequent chapters.

Building Stations or Buying Time.

Considering the advantage of the established audience of chain stations, the freedom from responsibility for

technical and management problems, and, on the other hand, the many problems which the station builder must solve, it is obvious that the erection of a station for goodwill purposes is advisable only when the special needs of a locality require an additional station. The commercial broadcaster uses radio to gain goodwill, and it is immaterial by what means the result is secured. It is not necessary for him, in most cases, to enter into the actual business of maintaining and operating a broadcasting station.

In St. Louis, several months ago, eight or nine concerns combined to erect a broadcasting station on a cooperative basis. While there is much greater justification for erecting a station for ten clients than for a single client, the most unpretentious broadcasting station does not justify its expensive maintenance until it has some twenty or thirty regular commercial users.

The decision to erect a broadcasting station should be made only upon a thorough study of the broadcasting needs of the area to be served. If there are no stations within two or three hundred miles of a desirable locality, and a sufficient number of potential users are available, there may be justification for the erection of a station. But this condition does not obtain in any of our important centers of population. In almost every case, toll broadcasting through the facilities of existing stations meets the needs of the average commercial goodwill builder.

CHAPTER IV

THE POTENTIAL AUDIENCES OF BROADCASTING STATIONS

Buying "time on the air" is a purchase of audience attention. In appraising its value, it is not sufficient to know the service area of a radio station and the population residing in that area; it is necessary to obtain an index as to the actual listening audience of the station under consideration.

The solicitors employed by radio stations usually confine themselves to a discussion of the potential audience. It is not difficult to take a map, draw an arbitrary circle with the location of a broadcasting station as its center and the service range as its radius, and total the population in that circle. But the conclusions reached by such a computation are likely to be misleading. Deductions must be made for non-radio listeners, for the number not using their radio receivers at the particular time it is proposed to broadcast, and finally for the number who listen to other stations. Subjected to these considerations, the size of a radio audience dwindles to a rather nebulous and indefinable figure.

Nevertheless, it is not impossible to appraise the value of a station's coverage. Given a knowledge of the radio listeners in its territory, a conservative estimate of its service range in all directions, and an honest appraisal of its general program popularity, a fair estimate can be formed of its value as a goodwill disseminator.

Family Listening Group the Basic Unit.

To get at the fundamentals of the problem of ascertaining the size of a radio audience of a particular station, we must

investigate not only the range of the station but the listening habits of the audience itself. To do this, we must study the reaction of a group of radio listeners seeking entertainment from a receiving set. This group is the basic unit, multiplied by tens, hundreds, or thousands of thousands, which makes up the audience of any station. The reactions of this unit give us an index to the habits of the entire radio audience. Their choice of program feature is determined by their individual tastes and by the distance that they are located from a particular station.

Experience has proved that there is a definite favorite broadcasting station for every listening group which almost invariably has the first opportunity to win its attention. Almost every broadcasting station has received thousands of letters from admiring listeners which state definitely that it is their "favorite" station. When the favorite station's program does not suit, other near-by stations are sampled until a satisfactory program offering is discovered; or, when a rival station announces an exceptional feature in the press, the audience may be drawn away. But an average program effort, unheralded by advertising or other newspaper notice, depends upon "favorite station" listeners for the major part of its audience.

The analysis of radio mail has not yet been sufficiently perfected to permit an exhaustive study of audience listening habits. In a period of one year, WEAf found that less than 10 per cent of its audience wrote more than one letter to the station. It was found that near-by listeners, within a hundred miles or less, usually comment on several program features when they finally do write, indicating that they are habitual followers of the station's programs. Most habitual listeners reside in the vicinity, that is, within twenty-five to one hundred miles, according to the power of the station. On the other hand, every powerful broadcasting station receives mail from all parts of the country and even occasionally from foreign countries. WGY, Schenectady, for example, is a favorite of British

listeners because it sends a comparatively powerful signal into the British Isles.

Value of Long-distance Listeners.

Letters from long-distance enthusiasts are sometimes cited as evidence of a station's extensive coverage. The long-distance listener, however, is not to be considered as an asset when goodwill broadcasting is undertaken.



FIG. 7.--A large proportion of long distance listeners are technically inclined youngsters who build highly sensitive and critical receiving sets.

Goodwill is dependent upon the satisfaction and pleasure derived from listening to a program. A long-distance listener does not seek that pleasure. He seeks the thrill of hearing the call letters of the distant station. He would be satisfied if stations more than 250 miles from his location confined themselves to constant repetition of their call letters.

The attention given to distant stations is of an entirely different nature from that given to near-by locals. As a

wit has aptly stated, there are some people who would rather hear a sneeze from Honolulu than a symphony concert from their home city. Representatives of some commercial broadcasting stations, however, have not hesitated to play upon the ignorance of potential commercial radio broadcasters by claiming a nation-wide audience because they have letters from a few rabid long-distance enthusiasts in faraway states.

The long-distance listener, particularly in urban centers and in areas where many broadcasting stations may be heard, does not ordinarily begin his activities until after 10:30 or 11:00 o'clock in the evening. The long-distance audience reaches its peak shortly after midnight. The rabid long-distance listener may listen contentedly to the program of the local station during the early hours of the evening, because it is difficult, if not impossible, to do real long-distance work until a comparatively late hour. Consequently, so far as goodwill broadcasting is concerned, the percentage of long-distance listeners in the radio audience is of little or no consequence.

As an example of long-distance reception conditions in a crowded center, a receiver in New York City, giving a good loudspeaker signal from Philadelphia during the day, is usually sufficiently sensitive to receive signals far beyond the Mississippi River after 1:00 a.m. The oft-claimed feat of hearing Pacific Coast stations on the Atlantic Coast is the product of a good antenna in a good location, a fairly sensitive receiver, and a zeal and willingness to stay up until almost daybreak.

Long-distance reception has become of considerably smaller importance in the radio situation since the standard of programs has been significantly raised and the quality of reproduction attainable has undergone almost revolutionary improvement. While the radio receiver was an almost magical, rather than musical device, the thrill of hearing a distant station was one of its principal claims to attention. Enthusiasm for long-distance reception is a

passing phase, out of which every normal listener gradually progresses, after he has heard the principal broadcasting stations of the country. Thereafter he confines himself largely to near-by reception which gives him faithful and natural reproduction. Expressions of long distance enthusiasts should not mislead the commercial broadcaster to form an exaggerated conception of the service range of a station.

The Service Range of Broadcasting Stations.

What the commercial broadcaster is interested in is the service range and service area of a station. The service area of a broadcasting station is limited to the territory in which it delivers a sufficiently powerful signal to permit clear and loud reproduction by a receiver of average amplification and sensitiveness without distinguishable distortion and without a noticeable background of extraneous noise.

Dr. Alfred N. Goldsmith, Chief Broadcasting Engineer of the Radio Corporation of America, estimated the effective service range of broadcasting stations according to power as follows:¹

Antenna Power in Watts	Service Range in Miles
5	1
50	3
500	10
5,000	30
50,000	100

This is a most conservative estimate, based upon loud-speaker reception, day and night, at all seasons (except during extreme periods of atmospheric disturbance), without distortion and with a background of noise no louder than that heard because of needle scratch with the highest grade of phonograph.

¹ *Proc. Inst. Radio Eng.*, October, 1928.

The radio audience generally does not demand nearly so high a standard of reproduction and, as a consequence, night reception in winter extends the service range somewhat above Dr. Goldsmith's figures. It is not unreasonable to triple these service ranges for winter night reception. In areas where there are few broadcasting stations, the listener is satisfied with a still lower standard of reception and listens attentively to the nearest station, even though the distance be five or even six times the minimum service range estimated by Dr. Goldsmith. Another factor which extends the normal service range of a station arises from the better reception enjoyed in rural districts where interference from power lines and electric machinery is rarely encountered.

Some Typical Service Ranges.

When WEAF began operating with half a kilowatt of power in the early days of broadcasting, its service range was given as 100 miles. The mail from the radio audience gave adequate support to this estimate. Later studies, resulting from exhaustive measurement of the signal strength of WEAF in the area served by it, led to some radical alterations of this simple 100-mile circle. It was found, for example, that in Pelham, N. Y., but 16 miles northeast of WEAF, its signals were barely audible with an average receiver, due to the shadow effect of steel buildings near the transmitter. Instead of the theoretical concentric circles, it was found that there were great variations in the way in which the signals were distributed in various directions. Figure 10 shows the effect of steel buildings and interfering objects.

The use of greatly increased power by WEAF and the removal of its antenna from the original Walker Street location have considerably altered the energy distribution in all directions, and the conditions shown by the map no longer hold. But the illustration shows what deviations from the theoretical service area may occur with stations

in poor locations and operating with low transmitting power.

How significant the influence of moving a transmitter a distance of only a mile is indicated by the fact that this move, at certain points in Connecticut, brought an increase in power efficiency of transmission of a ratio of 100 to 1.

In Fig. 8 are reproduced lines of equal field strength measured about the Bound Brook station of WJZ. The

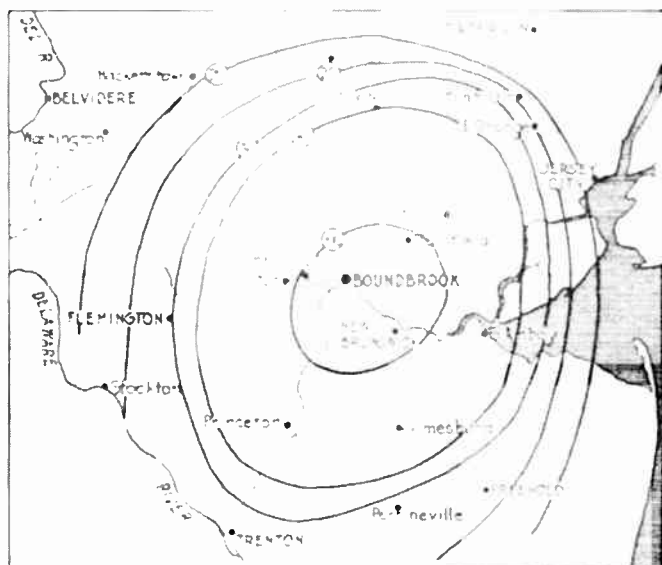


FIG. 8.—The significance of good location is shown by the lines of equal field strength measured from WJZ at Bound Brook. The figures are milli-volts per meter. (Courtesy of the Institute of Radio Engineers.)

absence of steel buildings in the immediate vicinity of the station and the flat nature of the surrounding terrain make its radiation approach that of concentric circles. The same point is brought out in field strength measurements made in the vicinity of Washington, D. C.

An interesting point brought out by these maps is that the received energy does not decrease proportionately as the

distance, but at a somewhat more rapid rate. Doubling the power does not double the effective range of a station. Harry Sadenwater, Engineer in Charge of the General Electric broadcasting stations, estimates that tenfolding the power of a station only threefolds the signal at any point within its range.

Signal Strength a Determining Factor.

When WJZ was removed from Aeolian Hall in New York to Bound Brook, with an increase of power from 1,000 to 50,000 watts, the management of the station was surprised to receive numerous letters of complaint from listeners in the Forty-Second Street district of New York because signals from WJZ were weaker than they had been previous to the move. Indeed it was true that the 50,000-watt transmitter, thirty-two miles from the site of Aeolian Hall, produced a weaker signal within a quarter of a mile of the station's former location than did the 1,000-watt station used before the transmitter was moved. The experience supports the statement that the station delivering the strongest signal at any point has the first claim on the listeners' attention and that any weakening of signal strength at once alters the distribution of a station's habitual audience.

The reliable service range is little affected by night and day conditions. An understandable signal, however, is delivered over considerably greater distances during the night than during the day. For example, in New York, it requires a fairly sensitive receiving set to get an intelligible signal from Philadelphia in the daytime but, after ten o'clock at night, it requires only a moderately sensitive, though quite selective, receiver to pick up Chicago stations. By intelligible signals is meant reception so sufficiently clear that melodies can be recognized and call letters, given by the announcer, can be distinguished. It is not meant to designate a clear and musically acceptable reproduction.

LISTENER RESPONSE—WJZ—LOW POWER AND HIGH POWER

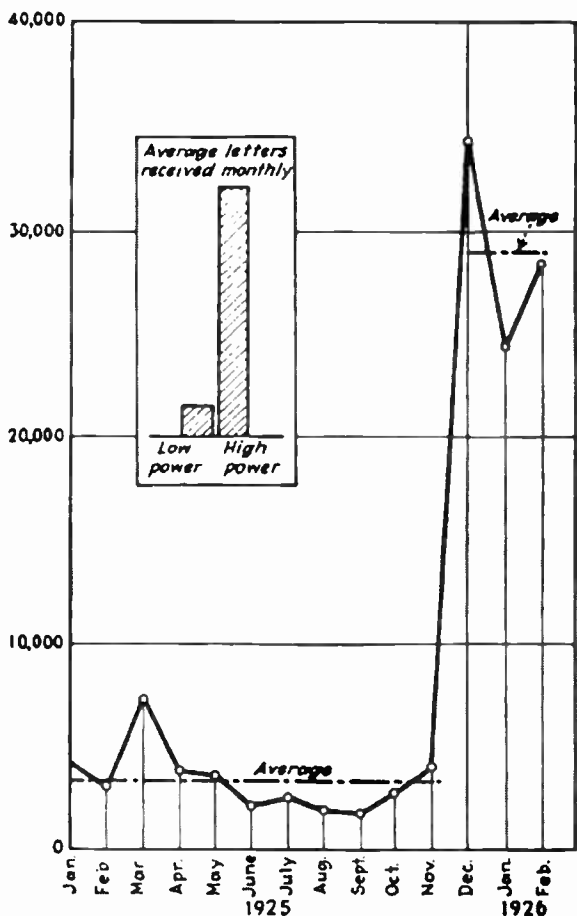


FIG. 9a.

The chart above illustrates the tremendous increase in letters from listeners after WJZ increased from 1,000 to 50,000 watts. The average number of letters received jumped from less than 5,000 to nearly 30,000, showing the vast widening of its service to set owners.

AREA ADDED TO PRIMARY ZONE BY RESULTS OF QUESTIONNAIRE IN THE FIELD

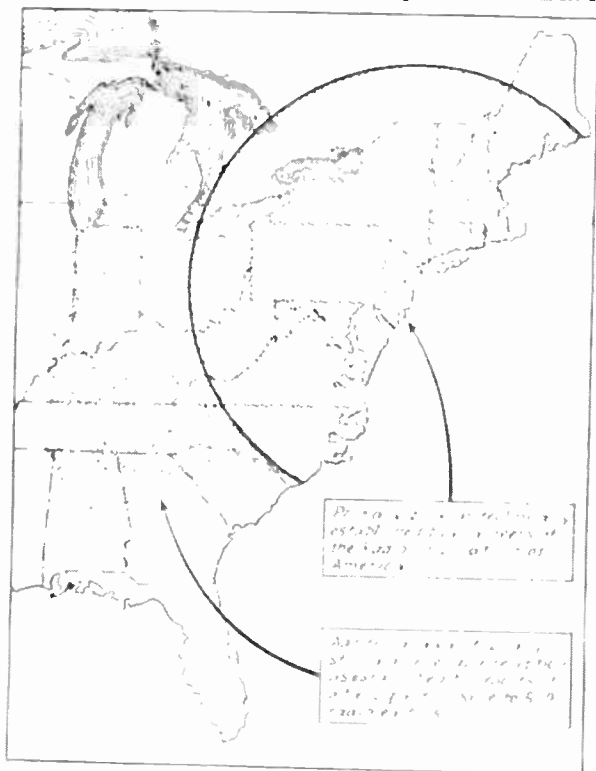


FIG. 96.

The "primary zone" of WJZ, where it comes in like a local station covers an area from Maine to South Carolina, and as far west as central Ohio.

AUDIENCE DISTRIBUTION—WJZ

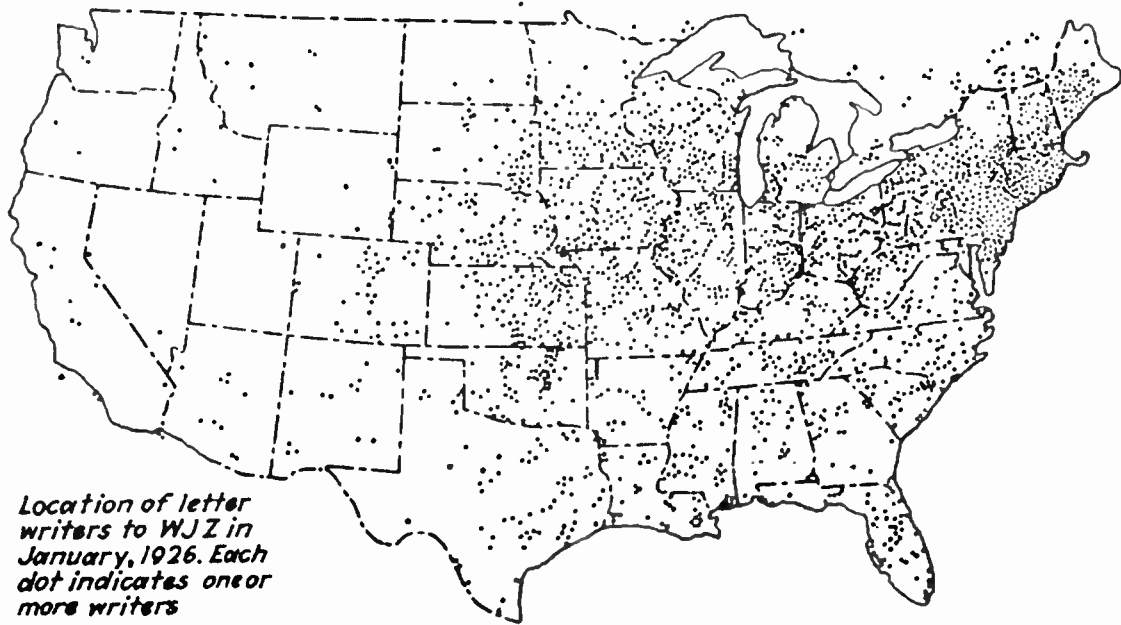


FIG. 9c.

Every dot indicates a town from which WJZ has received a letter. Note they cover every State in the Union. Half a dozen super-power stations, strategically located throughout the country, will develop radio markets of the South and West.

IMPORTANCE OF AREA EAST OF THE MISSISSIPPI AS ESTABLISHED BY THE SALES OF RADIO TUBES

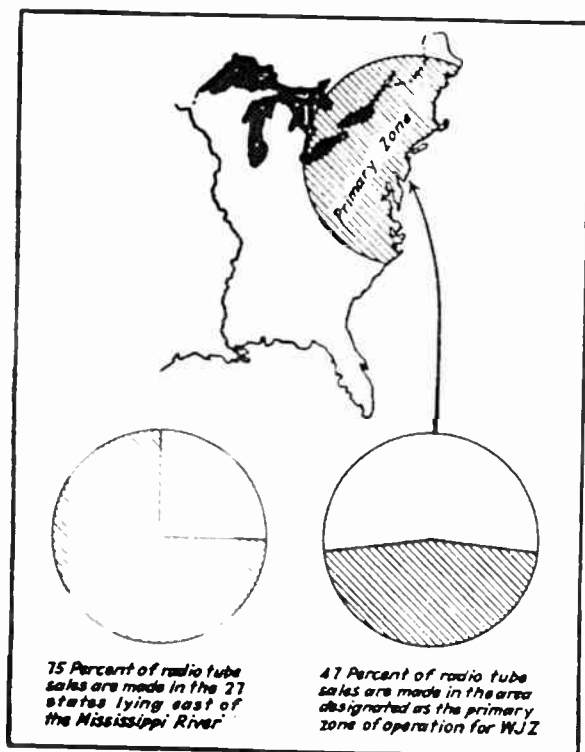


FIG. 9d.

Note that 75 per cent of tube sales are made east of the Mississippi, which is well served with good programs and powerful signals.

Figs. 9a, b, c and d.—The influence of power on station coverage, showing graphically the effect of increasing power from 1 kilowatt to 50 upon WJZ's service range. (Courtesy of Radio Retailing.)

Service Ranges Claimed by Broadcasting Stations.

Few broadcasting managements will agree with the service-range figures given in the tabulation on p. 54. Although they are admittedly conservative, the broadcasting medium, to be permanently successful, must prove its value in a limited service area. The commercial broadcaster must keep in mind that his purpose is to impress listeners with the pleasing character of his program; that can be done only in the area where his program is musically acceptable. An hour's listening with any receiving set will prove that reception from stations less than 100 miles away is eminently superior to that attainable from stations 300 or 400 miles distant. When a listener seeks musical entertainment, local stations are used; when he is "fishing" for call letters, the weaker the signal and the more distorted reception, the better he likes it, because that is the earmark of a long-distance record. But many a commercial broadcasting station bases its range claims on the maximum area over which it is heard.

One commercial broadcaster writes, in his solicitation to prospective broadcasting clients, that his station is the "radio center of the United States, being equidistant from both east and west coasts and sufficiently close to the Gulf of Mexico to compensate for the poorer reception caused by static. Radio programs broadcast from our main studio . . . travel to all parts of the United States and Canada and practically none are lost at sea."

Further in the solicitation, he states, "Let us assure you that our station has established an extremely enviable reputation throughout the North American Continent, and to Hawaii and Alaska for consistent, strong signal strength and exceptionally perfect modulation."

Another small station writes that its "range in daylight is 450 to 500 miles in each direction. At night, we cover the entire country . . . The states of Missouri, Iowa, Kansas, Nebraska, Oklahoma, southern Minnesota, and the Dakotas, and parts of Illinois, Indiana, and Ohio get

us very well, and we are especially strong with the farm population."

Such blue-sky claims, however, are not universally made. Station WOOD, at Grand Rapids, Mich., for example, states that its "principal aim is to serve our fifty-mile circle." In its prospectus, it gives the total population in that service area as 500,000 and notes significantly that Detroit and Chicago stations do not effectively serve Grand Rapids. Yet, judging from the statements of the first two stations quoted, they would not hesitate to claim a large Grand Rapids audience.

Exaggerated service claims are very largely made in the hope of selling those unfamiliar with the character of radio reception over long distances and are rarely believed sincerely by those who make them.

An argument in support of the long-distance claim lies in the fact that a goodly proportion of mail received by stations not located in large centers of population is from beyond their true service range. WOOD, for example, tabulates the mail received for the first two years of its operation on the following basis: 15 per cent from listeners within 25 miles, 5 per cent between 25 and 50 miles, 5 per cent between 50 and 100 miles and 75 per cent over 100 miles. Yet it does not conclude from these figures that its audience is distributed according to those percentages. A long-distance listener, who has patiently adjusted his dials in order to make out a distant call letter, is more likely to write a letter in praise of a station's modulation than is a listener who had only to turn on his "A" battery switch to have the program come pouring in with great volume. The acknowledgment from a distant station is an addition to the listener's collection of radio mementos, as a proof of his long-distance prowess.

Transmission Irregularities.

Fading precludes the establishment of a regular following in the area where it is experienced. Some stations, due

to causes not yet satisfactorily analyzed, fluctuate in signal strength over relatively brief periods, ranging from twenty seconds to two or three minutes. For a moment, signals may be very loud and then become relatively weak. This phenomenon is experienced only outside of the station's normal service range but it is sufficiently annoying, for example, to prevent WGY, Schenectady, and KDKA, Pittsburgh, from winning a consistent audience in New York City.

Rural Reception.

In rural districts, the nearest high-grade station may be 250 miles or more away and in a few parts of the country, 500 or 600 miles distant. The rural listener is willing to pick his program from greater distances than the urban listener, because he is not likely to be disturbed by power-line noises and because radio affords almost the only convenient and inexpensive entertainment available to him. This extends the service range of stations in rural areas beyond that of stations in large urban centers. WGY, Schenectady, for instance, in those directions in which the fading phenomenon is not experienced and where it does not trespass upon the territory of nearer stations, is the favorite and regular program source for several hundred miles.

As an example of differences resulting from irregularities in transmission and the effect of superior reception in rural districts, a receiving set installed in Newton, Sussex County, N. J., 45 miles west northwest of New York, finds the order of signal strength as follows: WJZ, Bound Brook, 30 miles to the south, 50,000-watt power, is several times as loud as its nearest competitor and is the first choice of listeners. WBAL and WEAJ, although one is 150 miles to the south while the other is only 45 miles east-southeast, due to a vagary in the transmission quality of WBAL, offer signals of about equal strength. WPG, Atlantic City, 120 miles to the south, is of approximately equal strength to WBAL and WEAJ, but subject to slight fading. It is therefore

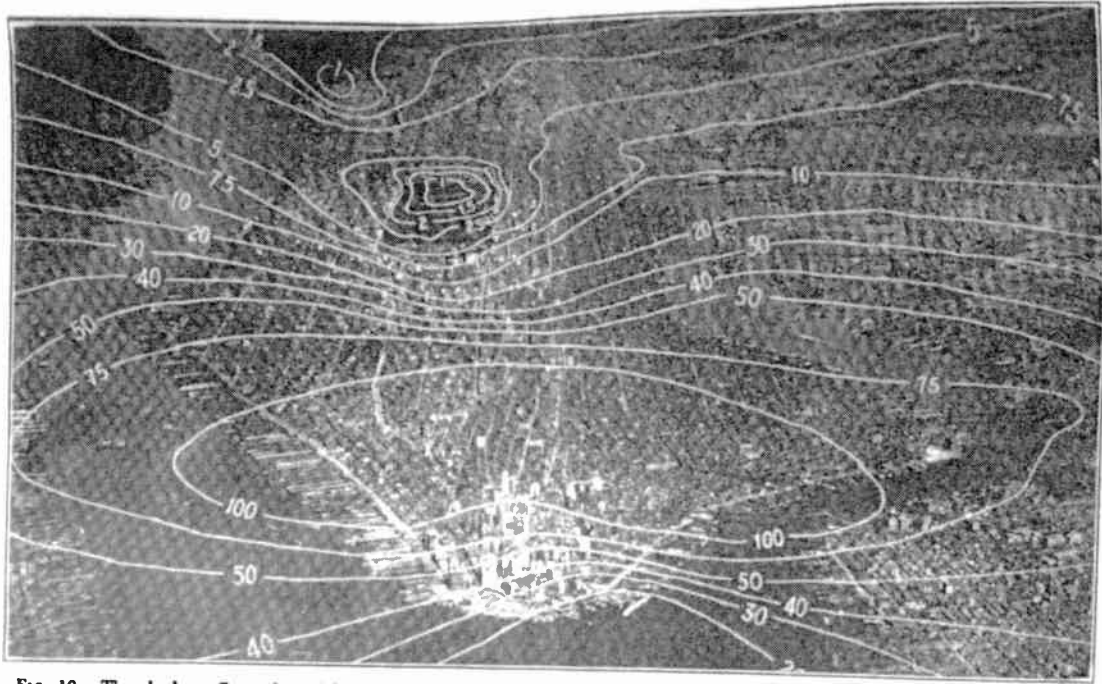


FIG. 10.—The shadow effect of steel buildings experienced by WEAf in its former Walker Street location. Note the marked influence of downtown skyscrapers, the depression in Central Park due to tall buildings surrounding it and their effect on Westchester County reception beyond. (Courtesy of National Broadcasting Company.)

X

the fourth choice. WOR, the second nearest high-power station, 35 miles to the east, is fifth in signal strength and consequently fairly low in the choice of listeners.

In New York City, WBAL, Baltimore, which lies approximately the same distance from New York as it does from Newton, would not be considered when the listener is seeking for entertainment, because there are fully twenty stations offering him a better signal. Thus, irregularities in transmission and superior transmission in rural districts significantly affect the service range of stations.

Broadcasting stations, conducted by concerns maintaining high-grade radio-engineering organizations, are able to furnish charts of signal strength similar to those shown in Figs. 8 and 10, but hundreds of smaller commercial stations have no such accurate information for potential broadcasters. A rough guide to the station effectiveness may be secured by an analysis of all the mail received by the station, if tabulated by counties or districts. By calculating the number of letters received per thousand population in each direction, any section having an especially low rating is likely to be subject to transmission irregularities or competition from stations delivering a stronger signal. This is a rather unsatisfactory method of discovering the transmission irregularities of a station, but it is better than no guide at all. If a statistical study is necessary to check the service area, it is worth while to inquire of radio dealers in each direction and at various distances, such as ten, twenty, fifty, and a hundred miles, just how the station is received.

Estimating the Service Range.

Determination of the service range of a station is then based upon these factors:

1. Transmitting power.
2. Transmission irregularities.
3. Receiving conditions.
4. Competing stations.

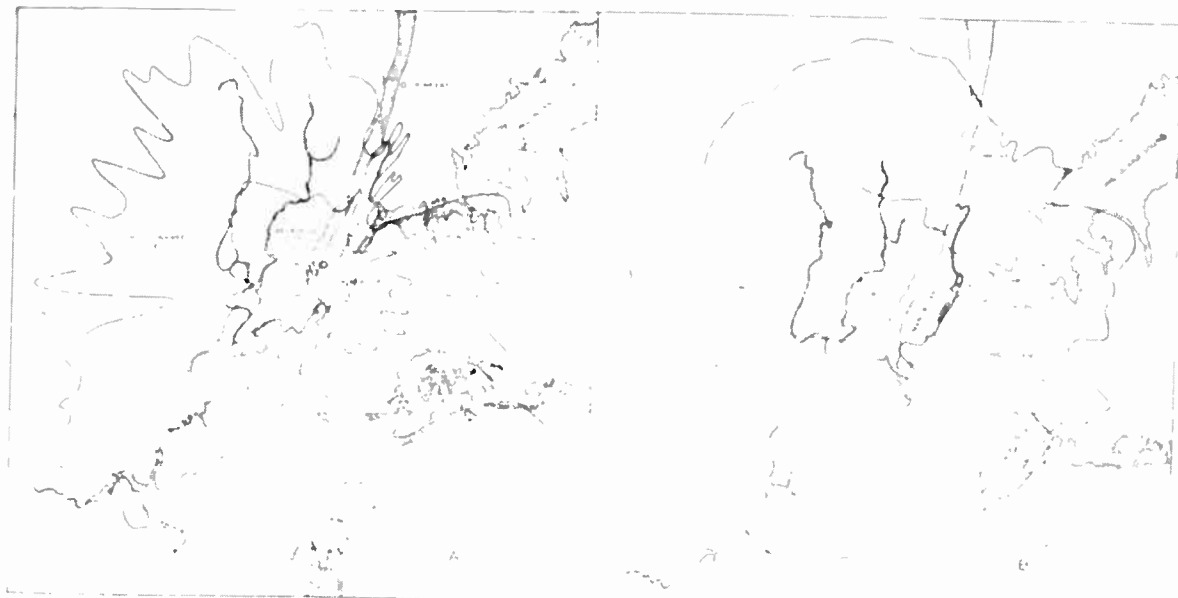


FIG. 11a.—Effect upon Field Distribution of moving the Transmitting Station to Suburban Locations. (A) 463 West Street, New York. (B) Secaucus, N. J.



FIG. 11b.—Effect upon Field Distribution of moving the Transmitting Station to Suburban Locations. (C) College Point, Long Island, N. Y. (D) West Orange, N. J.

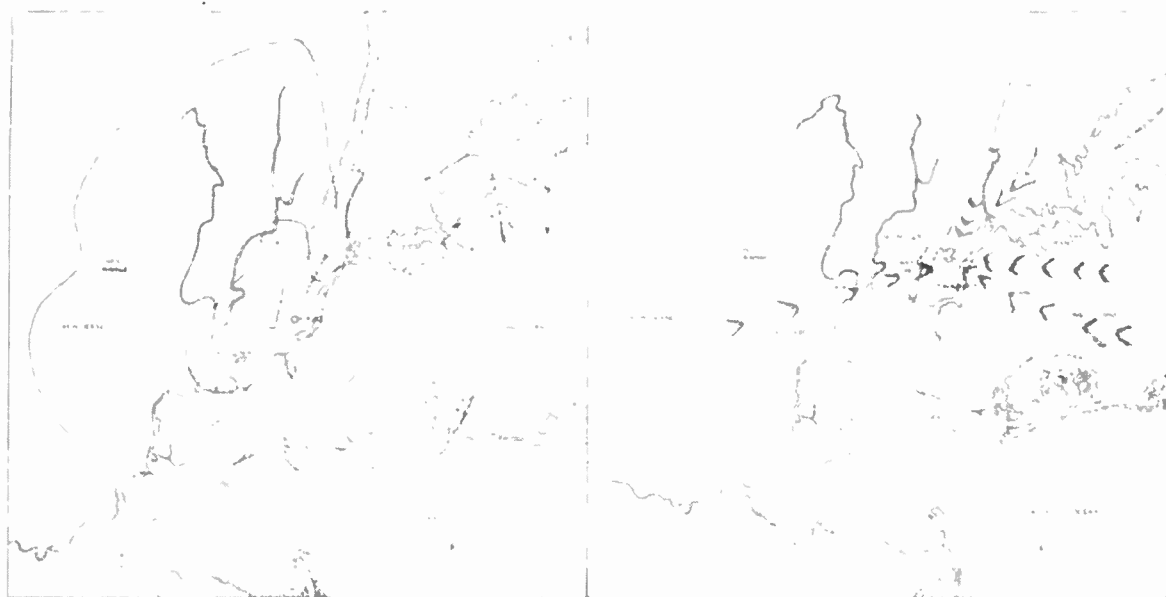


FIG. 11c.—Effect upon Field Distribution of moving the Transmitting Station to Suburban Locations. (E) 24 Walker Street, New York. (F) Composite figure showing main shadows and center of obstacle. These measurements were made by the Department of Development and Research, American Telephone and Telegraph Company. (Courtesy of the American Institute of Electrical Engineers.)

To facilitate estimating the service range in the absence of more accurate means of determining it, the following figures for effective night service areas are offered:

Power, watts	Minimum effective range over urban area, miles	Normal effective range in urban areas	Minimum effective range in rural areas	Normal effective range in rural areas without competition from nearer stations
5	1	3	5	10
50	3	7.5	12	22.5
500	10	20	35	65
5,000	30	50	90	160
50,000	90	135	225	360

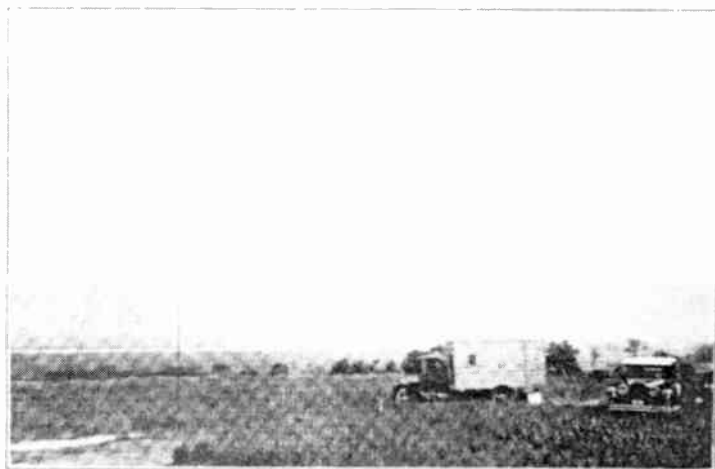


FIG. 12.—The portable half kilowatt transmitter used in securing the measurements in Fig. 11. (Courtesy of American Institute of Electrical Engineers.)

The normal service range is not attained in those directions in which fading or transmission irregularities limit satisfactory reception.

Determining the Number of Listeners in the Service Area.

After the service area has been determined in a general way, the population within it can be ascertained by consulting census figures. Usually, the broadcasting station can furnish the population data for its estimated service range, which may or may not have to be modified by reason of exaggerated conception of the service range or failure to take into account transmission weakness in a particular direction.

In the appendix are figures giving various facts about a few of the broadcasting centers of the country. When

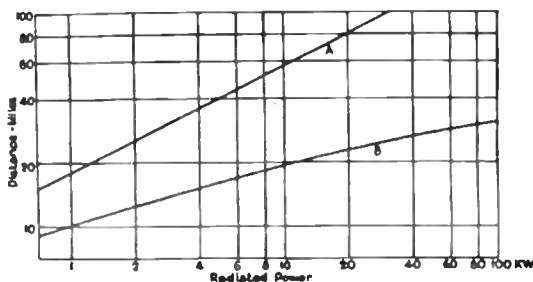


FIG. 13.—The increase in radiated power necessary to deliver a signal of 10,000 microvolts per meter over the distances indicated. Curve A assumes no absorption; Curve B gives the corresponding relations observed for suburban and country terrain. Prepared by D. R. Dept., A. T. T. Co. (Courtesy of American Institute of Electrical Engineers.)

applying these figures to determine the audience of a particular station, it is necessary to take into account any irregularities in transmission, competing stations, and established followings.

The percentage of radio listeners to total population is dependent upon the length of time satisfactory broadcasting has been conducted in the area concerned. In the United States, there being no tax on radio sets and no official censuses of radio listeners, it is necessary to rely upon estimates and private surveys for determining the radio

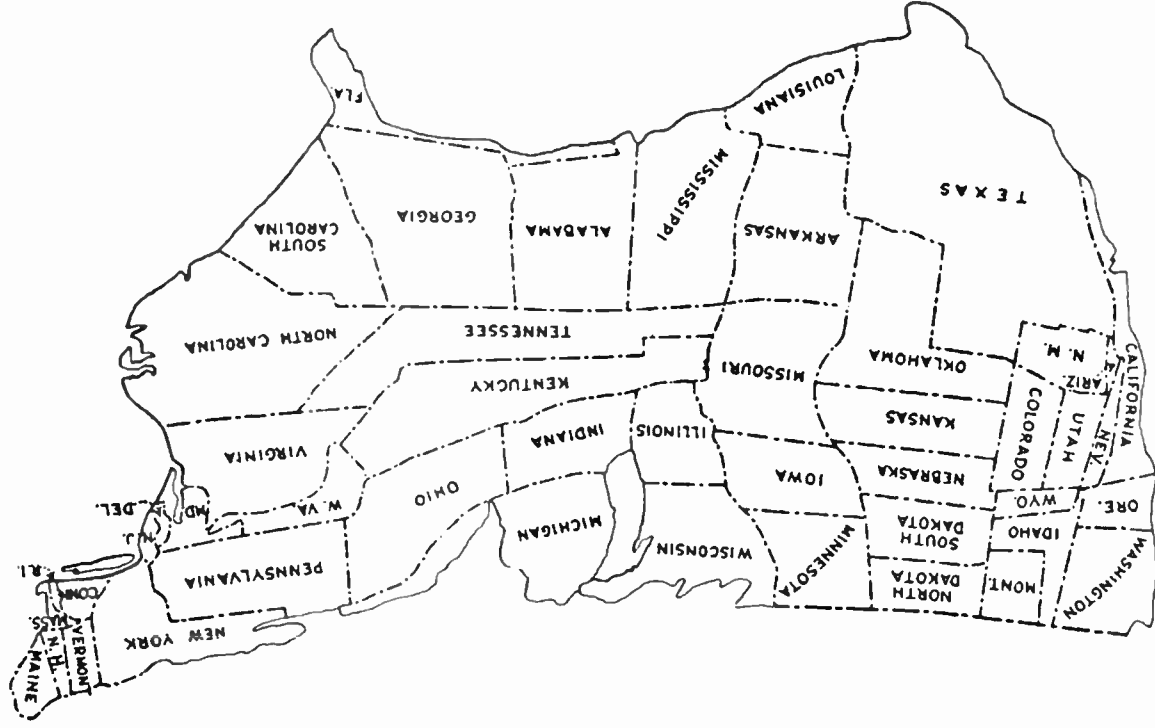


FIG. 11.—“Radio Retailing” map of the west farm market for radio. (See opposite page for explanatory description.)

EXPLANATION OF "RADIO RETAILING'S" MAP (FIG. 14)

This map shows the number of farms in each state and the number of radio sets on farms. On this distorted map, the sizes of the states are proportionate to the number of farms in those states still without radio sets.

F	Alabama	237,563	F	Maine	50,033	F	Ohio	244,703
N		6,030	H		12,480	N		54,384
%		97	%		75	%		77
F	Arizona	10,798	F	Maryland	49,001	F	Oklahoma	197,218
N		1,736	N		10,826	N		20,324
%		83	%		78	%		89
F	Arkansas	221,994	F	Massachusetts	33,454	F	Oregon	55,910
N		13,500	N		25,816	N		18,576
%		93	%		25	%		66
F	California	136,409	F	Michigan	192,327	F	Pennsylvania	200,443
N		44,448	N		37,184	N		18,804
%		66	%		70	%		90
F	Colorado	58,026	F	Minnesota	188,231	F	Rhode Island	3,911
N		24,192	N		51,772	N		2,540
%		58	%		72	%		36
F	Connecticut	23,240	F	Mississippi	257,228	F	South Carolina	172,767
N		5,774	N		4,756	N		8,372
%		75	%		99	%		95
F	Delaware	10,267	F	Missouri	260,478	F	South Dakota	70,537
N		324	N		74,100	N		20,424
%		97	%		71	%		74
F	Florida	59,217	F	Montana	46,906	F	Tennessee	252,689
N		3,904	N		16,740	N		9,880
%		93	%		60	%		96
F	Georgia	249,104	F	Nebraska	127,734	F	Texas	405,642
N		7,200	N		67,146	N		36,938
%		91	%		47	%		92
F	Idaho	40,593	F	Nevada	3,913	F	Utah	25,988
N		10,120	N		1,292	N		1,788
%		75	%		64	%		93
F	Illinois	225,601	F	New Hampshire	21,065	F	Vermont	27,786
N		91,820	N		8,500	N		8,782
%		59	%		59	%		68
F	Indiana	195,786	F	New Jersey	29,611	F	Virginia	193,723
N		30,040	N		15,456	N		12,488
%		82	%		48	%		93
F	Iowa	213,490	F	New Mexico	31,687	F	Washington	73,267
N		77,022	N		1,054	N		13,182
%		63	%		96	%		82
F	Kansas	166,879	F	New York	188,754	F	West Virginia	90,380
N		69,930	N		77,500	N		8,470
%		57	%		58	%		90
F	Kentucky	258,514	F	North Carolina	283,482	F	Wisconsin	193,155
N		18,240	N		7,150	N		23,456
%		92	%		97	%		87
F	Louisiana	132,451	F	North Dakota	75,970	F	Wyoming	15,512
N		2,560	N		23,002	N		1,974
%		98	%		79	%		80
Legend				Totals				
F	Number of farms		Number of farms		Radio sets on farms		6,371,478	
N	Number of radios on farms		Radio sets on farms		Per cent still unsold		1,106,006	
%	Percentage of farms without radios		Per cent still unsold				82	

audience. Many publications have made surveys of particular districts, and some of these studies are a valuable guide to the prospective broadcaster.

Estimates of the number of radio listeners in the United States vary all the way from 5,000,000 to 30,000,000, and of the number of receiving sets in use, from 3,000,000 to 10,000,000. With hundreds of manufacturers in the field and with the large number of home-built sets, it is impossible to gain an accurate estimate of the total radio audience from production statistics. Surveys in fairly prosperous suburbs of New York, Chicago, and Philadelphia have each led to the discovery of certain communities in which there is one receiving set to every other family. Observing from the elevated railways the number of aerials on the roofs of apartment houses, would lead one to guess that there are at least half as many radio sets as families. Until figures of the number of receiving-set owners are made a part of an official census, however, the number of the radio audience will remain in doubt. The most comprehensive and accurate summary of the radio audience and distribution of radio sets so far made is that prepared by *Radio Retailing*, this appears in the Appendix (p. 352).

Figure 14, a map appearing in *Radio Retailing*, July, 1926, indicates the number of families, number of farms, and number of radio sets in each state. The percentage of farms without radio follows very closely the distribution of broadcasting stations. For instance, New York, New Jersey, Connecticut, and Maryland have radio sets installed on 42 per cent, 52 per cent, 25 per cent, and 22 per cent of their farms, respectively; while Arkansas, Louisiana, and Mississippi run only 7 per cent, 2 per cent, and 1 per cent, respectively. The erection of a broadcasting station in a territory results in an immediate and marked stimulation of the sale of radio sets.

A report prepared by H. E. Way of the Department of Commerce, based upon a study of the points of origin of applause mail to twenty large broadcasting stations, sales

figures, and data compiled by *Radio Retailing*, gives an index to the percentage of total market for radio apparatus in the United States, as follows: Massachusetts, 4.451; New York, 9.301; Ohio, 7.555; Illinois, 8.306; Wisconsin, 3.453; Iowa, 3.093; District of Columbia, 0.499; Louisiana, 0.685; Oregon, 0.355; Rhode Island, 0.792; Pennsylvania, 6.835; Indiana, 3.783; Michigan, 3.971; Minnesota, 3.446; Missouri, 3.966; Alabama, 0.531; Oklahoma, 2.480; and California, 5.647.

These figures indicate that the proportion of set owners does not vary as the population, but according to the length of time highly developed broadcasting has been available.

Listeners in Foreign Countries.

In foreign countries, in which government licenses for reception are required, we have exact figures available as to the numbers of listeners. In every country where broadcasting has developed under this system, a steady increase over a period of years in the number of listeners has been noted. In England, where some twenty stations are operated by a single company which has the broadcasting monopoly, the number of listeners rose from 1,000,000 in 1924 to 2,100,000 in 1926. The latter figure is about one receiving set for every six families.

Victoria, Australia, reported 45,000 receiving sets in August, 1926, one for each seven families, and license applications coming in at the rate of 4,000 per month.

Broadcasting has been firmly established for a longer period in the United States than in any other country. We have been aided by prosperity and the fact that radio sets can be bought at lower cost in this country than anywhere else in the world. It is not unreasonable to assume a receiving set for each three American families. With some 24,000,000 families in the United States, this would give 8,000,000 sets and approximately 35,000,000 potential listeners.

There are 18,000,000 automobiles in the United States, an investment which is more than four times that of a radio set. In twenty years of the phonograph industry, about 11,000,000 phonographs were sold to the American public. Radio has a decided advantage over the phonograph, however, because the initial investment in a radio set is not necessarily large. Consequently, persons entirely unable to afford a phonograph are often the possessors of at least crude radio sets. Aerials can be found in the poorest districts of any city where broadcasting is fully developed. The low cost of a radio set puts it within reach of nine out of ten American families. Under the circumstances, it is not unreasonable to expect the number of radio sets to total fully 15,000,000 within two years, and to accept 8,000,000 as a conservative estimate of the number of sets now in use.

Percentage of Listeners in Broadcasting Centers.

In broadcasting centers, such as New York, Chicago, Philadelphia, Boston, Pittsburgh, Cleveland, Detroit, Minneapolis, St. Louis, Denver, Los Angeles, and San Francisco, the potential radio audience is probably not less than 25 per cent of the total population. The number of listeners per set, revealed by all the accurate surveys so far conducted, is slightly larger than the membership of the average family. The figure most widely accepted is 5.4 listeners per set. A small percentage of receiving sets, installed at clubs, hotels and institutions, serve large numbers and thereby bring up the general average slightly.

Apparently, the microphone is an opportunity to reach huge but indefinite numbers. In those areas where the potential audience is the greatest, there is also the greatest competition among stations. Having determined the potential audience of a broadcasting station, the commercial sponsor must make further study, if he is to estimate the audience to his particular broadcasting effort. Just as an analytical study of the service area usually causes extended

modification as compared with the claimed area, so also does a study of the listening audience significantly reduce the estimates of the station's habitual following. Instead of uncountable millions, the average broadcasting station audience dwindles to reasonable thousands.

CHAPTER V

ESTIMATING A FEATURE'S AUDIENCE

If there were only a single program to be heard in an area, the number listening would be equal to the potential audience, and this chapter would not need to be written. In congested areas, however, the commercial sponsor must have some idea of how the audience divides itself among a number of stations within range, whether that number be two, three, twenty-five, or thirty. It becomes necessary, then, to determine the proportion of listeners who select a particular program from several available to them. This, in its way, is as difficult to determine as the potential audience in a service area.

Judging Popularity by Mail Response.

The mail received by a station is often used as a means of proving its audience. Mail received may be a very useful guide and it may, on the other hand, be misleading. I have already referred to the long-distance listener. Although he may hear a station with so little clarity that he could not recognize the melody which a dance orchestra is broadcasting, if he thinks he has made out the call letters, he may write for confirmation of station reception. Such a letter certainly does not indicate a regular listener.

Another type of letter is that drawn by an outstanding program event which draws an abnormally large audience to the station. Consistent presentation of outstanding events may convert some of this audience into regular listeners. But only a broadcasting event of equal attractiveness can be expected to draw the same proportion of the potential audience.

There is a proportion of the radio audience which never writes a letter. Six months after broadcasting began,

although the radio audience was much smaller than it now is, it was not unusual for an amateur singer to receive as many as two thousand letters. At present, a regular feature, broadcast through sixteen stations, which draws a thousand letters, is an unusual success. On the other hand, a small station in the Middle West may run a prize contest and garner in as many as three or four thousand letters for that particular event. What conclusions may be reached from radio-audience mail?

Mail Response Offers Only Contributing Evidence.

To consider the total mail of a station received in the course of a year and to compare it with that of another station offers not the slightest guide to the respective value of the two stations as disseminators of goodwill. One station may have conducted a special campaign to secure a great deal of mail, while the other, realizing the unimportance of mail response, may have neglected to make any special effort to secure letters.

What the commercial broadcaster should study is the response secured from a program event comparable to the one he plans to present. The feature used to form his comparison should be broadcast at the same hour of the evening in the face of competition of equal grade to that which he must meet. Special efforts to attract mail, such as prizes or souvenirs, should eliminate a feature from comparison, unless the prospective user plans to employ potent means to attract mail. The study of the response secured to half a dozen average commercial features, presented by one station, with results of an equal number of similar programs by another, gives some guide as to the respective popularity of the two stations.

Station Popularity Should Be Investigated from Several Sources.

Clearly there is no accurate criterion by which the relative popularity of a number of broadcasting stations,

serving the same area, may be measured. The buyer of broadcasting time is as much at sea as the editor of a newspaper buying a number of syndicate features. He cannot estimate the contribution of each one to his circulation; he can only guess the magnitude of their appeal.

Program Standards Determine Station Popularity.

The audience divides itself among local stations of approximately equal signal strength principally in accordance with their relative program popularity, modified, under stimulus by unusual program events, by the attractiveness of a special feature.

Practically all broadcasting stations offer programs which, when studied in the newspaper schedule, appear to be of the same quality standard. In the course of an evening, each of a number of stations serving the same area may offer one or two soloists, a speaker, a dance orchestra and a classical music aggregation. But a week or two of critical listening will establish the superiority of one station over another in the mind of an attentive listener. The more successful station has, in that period, presented a number of headline events, either by wire connection with the studio of a leading station in another city or by obtaining a feature presenting artists, speakers, or sporting events of outstanding importance. It has demonstrated greater skill in the technical operation of its equipment, with the result that it is more clearly heard with the average receiver. Naturally this consistent superiority of one station over its rivals gives it a substantially larger share of the potential audience.

Another criterion for the standing of a station is the character of the commercial features offered. One station may have national advertisers of nation-wide reputation, employing prominent artists. Another may have small, local concerns and local artists. It may feature prize contests and make a policy of reading telegrams from individual members of the listening audience. The former

station has greater dignity and standing than the latter. The latter, on the other hand, gradually builds up an audience responsive to local goodwill efforts. Which of the two is the more suitable station for the commercial broadcaster, therefore, depends upon the character of the concern and the program to be offered. One station's standing may be compared to that of a magazine of national circulation, and the other's to that of a small-town, local newspaper. Each has its sphere of service and each does a different thing in a different way.

Individual Character of Stations.

It is apparent that the listening audience is composed of those who like the general type of program offered from the station. A broadcasting station has a definite character, almost a personality. This forms our only guide, under present conditions, to the nature of the station's audience. This character is not so indefinite as at first it may appear. Corporations have a character in the same way, which is the cumulative result of their methods of dealing with the public.

The prospective broadcaster should have little or no difficulty in deciding upon a particular station in an area, because the differences between stations are usually sufficiently marked to enable a judgment to be formed as to their suitability in gaining goodwill for the product under consideration.

It is not my purpose to discuss individual stations, because, in this formative age of broadcasting, they occasionally change their character. We may look toward marked ingenuity in program presentation, which can easily upset, in a short period, the complete character of a station and consequently the entire nature of its audience.

Stations of National Appeal.

There are a few particular types of stations which the reader can readily identify if he is a regular listener. Some stations are noted for their dignified handling of programs.

The artists and speakers whom they present are prominent. The dance orchestras which they broadcast are from the most famous and outstanding entertainment places in their community. They present leading sports events of national interest, either through their own announcer or by direct wire connection. They feature opera stars and speeches by the President and members of the cabinet. Their announcers avoid flowery introductions of unimportant personages. The commercial features broadcast through such stations are usually of high grade, both in respect to the kind of talent employed and the means used to direct attention to the sponsor. The sponsors are usually national advertisers and concerns whose products enjoy widespread distribution. Such stations interest a cross-section of the general public. They correspond to the nationally circulated magazines in printed advertising, except that the limitations of their range make national coverage impossible. Nevertheless, they have a national point of view and are logical mediums for the national advertiser to use in gaining goodwill.

The rates charged by such stations vary with the population and the potential audience which they reach. Broadcasting charges have been steadily mounting, and consequently a rate presented today may be obsolete tomorrow.

An official rate schedule is not yet issued by the National Broadcasting Company for its two networks. That centered by WEAf, known as the Red Network, at this writing, thoroughly covers the territory east of the Mississippi and north of Atlanta, for a cost approximating \$5,000 an hour; Pacific coast charges have not been estimated as yet. The Blue Network, concentrating on the largest centers of population of the east, now consisting of four stations, is charging, at this writing, approximately \$2,000 an hour. These figures are, of course, subject to change and represent the maximum charge, without customary discounts for long-time contracts, frequency of use, and daytime reduction.

The rates established by the "Commercial Broadcasting" chain, comprising stations in New York, Boston, and Providence, are as follows:

Station	Hour	Half hour
WLWL, New York	\$350	\$200
WNAC, Boston	250	150
WEAN, Providence	125	75

WOOD, Grand Rapids, announced the following rates for evening hours, effective on Aug. 1, 1926:

RATES AFTER 8:00 P.M.
(Charges based on one program per week)

Period	13 times	26 times	39 times	52 times
1 hour	\$65	\$60	\$55	\$50
1/2 hour	36	33	31	28
20 minutes	27	25	23	21
15 minutes	20	19	17	16
10 minutes	15	14	13	12

(Except under contract, rates subject to change without notice.) Less than 10 minutes: \$2.50 per minute. Minimum invoice: \$5. Monday-night rates 20 per cent additional (Chicago silent night). Twenty-five per cent discount on above rates for daytime programs (before 8:00 p.m.). Licensed broadcasting hours and days: 8 to 12 p.m. (see card letter). We allow regular agency commission of 15 per cent. Terms: 2 per cent, 10 days, net 30.

There being, at this time, no established basis for charges, no real analysis of the relative value of stations and audiences and no definite knowledge of the prospective demand for broadcasting facilities, these rates are subject to change upon the slightest provocation. It depends entirely upon the general improvement of broadcasting conditions by relief from station congestion and upon the development of new forms of presentation which increase the listening audience, whether these charges will be greatly increased in the near future.

<p style="text-align: center;">WGHP RADIO BROADCASTING STATION Detroit, Michigan</p> <p style="text-align: center;">170 METERS 100 WATTS</p> <p style="text-align: center;">RATE CARD No. 3—Effective April 1, 1928</p>	<p>ITEM 1—Advertising Rates 8 p. m. to 12 p. m. (For use of station facilities only—Excludes program cost)</p> <p>Three minutes, \$150.00 One hour or more, \$250.00 per hour and 6 p. m. to 8 p. m. can be secured at \$150 per hour</p> <p>Contracts for weekly program for four months, 5% discount, 8 months, 10%, 12 months, 15%.</p> <p>If time is available between 8 a. m. and 6 p. m. it can be secured at \$150 per hour. Schedule of hours will be determined by terms of contracts.</p> <p>All programs and method of advertising subject to approval of Director of Station.</p> <p>ITEM 2—Programs Suitable entertainment and proper adaptation will be arranged by Staff of Station. There will be no extra charge for this service. Talent will be billed at actual cost. Traveling expenses of talent will be borne by client.</p> <p>ITEM 3—Agency Discount Regular commission of 15% will be allowed to recognized advertising agencies on cost of broadcasting only.</p> <p>ITEM 4—Terms of Payment Invoices will be subject to 2% cash discount in 10 days—Net. term of month follows.</p>
<p style="text-align: center;">RADIO DIVISION OF GEORGE HARRISON PHELPS, Inc. NATIONAL ADVERTISING</p>	<p>ITEM 5—Closing Dates If programs are to be included in regular publications mailed to Radio publications, six weeks must be allowed. Final closing date, one week.</p> <p>ITEM 6—Coverage Unusually favorable reception conditions existing throughout the Middle West make possible excellent coverage by WGHP. The station reaches a potential market of extreme value to advertisers interested in this area. Nothing has been spared in the way of effort or money to establish WGHP as outstanding in this part of the country.</p> <p>ITEM 7—Miscellaneous WGHP is owned and operated by George Harrison Phelps, Inc. Director National Advertising. This institution is the only recognized Advertising Agency in the world operating its own station. The business of the concern is Advertising—clients engaging the facilities of WGHP have available the counsel of a staff of trained advertising experts.</p> <p style="text-align: right;">SEE MAP INSIDE</p>

FIG. 15.—A typical commercial broadcasting rate card. (Courtesy of George Harrison Phelps, Inc.)

Stations Appealing to Local Interests.

There is another type of station, a description of which will instantly call to the mind of the reader, familiar with broadcasting conditions in his district, one or more stations which serve his area. This is the popular local station with its chatty announcers who read telegrams from friends of the station and pretend that the orchestras play numbers at their special request. They introduce their artists with elaborate words of praise, not always justified. They feature local talent, refer glibly to their "dear friends, the radio audience," and speak of artists as "this little girl" and "this grand old man." There is ample evidence that such stations have faithful audiences. Local merchants use them effectively and trace results. Usually, the commercial broadcasting which they offer is unconcealed, direct advertising, spiced with a little vaudeville entertainment. Such stations are useful to the small merchant and the local advertiser. Their rates are naturally low because they appeal to a limited class of the radio audience. Nevertheless, they are not to be dismissed from consideration merely on the ground that they do not hold the more discriminating class of radio listener. The rise of the confession type of magazine is evidence of the numerical and buying power of this group.

The charges of the "popular" stations run all the way from one-twentieth to one-half the amount cited for national stations. Only by following the cumbersome method of analysis offered at the end of this chapter can a crude comparison be made of their relative value. In a general way, if two or three high-grade stations are serving an area with equal signal strength, the popular station with the local angle is not likely to interest more than one-fifth to one-tenth of the potential audience. On the other hand, it may have a signal superiority over all rival stations and consequently attract a full half of the potential audience in the area which it serves.

Special Listening Groups.

There are special demarcations in a few isolated instances. Some stations, by location and program concentration, have been able to appeal particularly to farmers. Others have been able to concentrate upon educational matters, which forms an obvious limitation to their audience, but one which may, in isolated cases, be of advantage to the prospective commercial broadcaster. Others, by faithful and continued appeal to women in special morning or afternoon programs, have built up fairly large bodies of listeners in special hours which may fit very well in a campaign directed to this class of listeners. More of this when we consider the hour of broadcasting.

The simplest guide at this stage of our knowledge of radio audiences is that we must visualize the broadcasting station as an individual character and likewise do that with the business being considered for broadcasting. So long as these two characters are naturally associated, the station may be a suitable medium.

The cautious buyer of broadcasting time can study various lines of evidence of program popularity of stations serving the same area and estimate the natural division of the radio audience among them. By listening critically to broadcasting, by circulating questionnaires among his employes, by inquiring of radio dealers, by comparing mail received in response to particular features of a similar character, he may form an estimate of the relative popularity of a number of stations. At best, it will be a guess, but, inasmuch as station popularity is one of the most important things he buys when renting station time, a guess, based on the most thorough analysis possible, is better than no consideration of popularity whatever.

Transmission Quality.

Equally as important as program standards in determining station popularity is quality of reproduction attainable. Given two signals of equal strength, two programs

of equal attractiveness, the one which gives the more realistic reproduction is the listener's choice. Carl Dreher, engineer in charge of WJZ, has estimated program attractiveness and quality of transmission as being the two factors, each exerting equal influence, which determine the listeners' choice of the station to which he listens.

The quality of reproduction attainable by a good receiver is dependent upon three factors:

1. Incoming signal energy.
2. Quality of transmission.
3. Interference.

The incoming signal energy determines the relative volume of stations. If one station has an advantage over its nearest rival of 50 per cent in signal strength, at a given point, it requires extraordinary program superiority to cause the listener to switch to the weaker station. So long as the receiver is within the normal service area of the station, it is able to reproduce programs with acceptable volume, provided it has average selectivity and amplification. If there are a number of transmitters within service range, other factors being equal, the listener will prefer the one giving him the strongest signal. However, this consideration of relative volume of two or more stations serving about the same service areas makes analysis of a particular station's value too complex. By using the service ranges based on power rating given in the table on page 70, sufficient recognition of this factor is made to make more complicated analysis of relative volume unnecessary.

Quality of transmission is difficult to judge, except in the case of stations which are marked by noticeably poor quality of reproduction. If an orchestra sounds rich and booming through one station and thin and scratchy through another, the listener's choice is not difficult to make. A station known for poor quality of transmission is not worthy of consideration when purchase of time on the air is being appraised.

A station located in an area of ether congestion may be subject to interference from distant stations. This causes the familiar heterodyning whistle, the strength of which is dependent upon the power of the station causing it and its distance from the receiving point. During the period when there was no radio law applying to the assignment of broadcasting station licenses, many stations transmitted programs seemingly oblivious to the fact that they were continuously marred by a persistent high-frequency squeal because another station was operating on a closely adjacent frequency. A station subject to such interference is distressing to listen to and its value as a commercial broadcaster may be little or nothing.

The relative popularity of competing stations, serving the same area, may be estimated by resorting to a system of points. By dividing fifty points among all the stations serving the area, according to the general popularity of their programs, and fifty points according to their quality of transmission, taking into consideration volume, faithfulness or realism of transmission, and freedom from interference, we may compute a guide to the percentage of the potential audience which is normally attracted to that station.

Listening Hours.

Still further deduction in the size of a station's audience must be made for various hours of the day, because not every broadcast listener uses his receiving set all the time. Again we enter a debatable subject, which no amount of discussion can resolve into the realm of certainty. Rather than discuss the subject at length, a table is offered below, in the section summarizing the method of computing the radio audience, giving the average number of the total radio audience listening in under ordinary conditions. This estimate takes into account not only the number of persons who listen six evenings out of seven, only one or two evenings of each week, and those who wait for a big broadcasting event before they use their receivers, but also the fact that a

receiver is often in operation without serving its entire normal listening group. A listening audience of 100 per cent assumes that every receiver is in operation and that the listening group includes every member of the family or the maximum group it habitually serves.

Audiences for Special Features.

Given a world's heavyweight championship prize fight and you may assume the entire potential audience concentrated upon the station broadcasting it, augmented by visitors in homes which are radio equipped and, in addition, large numbers outside the normal service range of the station up to the limit of the station's intelligible range.

The average commercial broadcaster, presenting a dance orchestra or a humorist, cannot expect to upset the habits of the listening audience. By newspaper advertising and through the notice attracted to a new program feature, it is possible to attract more than the normal audience to a station by enticing listeners from their favorite stations. If the feature lives up to its promise, it will hold a good proportion of the audience so attracted. So we must take into consideration the attractiveness of individual features.

Cumulative Value of Consistent Broadcasting.

Again we must consider the listening habits of the average family. Just as each family has its favorite station, so has each become devotee to a number of program features which appear at a certain hour each week. This is no idle assumption; the evidence supporting it is ample.

The Happiness Candy Company, for a period of years, has presented the "Happiness Boys" every Friday at eight.¹ They open their program with a catchy tune, starting, "How do you do, everybody, how do you do," and close with a ditty reminding the audience of their date "every Friday night at eight." These two specialties are familiar to millions. The "Happiness Boys" are

¹ Recently changed to 7:30 p. m.

radio's outstanding humorists, and their following is as loyal as that of any movie star or baseball idol. Eveready Hour, broadcast by the National Carbon Company, makers of Eveready batteries, has been a radio feature at 9:00 p. m. every Tuesday evening for a period of years. It has been consistently advertised in scores of newspapers and magazines. These and many other features have received hundreds of letters which state that their writers never miss hearing this feature each week, unless extraordinary circumstances prevent. Interviews with thousands of listeners by station staffs confirm this view.¹

The establishment of great popularity for such a program feature naturally affects the normal listening habits of the radio audience. A broadcaster may establish a reputation for his feature which will attract a large proportion of the potential audience to his program at the expense of the normal audience of other stations and, conversely, a rival station, presenting such a feature, may reduce his potential audience.

Competing Features.

This factor has been recognized by some commercial broadcasters. For example, there was much discontent on the part of radio listeners when WJZ's Brunswick Hour, habitually broadcast at 8:00 p. m. on Tuesday evening, was changed to 9:00 p. m., so that it conflicted with WEAf's Eveready Hour. Both Brunswick and Eveready Hour had their regular followings and apparently there were thousands who listened to Brunswick Hour from 8:00 to 9:00 p. m. and to Eveready Hour from 9:00 to 10:00 p. m. Again, when the management of the Edison Hour, presented by the New York Edison Company, was arranging its schedule through a New York station, they decided not to accept Tuesday evening at nine because it would

¹ The elements which lead to the establishment of a habitual following to a radio feature are considered with other program matters in Chaps. VI and XI.

be necessary to win their following in face of the competition of Eveready Hour. When S. L. Rothafel (Roxy) conducted the Capitol Theatre broadcasting on Sunday evenings through WEAJ, he came near cornering the radio audience in the territory over which this program was radiated.

Extraordinary events, such as the first Victor concert, featuring McCormack and Bori, the Dempsey-Tunney fight, some of the Atwater-Kent programs, have undoubtedly won audiences far in excess of the minimum estimate secured by following the process of calculation given. Such features have increased the percentage of the total audience listening by perhaps 50 per cent, and have attracted this increase entirely to their own features. They have, as well, drawn heavily upon the normal audience of other stations and, as a consequence, increased the normal audience to their features three-, four-, and even tenfold. Such occasions, however, are rare. The novice commercial broadcaster should not count on the possibility of repeating such broadcasting triumphs.

The prospective broadcaster must study the programs of all stations serving an area at the hour he proposes broadcasting before he can form a judgment as to the audience he can attract to his program. Only features of exceptional merit or the presentation of features of a very low order of entertainment or interest value cause marked deviation of the audience from its "favorite" station grouping. If the favorite station offers a profound lecture on philosophy, while the station second in favor has a popular music program, it is likely that the balance between the two stations is changed in favor of the second. But the conservative commercial broadcaster does not compute the drawing power of his feature to increase the normal audience of his station by more than 25 per cent.

Audience of Smaller Stations.

In many cities there are three or four high-grade stations and a number of small, low-power stations. Many of

these small stations broadcast to insignificant audiences. But it is impossible to prove conclusively that they are broadcasting to a well-nigh empty ether. Some such stations sell time on the air in areas with huge potential audiences of which they may gather a listening group of less than 1 per cent of the total.

The uninitiated commercial broadcaster must investigate carefully the standing of the respective stations in the area in which he is broadcasting. Each station has its standard of program quality which is the product of aggressiveness and activity on the part of its program force. Constant offering of high-grade programs wins a large "favorite station" audience. The time on the air of such a station is worth many times that of a rival which does not offer the distinctive outstanding program events and does not have so large a habitual audience.

Summary: Appraising a Station's Coverage.

We have now arrived at the point of computing the number of listeners to a given station at a given hour. The computation is based upon many assumptions and many variables, but, in the absence of a better foundation, it is the best available method of determining the value of a station's time.

To some, the estimated audience may seem high. It must be remembered that radio is a casual form of entertainment which does claim undivided attention and therefore does not interfere with other methods of spending the time in the home. Oftentimes, the radio receiver is turned on while social activities of various kinds, ranging from conversation to bridge, are indulged in. There is a surprisingly large element of the radio audience which listens in nightly. Even in the busiest cities, the competition of other forms of entertainment does not call all the members of the family away from home as much as half the evenings of the week, while in rural and suburban districts, the radio is not likely to have a competitor as often as one night

a week. Due allowance is made for summer conditions. Eventually, we will have exhaustive statistical studies to guide in the preparation of such a table, but for the present, it represents a conservative method of computing the actual audience under normal program conditions.

The process is, briefly: (1) determination of the service range; (2) estimate of the number of listeners in that range; and (3) approximation of the number of listeners to a particular station, with an allowance for the factors which may augment or diminish that number.

This involves analysis along the following lines:

1. Determination of the service range.
 - a. Draw four concentric circles on a large-scale map with its minimum normal urban and rural ranges, according to the table on page 70, as their respective radii.
 - b. Draw in the boundaries of the station's service area, using the circles already drawn on the following basis:
 - (1) In those directions which are urban in character, follow the normal urban-range line, except where fading or transmission weaknesses exist. In those directions, follow the minimum effective urban-range circle.
 - (2) In directions which are rural in character, follow the normal effective rural-range circle, except where transmission irregularities exist, where the normal urban range should be followed.
2. Determination of the potential audience.
 - a. From census figures, determine the population of the service area.
 - b. Approximate the percentage of potential audience according to the best statistics available, or estimate it on the following basis:

- (1) In areas served by two or more high-grade broadcasting stations for at least one year, 10 per cent of the population; for two years, 15 per cent of the population.
- (2) In areas served by four major broadcasting stations, two for at least three years, the other two for at least one year, 20 per cent.
- (3) In areas served intensively by broadcasting by at least three major stations for four years and with a number of minor stations, 25 per cent.

3. Calculation of total listening audience at the hour under consideration.

	Midsummer, per cent	Remainder of year, per cent
Morning	5	7½
Afternoon	7½	10
Evening		
6 to 8	10	18
8 to 10	15	25
10 to 11	12½	20
11 to 12	8	12

4. Estimation of the audience of the particular station to be used.

- a. List all the broadcasting stations serving the area and rate them according to popularity and transmission quality by percentage of total audience attracted.
- b. Deduct, from the audience being considered, up to 25 per cent for well-established competing features of unusual merit.
- c. Add up to 25 per cent for audience attracted if a feature of unusual merit, capable of winning audiences from other stations, is to be presented.

The result of this painstaking calculation will be a minimum estimate of the audience of a station. With so many variable factors, its determination is of hardly more than academic interest. But the question of how many listeners there may be to a program offering is asked so frequently that this conservative procedure has been formulated. In most cases, its application leads to a disappointingly small estimate. Instead of listening audiences of millions, such as enthusiastic supporters of the medium frequently claim, it has been found that it requires an outstanding event to attract 100,000 listeners.

Value of the Estimated Audience to the Commercial Broadcaster.

The goodwill value of the audience's attention for half an hour or an hour is as problematical as the actual number of listeners. An exceptional program offering, however, welds the trade name of its sponsor into the minds of its listeners under such favorable conditions that it is worth many times more than the brief and casual attention given to magazine or newspaper advertising. The value of broadcasting depends not only upon potential audience but on the impression which is made on that audience. For this reason, broadcasting rates are not based upon so inponderable a foundation as cost per potential listener. The usual basis is cost of station maintenance plus a reasonable profit, with an additional premium for stations of established success as commercial broadcasters. Without a doubt, there are smaller stations which are not worth a dollar an hour as goodwill mediums; there are other worthy small stations which have succeeded in appealing to local pride and which are unhampered by formidable high-power station competition, offering remarkable opportunities for gaining experience in commercial broadcasting and reaping rich returns on a small scale while doing so.

The attention of a station's habitual audience is what the commercial sponsor actually pays for when buying

time from a broadcasting station. With some stations, the rate schedule, based on cost of operation plus a reasonable profit, is considerably in excess of the actual value; other stations offer truly remarkable broadcasting bargains. For this reason, an investigation of prospective audience to a feature is justified, however weak the foundation of evidence upon which it is based.

CHAPTER VI

QUALITIES OF SUCCESSFUL GOODWILL PROGRAMS

The suitability of the medium having been determined and a satisfactory selection of stations having been made, the prospective commercial broadcaster embarks upon a task of radio showmanship. He must win his audience and, more than that, win it for *himself*. To please his listeners is not enough; they must remember and associate the sponsor with the goodwill secured by the program.

When solicited by a broadcasting organization, the prospective sponsor is usually offered a specific feature or program suggestion, to which he may attach his name. Sometimes these suggestions represent a thorough study of the sponsor's opportunity and the audience's probable reaction. Less competent broadcasting stations may offer sponsors program opportunities of negligible goodwill value.

A Middle-western station, claiming to serve the entire United States, offers to dedicate a group of numbers rendered by its orchestra to a sponsor, rotating such credit among fourteen non-competing national advertisers. In addition, it will refer to the sponsor's advertising by name of magazine and page. For this ingenious plan, it will accept a modest consideration of \$50 an evening.

Program suggestions from broadcasting stations must be studied with a view to judging their value from the sponsor's standpoint. It is not difficult to offer an idea which has considerable promise because it has some quality which makes it valuable, but it is not completely satisfactory to the sponsor unless it meets several definite requirements.

Successful commercial programs have seven general qualities upon which their effectiveness, from the sponsor's standpoint, is based:

1. Attention-compelling power.
2. Continuity.
3. Distinctiveness.
4. Fitness in relation to the concern presenting it.
5. Adaptability to the station's general character.
6. Degree and manner to which it directs attention to the sponsor.
7. Its acceptability to the radio audience.

Attention-compelling Power.

The attention-compelling power of a broadcasting feature is the degree to which it attracts public attention by reason of its novel and outstanding character. Atwater Kent achieved that quality in his programs by being the first to present, on a large scale, outstanding operatic stars. By securing the rights to broadcast the Dempsey-Tunney World's Heavyweight Championship Prize Fight, the Royal Typewriter Company arranged a feature of attention-compelling power.

Although the attention-compelling power of a feature can be measured by the newspaper publicity which it attains, this should not be the objective of the commercial broadcaster. The abuse of broadcasting as a means of obtaining newspaper publicity rather than for its prime purpose as a goodwill medium has been recognized by the press and has resulted in bans against the publication of the names of commercial features in the daily programs appearing in the newspapers.

Although a program feature should command attention, the broadcaster should not concentrate on that quality lest he sacrifice sustaining power. When launching a new feature in a crowded area with plenty of programs to choose from, it requires some outstanding characteristic, worthy of newspaper space, to win it an unusual amount of atten-

tion. To the degree that these conditions exist must the prospective broadcaster give thought to the potential

TONIGHT

Radio Organ Recital

on the

New Wanamaker Auditorium Organ

(The newest and largest in
the City)

This Evening at 10 to 10.45
Tune into W.J.Z.
at 455 meters

Organ Recital by Dr. Alexander Russell

PROGRAM

1. March from Tannhauser
Wagner
2. Serenade.....*Schubert*
3. Minuet.....*Boccherini*
4. Volga Boat Song.....
Russian Folk
5. Magic Fire Music, *The
Valkyries*.....*Wagner*
6. Toccata.....*Boelman*

The Auditorium is not open
to the public on this occasion.

First Gallery, New Building

FIG. 16.—The first advertisement of a goodwill radio program which appeared in New York newspaper on July 11, 1923. (Courtesy of Dr. Alfred N. Goldsmith.)

value of his first presentation. One way to accomplish that result is by the use of newspaper advertising appearing

on the page on which the radio programs are published. This method is being used by an increasing number of far-sighted advertisers who are thereby having their features sampled by the habitual listeners of other stations. Eventually this effective method of winning an audience will be a part of every well-planned commercial broadcasting effort.

Continuity of Presentation.

Continuity or sustaining power is in a sense the direct opposite of attention-compelling power. Having won attention for a feature, the next thing which must be accomplished is to make all those who hear it regular listeners. This is accomplished by the pursuance of a definite program policy, employing the same sustaining artists. Guest artists may augment the permanent group, but it is of great importance that the principal artists, whether they be players, singers, or speakers, be retained regularly. In the newspaper field, continuity is recognized by the use of comic strips which bring forward the same individual characters day after day. In broadcasting, such features as the Happiness Boys, the Eveready Hour with its practically unchanging group of musicians and singers, the Royal Hour, the Ipana Troubadours, the Capitol Theatre group, all represent continuity of characters with variety in program.

Groups of radio artists constitute themselves as a sort of radio stock company. If their work is good, they endear themselves to listeners as individuals. Variety and the desire to hear them on the ensuing week is attained by the fact that they put on a different kind of program each week. Continuity of character with variety of program characterizes all the outstanding successes of broadcasting.

The Atwater Kent Hours, for example, with their remarkable attention-compelling power, lack continuity of character. Thus, no personalities are built up in the minds of listeners to like or dislike, with the result that

the program creates no definite personal image of the feature presented. There is regularity of appearance and continuity in standard and type of feature presented, but there is no continuity of personnel. Consequently, Atwater Kent Hours arouse no definitely personalized memory in the minds of habitual listeners.

Distinctiveness.

Distinctiveness is an obviously necessary quality if the feature is to make headway in constantly increasing its audience. A person is easily pleased without distinctiveness, but he will not discuss a program feature with his neighbor or tell him to listen to it the following week, if it is not of a character different from other programs.

Discovering this quality of distinctiveness is not a matter of sitting in an office surrounded by samples and advertising proofs, waiting for a germ of tremendous inspiration. It is a matter of discovering artists, a thing most effectively accomplished by people in the musical and theatrical world. The Atlantic and Pacific Tea Company's program, known as the A. and P. Gypsies, is a group of musicians with a distinctive repertoire and a combination of out-of-the-ordinary instruments particularly suited to broadcasting. The once-famous Astor Coffee Orchestra, now used by the La France people through the WEA F chain, is a dance orchestra and, although there are literally thousands of dance orchestras on the air, the La France orchestra is totally different from others. It predominates in string instruments, which produce an unusual musical effect, just as Whiteman, with predominance of wind instruments, accomplishes the same end.

The Davis Saxophone Octette, appearing for the Davis Baking Powder Company, are distinctive because they bring to the front surprisingly acceptable saxophone harmonies, especially well reproduced by an average receiving set because of their clearness of tone. Here is distinctiveness without attention-compelling power which nevertheless

makes a first-class broadcasting feature because there is no other similar combination on the air.

Such well-established features as the Rose Room Orchestra and the Hotel Commodore Ensemble are known to the audiences which they serve and undoubtedly, throughout the country, features are being presented having that same quality of distinctiveness. Incidentally, although in my study of broadcasting, I have frequently and regularly listened to stations in all parts of the country, much more than an average broadcast listener does, I cannot name with certainty features in other cities corresponding to those broadcast in my own area. This merely goes to show that the regular audience of a feature is drawn from the local service area. A friend from Boston or Chicago may mention features which are uppermost in his mind and I will recall having heard them once or twice, but they are not established in my memory because they are not regularly available.

Fitness of Program to Sponsor's Character.

The fitness of a program, gaged by the standing or type of concern presenting it, is often neglected. It is a quality sometimes difficult to define. Obviously, a noisy jazz orchestra presented by Tiffany's would seem out of place, even though Tiffany's customers and potential customers probably like jazz as well as anybody else. Music picked up from hotels and cabarets is decidedly characteristic of the place which it represents because it is, perhaps, the most important factor in creating an atmosphere. But if you are a manufacturer of tooth paste or collars, for example, it is a little difficult to define a program fitting the concern. In other cases, when the prospective customers of a concern are representative of a definite class of society or when the reputation of the concern represents a definite characteristic, whether it be dignity, frivolity, exclusiveness, prompt service, or what not, there is a basis upon which to establish the fitness of a proposed feature to the nature of the product

or the character of its prospects. Conversely, general products, appealing to every class of society and having no outstanding basis of character except general worth, should capitalize their widespread field of prospects by seeking a program of the most general appeal. This has been done successfully by the Ipana Toothpaste Company, the Clicquot Club Ginger Ale Company, the Goodrich Tire and Rubber Company, and other concerns too numerous to mention.

Adapting the Program to the Station.

The character of a program should take into account the established reputation of the station where it is to be presented. WHN, for example, has concentrated upon dance music and vaudeville artists for its program features. Had *Balkite Hour*, for instance, featuring Walter Damrosch and the New York Symphony Orchestra, decided on WHN for its audience, it would have seriously handicapped its appeal to win regular listeners because that type of program is not regularly heard through WHN. Nor could a Harlem haberdasher successfully use WJZ, although he might win useful goodwill by using WPCH, because both the character and the location of the latter station's listeners suit it to a program which he could present.

Directing Attention to the Sponsor.

The method used to direct attention to the sponsor through which the goodwill gained is capitalized by him is the most delicate phase of program preparation. In this respect more than in any other must the attitude of the listener be kept scrupulously in mind. The most successful are those in which the name of the feature itself is indelibly tied in with the name of the product. *Eveready Hour* and the *Happiness Boys*, the *Gold Dust Twins*, *Clicquot Club Eskimos*, for example, are household words in the areas which are served by their programs.

Some commercial broadcasters make strenuous efforts to obtain mail from the audience by numerous pleas for letters. This is one of the most effective ways of antagonizing the audience and it will eventually be abandoned. Applause is spontaneous, and it is doubtful whether begging appeals stimulate the right kind of response. Eveready Hour, for example, practically never makes an appeal for mail. Yet it is one of the leaders in that form of response.

After all, the object of commercial broadcasting is to win goodwill, and not to stimulate the business of the United States mails. A commercial broadcaster may, on the one hand, insist on strong appeals for letters but, on the other, he would not think of taking a large customer out for lunch and reminding him each ten minutes that the So-and-So Company is paying for it. Although the object of the luncheon and the broadcasting is identical, most commercial broadcasters, on their large scale and relatively more important goodwill effort, insist in squeezing every possible letter out of the radio audience. One cause of this error is undoubtedly the desire to substantiate the usefulness of the medium, but it is foolish to do that at the expense of defeating the purpose of broadcasting.

Acceptability to the Audience.

The acceptability of a program to the audience is largely a product of the six qualities already described and the skill in showmanship displayed. It may be measured by the consideration given to the audience's desires at the particular hour at which the feature is to be broadcast. Chapter XV considers the acceptability of different kinds of programs at all hours of the day and night.

A broadcasting station should offer the prospective sponsor an established audience, the nature of which dictates the kind of program most likely to be acceptable. A program feature, broadcast at an hour only recently

utilized by the station, is of indefinite value. The audience must already be built up, either by commercial or sustaining features presented for a period sufficiently long to have an established following. If a station suggests a program feature, for an hour for which no audience has yet been developed, it is, in effect, asking a commercial sponsor to pay for building its "radio circulation." The cost of establishing audiences should be borne by the station and not by the sponsor.

Radio showmanship is in its infancy. Like any fine art, it does not lend itself to definite rules. Most of the succeeding chapters deal with specific phases of radio showmanship. A few general observations, however, may be helpful at this point.

Certain broadcasting ineptitudes, committed freely and frequently, destroy the acceptability of any feature, no matter what its other merits may be. They irritate and annoy, and are, therefore, effective antidotes to goodwill. One of them is lack of naturalness in announcing. Any grave and studied effort to make an artist appear bigger than he is, or any reference to the excessive generosity of the sponsor in making a feature possible, is obvious poppycock to the sophisticated broadcast listener. Commercial broadcasting is recognized as "goodwill advertising," and it cannot be made to appear as a gift by any spellbinding announcer. The broadcast listener invites the commercial broadcaster to his home through the medium of his receiving set. His reaction to self-laudation on the part of an invited guest, whether it be a commercial broadcasting feature or a friend from across the street, is identical. In the case of the friend from across the way, he is not always easily ejected from the scene, but the broadcast listener has the finest and most unostentatious exit in existence available to him. It is not like leaving church in the middle of the sermon; it is a mere twist of a dial entirely unobserved and unnoted by the sponsor of the feature.

Announcer's Importance in the Commercial Program.

There is a well-known broadcasting feature which habitual listeners will recognize from this reference. A number of artists appearing regularly were introduced for a long period by a chatty and sympathetic announcer who knew how to get over an emotional appeal which held a very large audience. After many months, another announcer directed the feature, using exactly the same artists. He tried to imitate his predecessor, but there is a lugubrious strain in his announcing which has turned thousands of listeners from this feature. They are still the same artists. Voice personality is one of the most important aspects of radio showmanship.

A broadcaster for a long time interrupted his regular feature of weekly dance music with a rest period during which a recipe was presented, having as its principal ingredient, one of the sponsor's products. The dance music which was offered was exceptionally good and earned a large following. I have observed no less than half a dozen occasions when the regularly expected "punishment" was tuned out, even though it lasted only two or three minutes, and the principal rival station sampled. The recipe was excused as a necessary evil but, had the music been anything less than outstanding, that feature would have had no following. Certainly, the recipe failed in its purpose. No doubt, the executives of the company involved would not pursue a similar policy at an affair given in their own homes, but they evidently labor under the impression that the radio audience is essentially different from themselves.

True Spontaneity.

Artificial efforts at spontaneity sound artificial. The broadcaster must recognize that his listener had his attention focused on only one sense when picking up his program, and that is the sense of hearing. If someone compliments you in a five-minute speech and then raises his lip, however slightly, in a sneer, you do not believe in the sincerity of

his compliments. It takes very little in inflection to disillusion the listener. An expression of surprise, when no surprise is felt, sounds flat and ridiculous from the loudspeaker.

Here are two examples of studied spontaneity which failed miserably: One is a famous feature which everyone enjoys, with a well-known figure from the theatrical world as guest artist, doing his best to act naturally. Every bit of program is so perfectly run off that it gives every evidence of careful rehearsing and yet, in the middle of it, the announcer goes through patter as follows:

"Now, Mr. Booth, when you appeared in that famous musical comedy 'Daniel in the Lion's Den,' the song hit of the show was 'Oh, Save Me!' was it not?"

The answer: "Yes, yes, that was a wonderful old number. Maybe I could sing it again after all these years."

The announcer: "Well, perhaps our orchestra leader has it. I will ask him. Mr. Gazaza, do you happen to have 'Oh, Save Me?'"

Mr. Gazaza: "Wait, I will see. Maybe I have it. I think I have. Oh, yes, there it is. Isn't that fortunate!"

The announcer: "Will you be so good as to play this for Mr. Booth and will you sing it, Mr. Booth, as you did of old?"

"Yes, yes," says Mr. Booth, "and I thank you so much, Mr. Gazaza, for playing this number for me."

When you see this in print, you think it ridiculous. Yet, with a change of a few words, it is similar to what was done through a chain of sixteen stations at a cost of from five to six thousand dollars an hour.

Another case of so-called cleverness in presentation: The scene, a famous dance orchestra, broadcast by a prominent New York sponsor. The announcer delivers the following gem:

"We just had a strange experience here. A white-haired old gentleman in native Russian costume came up to me and begged me in a sad, low voice to play a number which we played here several days ago. Its name is the same as

that of his three-year-old daughter, freezing in old Russia. Of course, we will do it. The orchestra will play 'Katinka.'"

On the face of it, the samples cited are obviously ridiculous, yet the fact that such announcements can be heard as a part of some of the finest features on the air is evidence that their ridiculousness is not appreciated.

Directing Broadcast Programs.

The direction of radio programs requires genius, just as does the direction of motion picture films and theatrical productions. Of course, if hackneyed and beaten tracks are followed, pitfalls are avoided, but this does not represent either the attainment of distinctiveness or a contribution to the advancement of the art. Most of these ridiculous *faux pas* in radio presentation are the result either of thoughtless or careless announcing, or of the meddling of totally unqualified executives in the running of radio programs. An advertising manager does not attempt to draw the illustrations to appear in the *Saturday Evening Post*, but he does not hesitate to monkey with the broadcasting picture in a manner which makes any skilled impresario, attempting to direct it, tear his hair. Broadcasting is so fascinating and so interesting that it is naturally a temptation for all and sundry to meddle with it. The direction of radio programs, however, is a specialized art, and requires artistic presentation and sensing of audience psychology. Its management should be left to persons accustomed to sensing these qualities, although this is the exception rather than the rule in the management of broadcasting efforts. Oftentimes individual reactions of the executives of the sponsoring concern have to be catered to by the impresario and their so-called good ideas are humored. All this tends to nullify the effectiveness of efforts upon which thousands of dollars may be spent every week.

A feature, to attain a goodwill result worthy of a substantial broadcasting expenditure, must have sufficient

attention-attracting power to win an audience and, at the same time, be of a nature which does not overshadow the sponsor; consistent in theme and personality, in order to be regularly expected and pleasantly anticipated; distinctive enough to be talked about; of a character in keeping with that of the sponsoring concern; of a standard befitting the station which radiates it; with a tie-in directing attention to the sponsor effectively and without offending and, finally, presented with a finished showmanship that pleases an audience already established for the particular hour at which it is offered. This result is most effectively achieved by centering full authority in a capable program director who carries out a definite and consistent program policy.

CHAPTER VII

SELECTING A COMMERCIAL BROADCASTING FEATURE

In selecting a program feature for commercial broadcasting, its objective—goodwill directed toward the sponsor—is often lost sight of. It is not sufficient to gain goodwill; goodwill must be associated directly with the program's sponsor. Herein lies the crux of selecting a successful commercial broadcasting feature. Mere popularity of a program, without centering on the product and its maker, is only partly successful.

The problem of realizing return is not confined to commercial broadcasting. It exists with every phase of propaganda work. Many readers can recall the electric sign in Times Square, New York, of the kitten playing with a spool, or the one of the polo players in action near by, but comparatively few know offhand what make of product the signs advertise. These signs were successful in gaining goodwill and creating interest, but they failed to direct goodwill to the sponsor.

In advertising, an electric refrigerator concern has popularized the slogan: "The modern iceman calls once and the ice stays always." The entire refrigerator industry has profited, because the slogan is only incidentally associated with the specific make of product advertised. So with radio, a commercial feature's usefulness to its sponsor depends not only on its popularity but upon the degree to which that popularity is associated with the sponsor's trade name and product. It is not unusual for the individual artist to overshadow the sponsor.

Amusement Stars Sometimes Radio Failures.

The prospective user of commercial broadcasting, who has learned the principle that the audience must be pleased,

oftentimes decides hastily that the thing to do is to hire the biggest and most famous artists who can be secured. This method is expensive and not always productive. The biggest artists of the theatrical and concert world are not always the best for the microphone. They are often excelled by artists possessing much less training and skill but having better microphone characteristics.

A star of the footlights leaves behind any benefit gained by stage presence, costume, and acting ability when he or she appears in the radio studio. Eddie Cantor and Al Jolson, topnotchers in the theatrical world, were hardly outstanding successes in their first broadcasts. Will Rogers, on the other hand, has scored numerous radio successes when he has been picked up from banquet halls, but, appearing in the studio without the presence of a large audience, he has been only moderately entertaining. Obviously stage and concert-hall presence is not a criterion by which fitness to broadcast may be judged. This is not a short-coming, but a mere limitation of the broadcasting medium.

Judging Adaptability to Radio.

To judge the effectiveness of a broadcasting feature, it is necessary to listen to it blindfolded and to imagine its volume reduced to that which is ordinarily heard from the loudspeaker. In the early days of broadcasting, we frequently set up microphones in the footlights to broadcast theatrical performances. I attended musical comedy performances, seated in the corner of a forward box so that I could hear but not see the performance. Usually the decision was against broadcasting when the performance was subjected to this test. Comedians particularly depend upon facial expression and gesture to put over their acts, both of which do not get beyond the broadcasting studio.

Cost of Artists No Criterion.

Adaptability to good radio reproduction alone is not sufficient to insure a successful commercial program. A

feature must win attention and direct that attention to its sponsor. Many a spectacular commercial feature, however, has attracted widespread attention to itself as a feature but has left no impression of the sponsor's name upon



FIG. 17.—Unkind newspaper critics, after hearing their broadcast through WJZ, suggested that Douglas Fairbanks and Mary Pickford had better stick to the screen, proving that headliners in other arts do not always make radio stars.

the listener. The broadcasting of the Dempsey-Tunney World's Championship Prize Fight through a long list of broadcasting stations was a highly spectacular feature

thoroughly appreciated by a vast audience, but it is doubtful whether the Royal Typewriter Company, which paid about \$35,000 to present it, attracted 2 per cent of the total attention to itself. Many a \$400 orchestra, appearing regularly, has a larger audience than a \$2,000 singer making an isolated appearance.

The theory that the more you spend the more you get does not apply to commercial broadcasting. The reputation of many broadcasting favorites has been built up slowly and gradually through consistent merit rather than spectacular glory. An advantage of buying microphone skill in preference to big names lies in the fact that broadcasting artists are frequently called to appear in person at public affairs. This results in publicity without cost to the sponsor. A high-priced feature, naturally, does not obtain many such bookings. The National Broadcasting Company maintains a booking bureau in order to make engagements for its commercial and non-commercial artists. From every standpoint, concentrating on the microphone appeal of a feature rather than seeking for famous names is the commercial broadcaster's best policy.

Of course, the Victor Talking Machine Company's programs with such stars as McCormack, Bori, Homer, and Schumann-Heinck, and Atwater Kent's hours with names of similar standing, have great newspaper value which may make other commercial broadcasters envious. But the Capitol Theatre group probably has as large a following as either of these features without the utilization of names as famous. Again it is a question of deciding whether the sponsor is buying publicity or broadcasting. Great publicity value is not essential, but natural adaptability to the microphone is. Many a feature favored by the fanfare of great publicity has failed to "get over," and disappointment instead of goodwill has been the reward of the well-meaning sponsor.

Assuming the adaptability to the microphone to be the principal objective of the commercial broadcaster in select-

ing his feature, we may consider some peculiar weaknesses of microphone pick-up with a view to eliminating certain types of features.

Conditions of Pick-up.

First, the acoustic conditions under which a program is picked up have an important bearing upon the effectiveness with which the microphone can respond. Speakers in large auditoriums often sound hollow because of the effect of reverberation. This is easily noted in almost any program "picked up" from a church, for both the choir and the preacher usually sound flat and are difficult to understand. Dance orchestras from outside points are more easily picked up, because the microphone can be successfully placed so close to the source of music that reverberation effect is largely overcome.

If symphony orchestras are to be properly picked up, the broadcasting crews must be technically skillful, so that good reproduction of their program is attainable. A symphony orchestra, regularly broadcast, is subject to constant experiment by conscientious broadcasters until highly realistic music is obtained. Microphones are moved and their respective balance adjusted until every instrument contributes its proper share to the electric output of the microphone circuit. The Capitol Symphony Orchestra, broadcast through a large number of stations every Sunday evening, is a highly successful orchestral pick-up, the result of several years' work of a technical organization. Nevertheless, solo singers from the stage are still quite ineffective. The same singer, heard under the favorable conditions at the Capitol broadcasting studio, makes a very much better impression. No matter how well the microphone is placed, it cannot overcome an echo when that echo is not a small proportion of the original sound volume impressed upon it.

In the broadcasting studio, with special draping and deadening to reduce reverberation effects, their influence

is overcome. There is such a thing, however, as too much deadening in the studio; this is observable in the receiving set by an absence of ring from such instruments as the piano. With the exception of dance orchestras, which present a



FIG. 18.—Broadcasting from churches and auditoriums often results in "hollow" effects due to reverberation.

comparatively small technical problem, any program not picked up from the studio should not be accepted as a commercial feature unless its pick-up is a demonstrated success.

Range of Volume.

A second consideration is the range of volume encountered between the softest and loudest sounds which must be handled in a broadcasting feature. At this writing, the limitations of radio receivers allow roughly a ratio of 400 to 1 between the softest and the loudest sound. Sitting in a concert hall, the listener is called upon to discriminate and enjoy passages ranging all the way from one sound unit in volume to one a hundred thousand times as great. The ear's range of volume ratio discrimination is obviously much greater than that of a broadcast transmitter and receiver.

The way in which this lack is overcome in the handling of radio programs is by reducing amplification of the electric amplifier system during loud passages and bringing up the weak ones by extra amplification, so that the ratio of sound energy transmitted to the receiving set does not exceed 400 to 1. This technical task is the function of the input amplifier operator. When he does not perform his duty properly, a trained listener can easily detect it. His work is most obvious when broadcasting is shifted from one point to another. The first words of an announcer from a new location are either too loud or too soft and there is a quick adjustment which brings the volume to normal level for best reception. Similar adjustments, less easily observed, are made throughout the broadcasting program.

Undoubtedly, there will be great improvement in transmission quality and the capabilities of receiving sets which will eventually permit accurate reproduction. It is quite possible, even today, to reproduce a program of dance music with the same volume with which it is transmitted, but usually such a reception is unpleasantly and uniformly loud.

A broadcast program of relatively constant volume, without requiring excessive amplification to give natural reproduction from an average loudspeaker in the home, is

the most desirable commercial broadcasting feature. This premise, for example, makes a program by a quartette, a chamber music group, or eight or ten wind instruments, more desirable than one by a large choral society, a full symphony orchestra, or an army band.

Area of Pick-up.

Not to be confused with range of volume is the factor of extent of pick-up. A choral society program could be planned for broadcasting so that its volume would be maintained at the relative uniformity level required by good broadcasting. The large area serving as the source of music would still add a technical problem of some magnitude to make the pick-up successful.

The microphone is, in essence, the ear of the broadcasting station. It is not a discriminating ear like the human ear, which can concentrate on a desired sound and exclude the impression caused by interfering sounds. It picks up every sound within range. The sensitiveness of the microphone as an ear is regulated by the input amplifier operator. If the microphone is called upon to pick up speech or quietly modulated singing, he makes it sensitive. When called upon to handle the great, crashing finale of a huge orchestra, he makes it insensitive. In its most sensitive condition, it responds not only to weak sounds, but to all sounds for a large area. A whisper can be picked up for a distance of thirty feet when the microphone is in its sensitive adjustment.

When picking up a large choral society, the microphone cannot concentrate its attention upon the singers in its immediate vicinity. To get the proper effect, the tenors and basses in the rear must have just as good a chance as the sopranos and altos in front. That makes it necessary to place the microphone at some distance from the singers so that the blended effect of the whole choral society is picked up. For the same reason, a listener desiring to enjoy a choral program naturally selects a seat at some

distance from the singers rather than one in their midst. To compensate for the distance, the microphone is adjusted to sensitiveness sufficient to respond to the voices of all the singers. In a public performance under these conditions, the audience noises may have an almost equal chance with the artists themselves. With constant experiment and experience, the art of placing and adjustment of microphones is being learned. The radio audience does not appreciate the delicate technique involved in good broadcasting. It does, however, unconsciously recognize failures by tuning them out in preference to features more skillfully broadcast.

The difficulties attendant upon variations in volume and extent of pick-up may be compensated by the use of several microphones and exceptional skill in handling them, but this ability, it must be admitted, is possessed by comparatively few broadcasting organizations. It is an art still in its infancy, bound to make rapid strides in the immediate future.

Musical Characteristics of Instruments.

The musical qualities of the instruments themselves enter significantly into the problem of feature selection. Herein lies the great opportunity of the ingenious commercial broadcaster, because there is an untold wealth of broadcasting features which have never been unearthed, possessing unusual microphone appeal.

A very effective broadcasting feature, from the standpoint of the ease with which it is well reproduced with the ordinary receiver and the facility with which it is picked up at the broadcasting station, is musical glasses. Ordinarily, one thinks of these as a vaudeville specialty, but, as a broadcasting feature, their exceptional microphone quality makes them more acceptable than many a conventional source of music. The flute, one of the more highly pitched of the wind instruments, also makes for very clear and realistic reproduction. The carillon is worthy of special

mention for the clarity with which it may be reproduced by a radio receiver.

The fundamental reason why such instruments make good broadcasting is their inherent purity of tone. We speak of music being as clear as a bell in recognition of the purity of tone. This quality is the outcome of concentration of sound energy on the fundamental frequency and the lower of the harmonics. Some instruments, on the other hand, do not have great purity of tone, but dispose their sound energy over a wide range of frequencies. Given a perfect receiving set and a skilful transmitter, this entails no serious barrier to successful reproduction, but that is not the condition to assume when appealing to the radio audience as a whole. Neither transmitter nor receiver, as a general average, is what may be termed high grade.

Fundamental and Harmonics.

The sensation of sound is the brain's response to air waves impressing themselves on the diaphragm of the ear. Air vibrations cause the auditory nerves to register an impression upon the brain center of hearing. The mechanical construction of the diaphragm is such that it vibrates to frequencies lying between 16 and 17,000 vibrations per second, both the upper and lower figures varying somewhat with different individuals. In speaking, the vibrations to which the ear drum responds lie between approximately 100 and 10,000 impulses per second.

It has been found that a communication system which transmits frequencies between 500 and 2,000 reproduces speech sounds which are easily understood, although lacking somewhat in naturalness. The ordinary commercial telephone gives satisfactory service even when working within these frequency limitations.

In listening to the music of a symphony orchestra, a much wider range of frequencies is involved. When a musician strikes the "C," one octave above the middle

"C" on the piano, the ear drum vibrates 517.31 times per second. When a flutist sounds a tone of the same pitch, the ear drum also vibrates at the same frequency of 517.31 vibrations per second. The factor which enables the hearer to discriminate between the music of the piano and the flute is the harmonics or overtones. Harmonics are exact multiples of the fundamental. The first harmonic is 1,034.62 vibrations per second, the second is three times the fundamental tone or 1,551.93 vibrations per second. There is also energy distributed on the third, fourth, fifth, and higher harmonics.

Distinction between Instruments Depends on Harmonics.

The distinguishing character of each instrument is determined by the relative energy distribution on its harmonics. For instance, one instrument may radiate 50 per cent of its energy on the fundamental, 12 per cent on the first harmonic, 18 per cent on the second, 10 per cent on the third, 3 per cent on the fourth, 2 per cent on the fifth, and the balance on still higher harmonics; another may radiate 45 per cent on the fundamental, 30 per cent on the first harmonic, 12 per cent on the second, 6 per cent on the third, 1 per cent on the fourth, 5 per cent on the fifth, and 1 per cent on higher harmonics. It is these varying distributions of energy that make one instrument sound different from another. The ear is extraordinarily sensitive to the effect of variations in this energy distribution, although it cannot consciously define them. The thing that makes a \$30,000 Stradivarius give a tonal quality superior to that of a cheap violin is minute variation in the percentage energy distribution among fundamental and harmonics.

Although relatively small energy is present in any one harmonic, it is essential, to secure accurate reproduction, that the broadcast transmitter not only broadcast the fundamental tones which give recognizable pitch but also give accurate reproduction of the harmonics. Otherwise,

the flute, violin, and piano lose so much of their naturalness that it is difficult for the listener to distinguish among them. Uniform amplification over the entire range of musical frequencies is therefore a requirement of tremendous importance if faithful transmission and reception are to be secured.

Great as the improvement in transmission and reception quality has been during the last few years, we are far from perfection. The advantage still lies with instruments concentrating a very large proportion of their sound energy between 200 and 3,000 cycles. Purity of tone is the result of meeting this requirement.

Many commercial features take advantage of purity of tone. For example, the Davis Saxophone Octette utilizes the clearness with which the saxophone is reproduced. The saxophone concentrates its sound radiation upon the fundamentals and two or three harmonics; the upper harmonics are not of prime importance.

The natural disadvantage of an instrument producing a wealth of harmonics can be overcome by judicious selection of compositions and understanding by the musician of the limitations of broadcasting. A simple nocturne on the piano, played gently and with feeling, sounds better than the impressive fortissimos of the famed concert player.

The Speaking Voice.

Finally, the speaking voice used must be subject to careful and impartial judgment. A voice possessed of oratorical quality is usually a failure before the microphone. Calvin Coolidge is a successful broadcaster because he speaks in a simple, clear, and quiet voice. Bryan's "Cross of Gold" speech would not have made a great impression by radio. The oratorical voice fails in broadcasting because the microphone does not pick up its great variations in volume very well and because it is unnatural to listen to someone shouting from the inanimate loudspeaker in the quiet surroundings of the home. As a member of a

mass audience, one expects to be addressed in a powerful, resounding voice, but the same voice quality before four or five people in a single room is quite out of place.

The same general principle applies to singing voices, and it accounts for some of the failures of very great and skilful artists. Accustomed as they are to facing large audiences, they cannot modulate successfully to the quiet sympathetic singing which reproduces naturally and easily.

Although selecting a broadcasting feature requires little knowledge of the science of acoustics, it is of advantage to consider the candidates for commercial features with these few principles in mind. Briefly, purity of tonal output, limited variation in volume, and small area of pick-up under favorable studio conditions are desirable qualities of a commercial broadcasting feature. These qualities are more important than fame or reputation of contributing artists in other fields. Effectiveness as a broadcasting feature is the prime consideration in selecting broadcasting artists.

CHAPTER VIII

WHAT THE RADIO AUDIENCE WANTS

The program desires of the radio audience were once a favorite subject of discussion among commercial broadcasters and program managers; and numerous questionnaires, submitted to thousands and tens of thousands of listeners, and tabulations of program preferences, expressed in tons of applause mail, were conscientiously studied in the effort to learn statistically just what the radio audience wants.

Searching for the Most Popular Feature.

Fully 70 per cent of the letters written to WEAf by admiring listeners in 1922 were in response to dance or jazz programs, 25 per cent to classical programs, and 5 per cent to so-called educational features. A year later, jazz dropped to about 35 per cent of the response, classical music rose to 35 per cent, and educational talks (then used in the all-inclusive sense of propaganda talks, political speeches, and educational material) increased to 30 per cent. These figures were brought forward as evidence that the radio audience had improved greatly in its tastes.

The early preponderance of response to jazz music arose out of the fact that request numbers were played freely, that the first broadcast listeners were mostly experimentally inclined young men, and that the poor musical quality of reception then attainable simply exaggerated the more raucous element of jazz music. The last fact did not detract materially from the entertainment value of jazz when nothing better was available, but it made radio quite unbearable to those who understood the beauties of classical music. Circulating questionnaires among such

a disproportionate and unrepresentative body of radio enthusiasts naturally gave a distorted picture of its preferences.

With improved quality of reproduction and wider distribution of radio receivers, every conceivable taste is represented in the radio audience. Any kind of program receives some kind of response. Program directors no longer search for the "most popular" feature or attempt to standardize the tastes of the radio audience by trying to please everybody.

Why Listeners Write Letters.

Generally speaking, letters are written in response to one of three impulses:

1. Genuine appreciation of a great and outstanding event.
2. Desire for some form of premium.
3. Wish to have name read over the air.

Only a very small percentage of the letters are written in a spirit of constructive criticism or suggestion. Most of the audience write that they like a certain feature which made a special appeal to them. An outstanding event draws heavy mail, while good features, regularly enjoyed, but not particularly unique or outstanding, do not obtain their just quota of response. They may please, but not sufficiently to inspire the writing of numerous letters. The effort of writing a letter is one not frequently indulged in by the average listener. It takes more than a "good" or "enjoyable" program to elicit a spontaneous applause letter from a listener; it requires a combination of ideal listening conditions and a striking program appeal fitting to perfection the writer's mood and wishes of the moment.

Only 10 per cent of the writers of radio applause letters write a second letter to a broadcasting station within a year. It has not been accurately determined, except on a very limited scale, just what proportion of listeners have written in to comment on programs. Estimates vary

from one in four to one in ten. Considering that most listeners enjoy at least 300 or 400 radio events a year, a letter in response to an ordinary program would thus represent an average of from 1,200 to 4,000 listeners. But this average forms no basis whatever upon which to estimate the audience listening to a feature, because the motive to write is influenced by the nature of the appeal made for letters. Premiums, unusual emotional appeal, request programs, and novelty are more important than entertainment value and audience satisfaction in drawing mail. Nor can the comparative popularity of features be compared by examination of mail return, because response to an offer of booklets or other valuable premiums is not an index to appreciation or popularity. The application of methods similar to keyed advertising in judging program effectiveness is generally misleading.

Pleasing the Entire Audience.

The nearly frantic efforts, made by some commercial broadcasters to discover through extended questionnaires and statistical investigations just exactly what kind of program will please the greatest number, are wasting a good deal of time and effort to find out something which no one definitely knows and which varies from hour to hour with the individual listener. For example, one very successful commercial broadcaster seems to be on the verge of a nervous breakdown, half the time, trying to find out exactly what will please everybody. Although this feature has now been offered for more than two years, questionnaires still go out in great numbers; the opinions of scores of persons are studied with interest and the handful of responses received is apparently considered proof of the success of the broadcaster's policy. The writer has received twenty successive questionnaires, each asking no less than seven specific questions, some with many parts, and requesting that the answers be forwarded within twelve hours after the program in question is completed.

The receipt of these questionnaires stopped abruptly, however, when the author ventured to criticize the general program policy of the feature.

Most experienced users of the medium concentrate their attention on the program value of their feature and rely on audience mail only for casual confirmation of their success and program directors find more guidance in half a dozen well-written letters, indicating intelligent thought and discrimination, than they do in a thousand letters of ordinary applause.

A story, told by an advertising man who introduced a young copywriter to Cyrus Curtis at an advertising club in an eastern city, illustrates the futility of attempting to find a universal appeal. The young man was flustered at meeting the great publisher and attempted to make conversation by telling Mr. Curtis that he had read the last issue of *The Saturday Evening Post* from cover to cover and enjoyed every story in it. Mr. Curtis is said to have replied that he would have to read *The Post* again himself for a change, if its editorial direction was falling down to the extent that it appealed to only one individual taste. "The text of *The Post* is balanced so that every reader finds at least one story which appeals to him very strongly and two or three others which please him," explained Mr. Curtis. Probably this incident was invented to prove a point in argument, but, whether true or not, it shows the similarity of the editor's problems to those of the broadcasting program manager.

Radio's Cross-examinations Unique.

The theatrical profession does not subject its patrons to continued cross-examination as does the broadcasting fraternity. It knows definitely that musical comedy appeals to a large percentage of the population, no matter where it is offered. It knows that farce comedies have a wide appeal, but not nearly so extensive as that of musical comedy. The success of farce comedy is in a large measure

dependent upon the ability and reputation of the star comedian. Personality reputation is as important as the humorous quality of the farce's script. It also knows that serious drama, although limited in appeal, if successful, is not quickly forgotten; that its success cannot be determined in advance by the most skilful critic. On the other hand, if a serious play goes over, it makes fortunes, because it receives invaluable word of mouth advertising among those to whom it appeals.

The classical drama, or highbrow drama, has a very limited audience but, if done successfully, wins the lasting gratitude of the sophisticated group to which it appeals.

In earlier days of theatrical presentation, the public may have been subjected to questionnaires to determine whether musical comedy or farce or drama was nearest its hearts, but the theatrical profession has long given up turning to its audience for guidance. The audience does not know what it wants and takes what it gets.

Relative Popularity of Four Classes of Radio Entertainment.

The same generalizations as to the relative popularity of programs can be made for radio. Without question, dance or jazz music appeals to a larger percentage of the radio audience than does any other form of music. It is the musical comedy of radio. Next in appeal is the popular program, comedy and song and, like the farce comedy, individual personality of the artists counts more than selections used in the program. A broadcast listener may like the Smith Boys and dislike a nasal twang which one of the Jones Boys possesses. He does not specially care whether the Smith Boys sing "Sally in Our Alley" or "The Sidewalks of New York," so long as they do their act in the way that is characteristic of themselves. If the Smith Boys are humorists, but try reciting Shakespeare seriously and dramatically, their listeners wonder what has happened to their favorites.

Less general in appeal is the continuity drama, because it requires undivided attention of the listener, while a dance program does not. A continuity program, however, which grips the listener and wins his attention, makes a lasting memory impression of tremendous goodwill value to the sponsor. No dance orchestra has a chance of registering as permanently or profoundly as a group of artists who put over a successful continuity.

Classical music, presented in concert-hall style, has the most limited appeal, although reproduction weakness has been largely eliminated so that, given a good radio receiver and a good transmitter, a person understanding and enjoying classical music can now enjoy it when presented by radio.

This brief summary crystallizes the opinions of a number of broadcast program managers who have been identified with these problems from the first days of broadcasting. The commercial broadcaster is more concerned with the nature of the impression and credit redounding to the sponsor from the presentation of a feature than he is with its general popularity. Dance music is acceptable to the largest percentage of the radio audience, but it rarely registers a tangible impression to the listener. Its entertainment value is great, but its impression is ephemeral.

Popularity versus Distinction.

Anna Byrne's dance orchestra is one of the finest radio dance orchestras on the air. Its predominance of string instruments makes it distinctly different from the average run of dance music combinations. It has the distinction also of being the first dance orchestra presented as a commercial broadcasting feature. It appeared first in 1923 through WEAf, sponsored by Browning, King, and Company. In that capacity, it pleased a countless audience. After a time, Browning, King, and Company discontinued broadcasting, and a few weeks later the same orchestra appeared as the Astor Coffee Orchestra. Although tens of

thousands had been listening to the Browning, King Orchestra regularly, they made no protest when it disappeared, and it is doubtful that many recognized it when it reappeared. After appearing as the Astor Coffee Orchestra weekly for a long time, Anna Byrne's orchestra became the La France Orchestra. There is no indication that these shifts were observed by a large part of the radio audience, although, in each capacity, Miss Byrne's orchestra was the recipient of large quantities of appreciative mail. There is ample evidence that this feature has a large following, but, like the jazz hits of today which it plays, it is forgotten by its listeners tomorrow.

The dance orchestra has been used as a valuable adjunct to many commercial hours which employ sustaining artists and specialties to achieve a degree of distinction from the average run of dance orchestras. Thus the popularity of dance music is utilized without, at the same time, winning for the feature the classification of "just another dance orchestra."

The popular humor and song program, which may be termed "radio vaudeville," builds up personalities which win followings as do movie stars. Outstanding successes in this field are rather few in number, because the requirements of the microphone have not been made the subject of specialized study or training. The Radio Franks, the Happiness Boys, Goldy and Dusty, the Smith Brothers are a few of the successes. They have good voices. They are conscious that the only thing which gets over to the radio audience is sound. They know how to win their audiences by voice personality. Their followings are a definite group of listeners. Either you like them or you do not. If the Happiness Boys became the Mirror Midgets, it would be a significant event in the broadcasting world.

Station or Personality.

Valuable as a personal following is, however, it is distinctly associated with the station through which it is

gained. The experience of Norman Brokenshire, once one of WJZ's most popular announcers, is a typical example in support of this point. Mr. Brokenshire's announcing is of the patronizing and verbose type with frequent attempts at humorous comments. That it pleases a great number of people is evidenced by the large amount of personal applause mail he received while with WJZ.

As his connection with WJZ drew to a close, he utilized many opportunities to call the attention of the radio audience to the fact that he was affiliating himself with a smaller station. His newspaper publicity was widely carried, but only his most ardent admirers followed him to WPCB, which has in its service range the most populous area served by WJZ. Mr. Brokenshire had to begin all over again with WPCB's audience to win the favor of that element which enjoys his kind of announcing and WJZ's audience remained apparently unaffected. Radio stars do not carry their brilliance from one microphone to another; each station's audience must be won anew.

The Continuity Program.

The continuity presentation bridges the gap between the distinctiveness of the classical and the transient impression of the dance music program. It combines literature and music, overcoming the monotony of an extended period of either.

The foundations of continuity program technique were laid in 1923 by Paul Stacy, who had charge of the presentation of *Eveready Hour*. Realizing that the announcer's introduction of artists, selection after selection, was tiresome and crude, Stacy devised continuities which weave the description of the number into a connected plot. The announcer becomes a personality, taking a part. Sometimes speech is the predominant feature of these programs, with music providing a background; or music predominates, and the speech serves to carry the listener's mind naturally

from one number to another. It is neither radio drama nor radio opera. The radio continuity is not merely something borrowed from another art, it is originated for radio. With the limited experience in this form of presentation, it is not always successful.

Stacy's conception is a sound one. The announcer in the concert style of presentation is an artificial personality, required to set the stage for an artist's impersonal effort. His function is as formidable as that of an announcer at a theatrical performance whose task would be to describe the surroundings and stage setting while the players would be called upon to do their work against a blank wall. Continuity makes description a part of the show and the announcer an actor. Without perfect blend and illusion, he becomes ridiculous.

I recall a program attempting to depict the activities of a fire department which was once inflicted upon New York's radio audience. It was a novel conception but, depending as it did upon words to depict tremendous action, it failed miserably. It was entertaining only because it was ludicrous. The terrified yells of the announcer failed to terrify the audience, and the mere statement that you were moved to the fire house in response to the alarm was unconvincing.

Problems of the Continuity.

Most continuities fail either because of some extreme improbability or because of poor "voice" acting. It requires training and rehearsal to put over a continuity. But a concern which puts over, as did the National Carbon Company in its Eveready Hour, a feature like the Galapagos program which is still remembered and discussed by radio listeners two years after it was presented, obtains a measure of goodwill which cannot be equalled in any other way.

Truly we are in the flicker-film days of radio presentation. The first pretentious continuity program was presented

through WJY in 1924. It was the outcome of suggestions of the *New York Tribune's* daily column of criticism, written by "Pioneer," at that time Raymond Francis Yates. It was offered under the gaudy name of "Omni-Oral" presentation. The announcer and an assistant, by their conversation, introduced the numbers for an orchestra and a few soloists. It seemed apparent that a list of numbers was first prepared and conversation fitted around them. The patter, however, was so unreal that the effect was hardly successful. Later programs along the same lines, offered with the same artists, were far superior to the first attempts.

In some of the more pretentious continuity programs, special music has been composed to fit the mood which the continuity is presenting. A poetic narrative like "The Ancient Mariner" or "Evangeline" lends itself to continuity presentation. A background of music to such a reading, skilfully balanced to avoid drowning out the speaker's voice, brought forward to full strength to indicate action, uses music and speech to supplement each other quite naturally and effectively. The structure and preparation of the continuity is considered in detail in a later chapter.

One feature of the continuity is that it requires the listener's undivided attention. This has both advantages and disadvantages. The continuity must be without flaws or lack of realism, because they will not pass unnoticed. Repeated ineptitudes result only in the program being tuned out. Compensating is the advantage that a successful continuity is remembered just as an evening's entertainment at the theatre is. It enables the gaining of goodwill in a forceful, impressive, and lasting manner, unattainable by a program of casual entertainment. Given good staging, the continuity wins a measure of goodwill and audience appreciation which no other form of program secures. A continuity which does not "get over," however, is not a goodwill asset; it is a liability.

Listener Participation in Programs.

Some programs do not fall into any of the classifications so far made. Among these are programs in which the listener actually participates. We recall the programs presented by *Time* magazine under the name of "The Pop Question Game," through WJY. The character representing *Time* asked ten questions based on the news of the day, allowing thirty seconds after each one for the listener to answer the question for himself. At the sound of a gong, Pop Questioner gave the correct reply. The questions were based upon current events, to which *Time* is devoted. Thus a very subtle and successful selling message was put over because the listener was made conscious of his lack of knowledge of the events of the day as an argument for subscribing to *Time*.

The United States Playing Card Company offers auction bridge games by bridge experts. Radio listeners gather in parties of four and each is dealt a hand described by the announcer. The play of four bridge experts, each holding one of these hands, is followed through, together with the reasons for every play. Listeners are thus taught the fine points of bridge and sold the desirability and fascination of the game at the same time.

When an ingenious program director discovers a way in which to use the sponsor's product which is a service and entertainment to the listener, he is using the broadcast medium to the greatest advantage.

Popularizing the Classical.

Classical programs, while not so generally popular as dance music, have, by good radio staging, been greatly extended in their influence. Classical music is not widely enjoyed because it is not understood by the public at large. Walter Damrosch, by his charming explanatory prefaces, makes classical music enjoyable to the most uninitiated. Thus, the Fansteel Products Company, sponsor of the Damrosch programs, performs a service and main-

tains a dignity through the personality of Mr. Damrosch and the standing of the New York Symphony Orchestra which he conducts, so that its trade name, Balkite, is brought to the public with the finest of associations. That a concern which does broadcasting with such remarkable personnel and such thoroughness, undoubtedly makes a good product, is the inference carried to the listener.

The Atwater Kent Hours present some of the world's greatest artists, well appreciated by the concert-hall audience and by a vast number who would be members of the concert-hall audience were they financially able and sufficiently near to musical centers. The programs are presented in standard concert-hall style. No radio showmanship is employed to make these wonderful features of wider appeal. Although Mr. Kent has established new standards of artist quality through his presentations, they are, to the listener who has no other contact with or knowledge of the opera and concert, a disjointed series of spectacular radio performances.

The commercial broadcaster apparently has to choose between two extremes, popularity and distinctiveness. He may attain extreme popularity by appealing to the largest percentage of the audience with a dance music program, or he may go to the other extreme and achieve exceptional distinctiveness and impressiveness, but appeal to only a limited number. The most effective middle ground is a matter of preference which cannot be answered by a study of the radio audience's mail response. Centering attention upon pleasing the class of audience most productive in the sponsor's business in a way which reflects credit upon himself should be a primary concern of the commercial broadcasting program director.

In succeeding chapters, radio features, both instrumental and vocal, are considered from the standpoint of their adaptability to the microphone, and also from that of the manner in which they may be combined to

make a distinctive and smooth-running program. The full range of program appeals, from the most widespread popularity to the most limited distinctiveness, is considered, as well as methods to overcome their respective shortcomings.

CHAPTER IX

INSTRUMENTAL MUSICAL FEATURES

Dance music pleases a larger percentage of the radio audience than any other single type of broadcasting program. It provides both casual and active entertainment. The radio receiver may be turned on while the usual activities of the home are continued undisturbed, or the program may be used to provide the mainspring of the evening's entertainment. Most people who enjoy and understand classical music also like good jazz music. Those who object to and dislike popular music are a small proportion of the radio audience. Persons whose musical tastes are so advanced that the very thought of popular music irritates them find any kind of radio music so distasteful that they are rarely, if ever, radio listeners.

The fairly constant volume of dance music, which suits it to easy microphone pick-up, further recommends it. It may be broadcast from the studio or picked up from a remote point with equal facility. It is acceptable through a mediocre receiver to those who tolerate such a device. Apparently the easiest way to satisfy the radio audience is to give them dance music.

Distinctiveness in Dance Music.

The ability of a dance music program to make a lasting impression upon the individual radio listener is dependent upon its distinctiveness. Being faced with most spirited competition, the number of dance orchestras possessing real distinctiveness can be counted on the fingers of two hands. Many are pleasing, but few are distinctive.

The broadcasting of dance music has been greatly overdone. Listen in at a late hour in any part of the country

and perhaps four out of five stations are broadcasting dance music. One gains the impression that America is a dance-mad country, fox-trotting its way around the clock. If you tune from one station to another, you are likely to hear the most popular number of the day through three or four different stations.

Receiving, as it does, much more than its just share of microphone attention, an ordinary jazz orchestra, even though highly acceptable, creates little or no impression upon the listener. The radio audience has more jazz than it can use, unless it discovers a way of enjoying three programs simultaneously. Dance music is lowest on the scale of distinctiveness, just as it is highest in the scale of popularity.

But it is not impossible to obtain distinctiveness with a dance orchestra. Tin-pan jazz, with its usual layout of saxophones, violins, and cornets, is outruled as an effective commercial broadcasting feature. Distinctiveness is gained either by unusual instrumental combinations or by means of supplementary specialties which lift a group out of the ordinary run of dance music entertainers.

Successful Dance Orchestras.

Paul Whiteman, a year or two ago, toured the United States with a symphonic jazz orchestra which appeared in the leading opera houses and concert halls of the country. Whiteman's orchestra features wind instruments both of brass and wood. His special orchestrations and instrumentation attain a remarkable degree of distinctiveness, recognizable by the most inexperienced listener. The few times his orchestra appeared before the microphone, thousands of letters resulted from each broadcast.

Different from the Whiteman Orchestra is the popular Anna Byrne Orchestra, the musicians of which are recruited entirely from symphony orchestras. It features string instruments and plays with gentle harmony. Classical trio selections and instrumental solo features are used to provide intermissions during its hour program.

Vincent Lopez, Ben Bernie, and Paul Specht each have their individual style, easily identified by the habitual listener. I remember hearing Vincent Lopez through a Pittsburgh station unexpectedly one evening not long after he had begun broadcasting regularly through WJZ in New York. Although I had never analyzed what makes the playing of his orchestra distinctive, the music from the Pittsburgh station at once impressed me as being for all the world like that of Lopez' orchestra. I waited for the announcement and found it was no imitator; it was a Lopez orchestra playing at the William Penn Hotel. The factor which makes a particular dance orchestra outstanding need not be understood by the listener to be appreciated. Likes and dislikes are felt emphatically. Every listener can name his favorite dance orchestras readily.

Special instrumental combinations and special orchestrations help to raise an orchestra above the ordinary run of jazz combinations. Only in unusual instances, however, is this means of attaining distinctiveness sufficient to make an outstanding broadcasting feature. Skillful "arrangers," as the musicians who prepare special orchestrations are called, are not numerous.

Supplementary Features to the Dance Orchestra.

Many combinations attain distinctiveness by means of musical specialties such as a classical trio or an exceptionally skillful xylophone soloist. The excellent Goodrich Silver-town Cord Orchestra supplements its programs with the work of the Silver Masked Tenor, whose unusually good microphone qualities are used to advantage in making the feature an outstanding one. Raucous baritones of the type usually featured with dance orchestras are frequently such a liability as to make an otherwise acceptable orchestra distasteful. A real singing orchestra, capable of good, old-fashioned, barber-shop chords, would make a broadcasting hit.

The Clicquot Club Eskimos, conducted by Harry Rieser, feature the Hawaiian guitar, exceptionally well suited to

broadcasting because of the pure vibrating quality of the metal string. Their music sounds well, reproduced on almost any receiver, no matter how restricted its tone range or volume. The Davis Baking Powder Company presents dance numbers by eight saxophonists, offering unusually fine harmonies of good broadcasting quality.

Departing from the Conventional.

There are all kinds of possibilities, departing entirely from conventional lines, for the creation of entirely new dance music formations possessing distinctiveness and therefore great goodwill value. Perhaps some one will experiment with a dance orchestra entirely of wood winds or one entirely of string instruments. Seemingly impossible combinations, such as organ and xylophone, may be a source of good radio dance music. Only actual experiment can determine.

The program director of the broadcasting station can aid the prospective commercial broadcaster greatly, if he is not influenced by the fact that a thing has never been done before or that a suggested combination is not especially pleasing when heard in the studio. This is no proof that it is not an exceptionally fine broadcasting combination.

The relation between the respective volume of different instruments can be altered by judicious microphone placing so that entirely new tonal effects are secured. This field for unusual effects has not been extensively studied. The tiny roar of a sea shell can be amplified so that it is reproduced in the home of the broadcast listener as loudly as the finale of an eighty-piece symphony orchestra. Although the volume of the symphony orchestra, when heard in the concert hall, is several million times greater than the sea-shell roar, the microphone is sufficiently adaptable to put on the carrier wave a signal of equal strength from these two sources.

An imaginative musical director, thoroughly cognizant of the capabilities of the microphone and its associated

amplifier system, should be able to devise entirely new combinations, which may sound unpromising in the studio, but which can be brought into an agreeable musical focus by proper balance or by the use of several microphones. There has been a marked apathy on the part of program directors in devising new and original instrumental combinations to take advantage of the full possibilities of broadcasting.

Cost of Dance Orchestras.

The cost of dance orchestras varies greatly with reputation. The commercial broadcaster who has economy in mind may arrange with a hotel or dance-hall combination for broadcasting its music direct from its regular place of appearance. Since it does not play specially for broadcasting under these conditions and its radio performance is of mutual advantage to the sponsor and the orchestra itself, the cost of broadcasting and the expenses of such an orchestra can be divided between the two parties. Divided credit over the air is naturally poor policy for a commercial sponsor of any account, and it is effective only in isolated instances, as in the case of a small-town station serving a local area, presenting a program in behalf of the local merchant.

The dance orchestra may play for radio with equal effect at the broadcasting studio or at an outside point. In the latter case, the orchestra should be conducted with the fact that it is being broadcast fully in mind. No long intermissions or excessive audience applause should be featured during the broadcasting. Vincent Lopez, by regarding responsibility to the radio audience, is as successful, broadcast from the Casa Lopez, as he would be from the studio. The fact that he is simultaneously entertaining patrons and the radio audience is not permitted to cut up his radio program in a manner which detracts from its acceptability to the listener.

Some broadcasters merely place the microphone in a convenient position and let the dance program take its

regular course with only occasional announcements. Lengthy intermissions and breaks annoy radio listeners who have none of the distractions of those present at the dance hall or cabaret to entertain them. It is natural that such poorly broadcast programs do not win goodwill.

Studio jobs are generally superior; as instruments can be better balanced about the microphone, the radio reproduction is natural. There is no audience noise and every need of the microphone and its radio audience can be met under studio conditions.

A better grade dance orchestra, appearing specially at the studio, but which does not need to rehearse specially for radio, can be hired at costs ranging from \$300 to \$400 an hour on the average, and running to \$500 and \$600 and more for headliners. Unknown aggregations, where union rules do not prevail, may scale all the way down to \$50 an appearance.

The commercial broadcaster, therefore, should beware of an average or even a good dance orchestra. In his search for broadcasting material which will win him goodwill, he must be certain that it is quite different from the ordinary run of orchestras, either by means of specialized combination of instruments or the assistance of supplementary artists.

The Symphony Orchestra.

The symphony orchestra is the most distinctive and pretentious form of broadcasting presentation. The broadness of its appeal depends as much upon the showmanship used in staging it for the radio audience as it does upon its musical experience and skill. The Philharmonic Society of New York has been regularly broadcast through the principal New York stations while presenting its regular concerts to its audience. The appeal of these programs has been tremendously enhanced by the brilliant work of such announcers as Milton J. Cross and Graham McNamee, who utilized the time between numbers in explaining the full

significance of each selection and giving something of the life of the composer. The sophisticated concert goer is supposed to be familiar with these things, or he finds them in the concert program. The radio audience appreciates the introductory announcements, and enjoys classical features, the significance of which it understands as a result of good announcing.

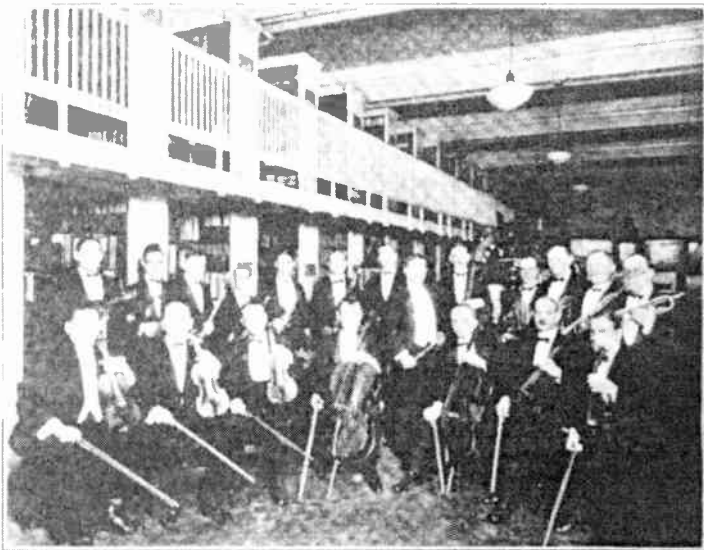


FIG. 19.—The KDKA Little Symphony Orchestra, especially organized for broadcast presentation, has millions of followers through its several years of service to the radio audience.

Even people of a type considered totally unresponsive to classical music are intrigued by the explanatory prefaces by Walter Damrosch. His first broadcasts, several years ago, were rendered the studio without the aid of a symphony orchestra. Mr. Damrosch used only the piano to illustrate the various dominant movements of the master classics. The written expressions of the radio audience were convincing evidence of appreciation. I recall one

letter of the many thousands received, written in the illegible hand of a coal miner whose contact with music prior to radio was limited to the player piano of a local motion picture house. His letter thanked Mr. Damrosch in touching terms for opening a new world of classical music to him. Broadcasting service of this kind makes a tremendous and lasting impression upon those whom it affects so deeply.

The ordinary style of concert presentation, whether applied to instrumental or to vocal artists, is tiresome to the average radio listener. One selection after another by an artist, no matter how famous, is tiresome, if there is no appreciation of the significance of the selection and no relief from the monotony of unvarying personality. This is probably one reason for the limited following of the concert hall.

The cost of presenting a full-fledged symphony orchestra, whether from the studio or the stage, is considerable. Only a broadcasting organization of great technical skill and experience is capable of making an acceptable radio presentation. The placing of the microphones and the pick-up of the Capitol Symphony Orchestra, playing at the Capitol Theatre, represents literally years of experimentation on the part of WEAF engineers. An inexperienced broadcasting organization is incapable of securing a faithful blend and balance to the instruments.

The Coming Radio Symphony.

Large numbers of musicians, necessary for filling effectively the huge space of opera houses, are not required for adequate presentation of symphonic music through the microphone. Indeed, the tremendous volume of the finales of a symphony orchestra is a handicap rather than an aid to broadcasting. The structure and membership of a symphony orchestra is based upon the needs of the huge auditorium. Eventually, radio will demand its own combination of instruments instead of borrowing wholesale from other fields for its musical arrangements. The radio symphony, with its special orchestration, prepared with the

needs of the microphone thoroughly in mind, will be a new musical combination suited to realistic reproduction in the home.

Broadcasting managements are still concentrating their attention on finding suitable broadcasting material from other fields rather than going about the task of creating their own musical combinations. The motion picture art did not come to its own until the difference between acting for a theater audience and the special needs of motion picture acting were understood. The technical perfection and concentration upon the layout of the scene, the use of close-ups and the concentration on appeals to the eye have made the motion picture what it is today. Radio, likewise, will in time have its own music and instrumentation, of a type which will sound natural when reproduced in a small room, and which will hold within the limits of volume variation of a radio receiver. The grandeur of the symphonic presentation, so imperfectly transmitted to the radio listener, will be displaced before the microphone by a music concentrating upon the gentle harmonics effectively appreciated at moderate volumes. The first "whispering" symphony, meeting the needs of the new art, will be more popular than the overdone dance orchestra.

Chamber Music.

Chamber-music combinations, ranging from trios and string quartettes to classical groups of eight or ten instruments, have won exceptional popularity. Harry Horlick's Atlantic and Pacific Gypsies, Max Jacobs' Orchestra, playing with Eveready Hour, Bernard Levitow and his orchestra, which has appeared for the Royal Typewriter Company and other concerns, Whittal's Anglo-Persians, and Nathaniel Schilkret and his Maxwell House Orchestra, are examples of successful radio features of this type. The A. and P. Gypsies hold quite closely to the concert-hall style of presentation but, so well suited to the microphone is this combination because of the absence of extreme

volume variations and the concentration on melody and harmony, that they rank high in the estimation of the radio audience.

Skilful direction can enhance tremendously the goodwill value of chamber-music features. The Royal Typewriter programs indicate a good appreciation of radio showmanship, giving their feature added effectiveness. W.E.A.F.'s tabloid operas, rendered as a sustaining program under the direction of Cesare Sodero, are good examples of classical



FIG. 20.—The famous Flonsaley Quartet is an example of a small musical group which broadcasts with the utmost effect.

features so presented as to have a popular appeal. In a later chapter, the work and methods of *Eveready Hour* and other features, outstanding for their skill in showmanship, will be described.

Again, with smaller musical organizations, a much greater display of originality and departure from the conventional is likely to be manifested in the near future. Even the mere addition of a small organ to Bernard Levitow's ensemble has enhanced the distinctiveness of that feature considerably. With smaller groups, entirely new combinations of

instruments are possible. Perhaps someone will some day bring forth a delightful combination of flutes and clarionets, or bells, gongs, and xylophones. Things seemingly impossible from the musical standpoint may have unusual broadcasting qualities. A willingness to depart from conventional lines in musical presentation, combined with an appreciation of the microphone's possibilities, is an essential qualification of the ingenious broadcasting program director.

It is not unusual to find a program director whose eighteen months of broadcasting work have led him to conclude that he has "tried everything." An expert is usually one who has not yet learned enough of a subject to be aware of his ignorance. If faced with one of these, the program sponsor may find the following list of musical instruments helpful in questioning him. It covers only the letter *A* and part of the letter *B* in a comprehensive list of musical instruments, and it includes, here and there, an instrument now entirely obsolete. Many instruments, discarded as instrument makers improved their art, nevertheless make exceedingly good broadcasting. The clavichord, for example, has a brilliance through the loudspeaker which is pleasing and cheerful. The evolution of musical instruments has tended toward those having a wealth of harmonies and richness of tone, easily lost in radio reproduction. Consequently, the list, given only to show that there is a vast field for research to discover new broadcasting instruments, should not be dismissed on the ground that many of the instruments have been displaced by more highly developed devices now in common use.

alub	aeolian pianoforte	albugue
Abyssinian flute	aeolium	ambira
accorda	aeolodicon	anbuba
aectabulum	aeolomelodicon	anemochord
aetnophone	aeolopantalon	angelot
adiophonon	aeiotana	apollon
aeophone	auton	apollolyra
aeolian harp	ajakli-kenian	apollonion

arcicembalo	autoharp	bania
arghool	autophon	banjo
armandine	avicinium	barbet
arpadoppia	baazas	barrel organ
arpeggione	bacciocolo	basset horn
aspicordo	bagana	bassoon
ascaulos	bagpipe	bastardilla
ashantu trumpet	balafu	bathyphon
asheor	balalaika	batillus
atabel	bandonion	baxoncello
aulos	bandurria	

Instrumental Soloists.

Although instrumental soloists who can hold their radio audience for more than two or three selections are rare, a few who have studied the technique of playing especially for the microphone have achieved extraordinary reputations and are able to present fairly long programs successfully. No individual broadcasting artist has a larger weekly audience for his special program than Godfrey Ludlow, whose Sunday-night concerts through WJZ, WGY, and other stations have competed successfully with artists of much greater note from the standpoint of concert and operatic reputation. Ludlow plays for radio with a gentleness and tenderness of feeling which reproduce effectively in the home. To see him broadcast would be an education to many a concert performer who broadcasts for the first time. He huddles close to the microphone, giving one the impression that he is trying to climb inside of it. He plays so softly that absolute silence must be maintained in the studio. His performance is a contrast to the demonstration of technical gymnastics which is so effective in the concert hall.

Winifred T. Barr, WEAf pianist, and Minnie Weil, broadcasting through many New York stations, are two pianists whose technique is well adapted to the microphone. The loudspeaker does not overload from excessive vibration and volume when their programs are being reproduced. Some of the world's greatest artists have presented dis-

appointing programs in spite of their tremendous musical skill and experience because they have not been taught the special requirements of the microphone.



FIG. 21.—Godfrey Ludlow, radio's premier violinist, has developed a specialized technique for the microphone, which has won him an immense following through WJZ's network.

The duties of the input amplifier operator have already been mentioned in a previous chapter. The greater the responsibility upon the input operator, the more altered is the original music in its reproduction. It is a feature of the programs that are the most pleasing to the radio audi-

ence that they require the least manipulation of the input amplification control. Music which is rendered within the volume limitations of microphone pick-up and the receivers' reproduction capabilities has an ease and naturalness far superior to music which must be suppressed by the input operator in one bar and excessively amplified to bring it up to the necessary volume in the next. Ultimately, when we have equal amplification of the entire range of tones in receiving sets, the most effective transmission will be truly natural. The limitations of the microphone will not be nearly so drastic as they are today. But meanwhile, a feature of a nature which taxes the capabilities of average receivers because of dependence upon powerful reproduction of low tones, or of very high harmonics, or of great volume variations, for realistic reproduction, is handicapped in attaining its just measure of goodwill.

Given an instrumental combination suited to broadcasting, there still remains the important task of program arrangement. Most groups simply concern themselves with preparing a list of selections of one kind or another. Other features are presented with some theme or plot which binds the program into a musical continuity. Eventually, a program consisting of a series of selections, as compared with the continuity program, will have the same relative popularity as a showing of stereoptican views versus a moving picture drama.

CHAPTER X

THE VOICE IN BROADCASTING

The importance of tonal expression in conversation is rarely realized, because we are accustomed to place emphasis on words, facial expression, and posture. The intonation of voice, however, can completely alter the meaning of a sentence. The expression of tone used to say: "She is a hard-working young lady," when expressed by a jealous wife speaking of her husband's secretary or by a professor praising one of his star pupils, conveys two entirely different meanings. When a radio speaker is attempting to convey information only, his tone is likely to be cold and expressionless. Yet the ability of a radio speaker to hold his audience depends as much upon warmth of expression as it does upon the subject matter of his remarks. Only when there is real emotion felt as the words are spoken is there life and expression in them.

Listener Hears More than Mere Words.

The broadcast listener concentrates his attention entirely upon voice expression. He has only his imagination to draw upon for visual consciousness of the speaker. Consequently, the radio listener is certain to be conscious of feelings and attitude expressed by the minutest shade of tonal expression. The actual words spoken into the microphone are only a small part of what is actually broadcast. The very fact that the radio audience conjures up in its own mind an image of every speaker, based only upon what he expresses in his voice, is indication of the extraordinary power of the microphone to convey personality as well as intelligence.

A radio speaker who merely recites words to the microphone, however interesting they may be in manuscript form, fails completely to hold his audience. Nevertheless, while a public speaker may spend hours in practicing the tonal expression which he will put into every line of an important address, radio speakers usually consider them-

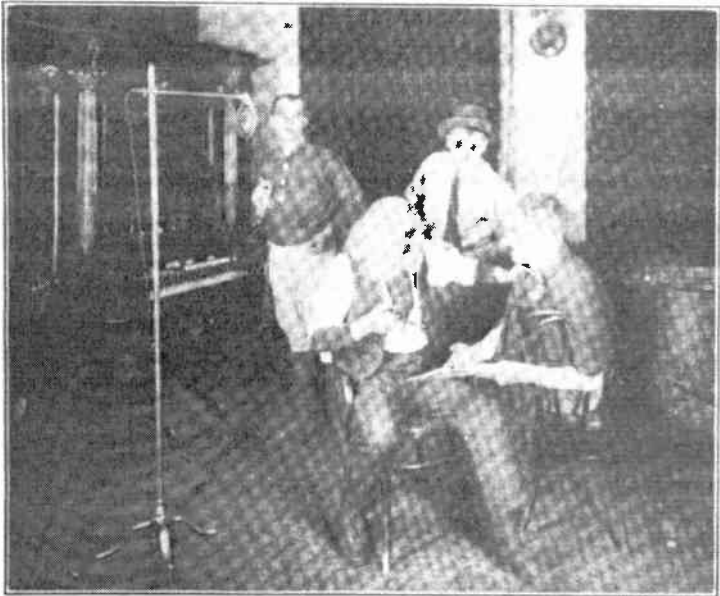


FIG. 22.—Broadcasting a play of the Canadian North through WGY. There can be no lack of realism in what James S. B. Mullarkey, as "MacTaviab" is saying.

selves ready to broadcast when they have written out the text of their radio addresses.

Although the announcer performs a seemingly secondary part in the program presentation, the part played by his tonal expression is often sufficient to make or mar a program. Simple announcing to the effect that "the next number will be," is not only lacking in interest but, because of its brevity, is bereft of any personal warmth.

Announcing is much more than conveying in words what information is necessary to make a program intelligible; it is a matter of voice acting to build up interest and anticipation.

Special Training and Unusual Inspiration Make Good Radio Speakers.

Whether in the capacity of announcer or as a radio actor or speaker, the outstanding successes are those who put expression into their speaking before the microphone. "Radio personality" is the term used to describe that general ability to convey feeling and impression as well as information. Radio personality arises from one of two sources: either the speaker is so imbued with and enthusiastic about his subject and his broadcasting task that he radiates interest and enthusiasm through his voice, or else he is a skilful actor, who, by special training and study, has learned exactly the intonation and voice expression which make every passage of his remarks vivid and natural.

The greatest broadcasting events have been those in which the announcer has actually experienced the thrill and excitement of the events he had to portray, and conveyed his feeling to the audience. When the Willard-Firpo fight was broadcast, an announcer was selected who had a rich resonant voice and who, by reason of his experience as a newspaper sports writer, was thoroughly competent to broadcast every detail of the contest. He had, moreover, a record of conspicuous broadcasting successes in announcing theatrical events. The entire radio audience within range of WEAf focused their receivers on this broadcast. Two preliminary fights were first broadcast, and it happened that the announcer's voice, though clear when heard face to face, had exceedingly poor microphone quality. Under the stimulus of the event taking place before his eyes, he spoke more rapidly than was his habit, and the yelling fight fans at the ringside completely overshadowed his efforts.

Thousands of frantic telephone calls were made to the radio station, and the entire telephone system was upset to a greater degree than it had been at any time since the Black Tom explosion. Every wire from the uptown central offices of the residential districts of New York to the downtown exchange through which WEAJ is reached, was buzzing telephone calls to complain that the announcer could not be understood. The entire station staff was unable to handle more than a very small percentage of the telephone calls which flooded to it.

Only two persons representing the broadcasting station had ringside seats: One, the announcer who was unexpectedly failing to get over, and the other, an observer, a member of the commercial staff of the station. He had never in his life spoken through the microphone. In the emergency, he was called upon to take over the microphone with literally the entire radio audience hanging on his words.

So thoroughly did George F. McClelland become imbued with the excitement of the fight that, very probably, he forgot completely he had a microphone in his hand. There has never been a more thrilling broadcast of a sporting event, because of the absolute sincerity and abandon of the announcer in expressing vividly what took place before him. His vividness of expression put over one of the most thrilling fight broadcasts ever heard. No man ever stepped into a breach with greater effectiveness. He has never talked over the microphone since, but he is now one of the leading executives of the National Broadcasting Company.

Graham McNamee is without doubt the best known and most successful announcer of sporting events. The secret of his success is that he lives them and thereby makes his listeners live them. Anyone who heard him describe the intermission between the two halves of the Army and Navy Game at Chicago in 1926 will remember his rollicking laughter as the canvas battleship of the Navy romped down the field to meet the Army tank. Excitement and

hilarity came through the microphone and yet, a reading of the shorthand transcript of what he said would certainly indicate that it was not what McNamee said but how he said it that put it over.

J. Andrew White, the first person to describe a sports event for broadcasting—the Dempsey-Carpentier fight—handles his events in an entirely different manner. He is an accurate reporter; he sees all and describes every essential event taking place in its true proportion. *The New York Times* published the shorthand transcript of his handling of the Dempsey-Tunney fight and various other events and a check up of his description with the various newspaper accounts reveals the remarkable powers of observation which Major White possesses. McNamee, on the other hand, excels as an entertainer, making you laugh or tense, whether or not you understand the sport he is describing.

Those who heard Woodrow Wilson's only radio speech, brief as it was, will never forget the extraordinary bitterness with which he assailed the senators who opposed the League of Nations. It remains to this day the most expressive broadcast ever heard because of the depth of feeling which the voice conveyed.

Another occasion which anyone who heard it will remember was a feature of the Galapagos program which, if badly done, would have sounded ridiculous. It is an example of voice acting which was the product of painstaking rehearsal and training. Shipwrecked for months on the Galapagos at the equator, living only on turtle fat, wandering, and waiting, a member of the suffering crew became insane. I will never forget the pitiful anguish expressed by the gibbering, tired, crazy sailor. This part was played by Paul F. Stacy, who was then directing these distinctive Eveready presentations.

The effectiveness of good voice acting is illustrated by the work of Alfred Shirley, who impersonates characters from literary masterpieces. So skilful is he that he can take

two or three parts in a conversation so realistically that it is difficult to believe that there is but one person before the microphone. In the course of half an hour, he may give six or seven excerpts from Dickens and Thackeray, without causing the listener to be conscious of the slightest voice monotony.

Radio Voice Acting.

Many attempts at radio drama have failed largely because of mediocre voice acting. Much attention has been given to finding plots which involve only two or three voices, but most of the presentations have been given after only a few hours of preparation. The possibilities of the radio drama are fully as great as those of drama before the footlights, because expressions of emotion are as easily conveyed through the microphone as in person. Music can be used to convey action to a limited extent, but the successful radio drama cannot be too greatly dependent upon action. The play of emotions, depending entirely upon sound projection, leaves an adequate field for presenting radio drama which will grip and hold its audience from start to finish.

Radio Stage Fright.

Radio addresses of an informative or narrative nature are frequently broadcast by those who do not have microphone experience. Oftentimes, a radio speaker, appearing for the first time, is subject to stage fright, possibly engendered by listening to the many radio speakers who failed to get over. I have, on many occasions, seen theatrical stars, accustomed to appearing nightly before large audiences, suffering untold horrors of fright before the microphone. After thirty seconds of speaking, they are more at home before it than they would be on the stage.

Watson, the laboratory assistant and early associate of Alexander Graham Bell, whose name is a part of every history of communication because his voice was the first ever transmitted electrically, recalls the stage fright which



FIG. 23.—Paul Stacy (left) helps Edgar White Burrill (right) to put expression into his dramatic reading of "The Ancient Mariner."

celebrities experienced the first time they spoke over the telephone. In commercializing the new means of communication, Bell and Watson gave public demonstrations and invited members of their audience to try the telephone. Hundreds quaked with fear, just as many have trembled before the microphone today. Having been thoroughly convinced that he is addressing millions of people for the first time and thrust unceremoniously into the clammy, deadened studio, it would be natural for the most courageous man to be frightened at the prospect.

When an executive of one of the large concerns now broadcasting regularly began his career through WEA F one evening, I noted the cold perspiration on his brow. Fearing his stage fright might prevent him from finishing his speech, I took him to one of the unused studios, and placed two chairs face to face, with the microphone a little to one side. I asked him to forget his broadcasting but to read the speech to me in the voice he would use in speaking to me. The announcer introduced him and then, at the end of each phrase, he looked toward me and found me listening with grave attention. Soon he regained his composure, and used a quiet, easy, intimate tone of voice, unusual to novice broadcast speakers. Today it is almost impossible to keep him away from the microphone.

How to Speak for Radio.

Although the radio audience totals millions, the speaker who visualizes it as it really is, a little family group, assembled about a loudspeaker, is most likely to use an effective tone of voice. Experienced orators, visualizing millions before them, generally exaggerate their oratorical effects as if trying to address a throng of a million people. Such an address, thundered through the loudspeaker in the home, sounds out of all proportion to its surroundings.

The following paragraphs are taken from an instruction book which I prepared for the speakers appearing at WEA F as to the best voice to use for speaking over the radio:

"A broadcast performance is as personal and intimate as one given for a small group of friends in your own home. There is none of the annoyance and distraction occasioned by large audiences. The studio is comfortable, quiet, and homelike.

"You need not raise your voice higher than you do when entertaining a group in a drawing room. Although the radio audience is large, broadcasting requires the minimum of effort.

"When speaking over the radio telephone, do not hurry—use a quiet, clear, slow, and distinct voice of the same pitch that you use in addressing a group of five or six people seated around a table.

"Broadcasting is simple and easy. It not only overcomes distance, but does it with the least possible effort and strain on the part of the artist.

"If you are accustomed to large audiences, you may miss the applause which is often so freely given. But the radio audience is the most responsive which exists. To respond to you requires much greater effort than a mere automatic clapping of the hands. They must either telephone the station or go to the trouble of writing a letter of appreciation of your performance. Thousands of letters are received during each month, expressing appreciation of the work of broadcast artists."

Judging the Broadcasting Quality of a Voice.

People frequently inquire of broadcasting managements whether their voices are well suited to the microphone. Obviously, essential qualities are clearness in articulation and natural ease in correct pronunciation. Many voices which possess both these qualities, however, and which one would expect to be good broadcasting voices, prove failures. Rich, resonant voices, delightful to the ear, sometimes have a throaty and blurring quality over the microphone. Trained actors, speaking in a quiet, conversational tone, are able, by placing the tone well forward, to project it

throughout a large theatre. Orators frequently rely on mere lung power to flood an auditorium rather than on skilful placement of the tone. An oratorical voice is usually a handicap in broadcasting, because excessive sound energy impressed upon the microphone is likely to lead to overloading and distortion. An executive accustomed to addressing a distinguished board of directors is more likely to broadcast well than a political speaker experienced with large audiences.

It is a psychological action natural to nervousness to clear the throat after the first few words, producing a disagreeable and exaggerated effect from the loudspeaker. It is wise to clear the throat thoroughly just before the broadcast address begins.

Detrimental Voice Characteristics.

Bearing in mind that every intonation of voice inflection is regarded with considerably more attention when heard through a radio receiver than when heard in conversation, any unusual characteristics of inflection, however slight, become matters of serious proportions. A slight nasal quality in the voice becomes obnoxious in the radio listener's home. A rising inflection is positively irritating, while an effeminate voice is likely to result in a few hundred punctured loudspeakers. An affected voice or even a speaker who observes meticulous care in seeking to pronounce clearly is unwelcome. Some accents are agreeable, others, a serious detriment. The voice of Lambden Kay, WSB's famous announcer, with its musical southern twang, is familiar to listeners in every part of the country. The Scotch dialect, with its clear-cut consonants, reproduces well. The French accent, because of the natural way in which a Frenchman puts his tone forward, is quite acceptable. To one not accustomed to an English accent, it may be incomprehensible unless the tone, by special training, is thrown well forward. A German guttural is incomprehensible. Nothing broadcasts better than a per-

fectly natural, easy speaking voice, with no particular distinctive outstanding qualities. For most people, broadcasting is as easy as speaking to the members of their own families.

Extended broadcasting experience sometimes adds qualities to the voice which detract from its acceptability. A certain ceremoniousness is affected by experienced announcers who consider it a mark of announcing skill. When Marie, the Queen of Rumania, appeared through WJZ, there were long preliminary announcements. Rising to the occasion, the stars of WJZ's staff, with tremendous ceremony, described the significance of the occasion and the honor of having the Queen of "Rumawnia" before the microphone. The radio audience heard "Rumawnia" pronounced in this affected manner so often, that they began to wonder whether this might not be the correct pronunciation after all. Her Majesty had not spoken three words before she mentioned the name of her country, Rumania, in a simple, unceremonious manner, which made the unctuous announcers appear ridiculous.

The radio lecturer who knows and feels his subject may anticipate a microphone appearance with pleasure. His natural speaking voice, carrying with it his interest and enthusiasm in the subject which he knows, is all that he needs to hold the radio audience.

Radio Humorists.

For commercial programs, humorists are often suggested as ideal features. The search for radio humorists is diligently carried out by program managements, but rarely is a star radio humorist unearthed. This is due to the fact that stage training for expression of humor is something of a handicap to successful microphone appearance. Applications for the job of radio humorist ought to be made through a medium of phonograph records rather than in person. Humorists are too well trained to the artifices of facial expression and gesture to get over their stuff through the

microphone. The most successful radio humorists are those with phonograph-recording training.

Will Rogers is an example of a successful radio humorist. He gets over because practically every member of the



FIG. 24.—Billy Jones and Ernest Hare, the Happiness Boys, radio's most successful humorists, learned the art of microphone singing through phonograph recording.

audience has a picture of Will Rogers in his mind as he listens. On one occasion, he broadcast from a studio without the aid of audience reaction. He must have felt this keenly because he was not nearly so effective without its aid

as he has been on the numerous occasions when his voice has been picked up from banquets, supported by audience laughter and made more expressive by its presence.

The "Happiness Boys," whom I mention so frequently because they stand head and shoulders above most of their rivals, can hardly be said to get over because of the material they select. They can make you laugh at a veteran joke. They laugh at each other and their hearty laughter is contagious. They never permit a deadly silence after they have sprung one of their "gags," nor do they laugh too loud and long. When one tells a story that does not go over, his teammate taunts him and carries the radio audience along. Never for an instant do they miss the radio audience's reactions, either consciously or subconsciously.

The apparent limit for which any voice, no matter how good, can be heard without interruption is ten minutes and, in most cases, less than that. Humor needs musical backing. The song-and-humor program offers enough relief against voice monotony to be effective. Radio humor is a highly appealing feature and, when the dignity of the sponsor is not an essential factor, has excellent possibilities as a commercial broadcasting feature.

Singing for the Microphone.

Selecting singers for commercial features is bound by much the same considerations as selecting good speaking voices. The tremendous, breath-taking finales which shake the pillars of opera houses are reefs of destruction when broadcasting is concerned. The marvelous expression developed by opera-trained voices, singing the softer and gentler passages, gets over the microphone to perfection, in fact better than when heard at the opera. Reproduction of such passages in the home is not affected by sound absorption and noise interference of a large audience, and consequently feeling in tone registers with marvelous effect. Given a reasonable amount of microphone instruction, the greater the artist, the greater his radio success,

but it is difficult, for a brief broadcasting program, to leave behind the training of many years and to modulate the voice down to a quality which makes for effective broadcasting. Again, visualizing a vast radio audience has misled many such artists. If they could be made to sing as they do in their own homes for the entertainment of a single, beloved visitor, quietly, gently, emotionally, the microphone would give them an opportunity to get over their art and skill more effectively and to greater numbers than can be reached by years of appearance in the opera house.

Singing voices, exhibiting the finest tonal characteristics, from the microphone standpoint, may fail to win radio success, because of careless enunciation. Clear articulation is more important when before the microphone than on the concert stage. When broadcasting, the artist has unusual opportunity to sing with his best enunciation because he is not compelled to concentrate upon the effort to make the voice carry through a large hall. Artists rarely take advantage of this opportunity to increase the effectiveness of their radio presentation in this manner. It is of particular importance when broadcasting a song, the words of which the listener is expected to understand. Many a radio performance of a Gilbert and Sullivan operetta has been converted into a pleasing musical meaninglessness because not one word out of ten could be understood by the listening audience. In group singing, especially, perfect unison and clearness of enunciation should be attained for greatest effectiveness.

An artist who appreciated the importance of quiet singing appeared at numerous New York stations one season under the name of the "whispering baritone." He took the radio audience by storm. He sang with his face not more than three or four inches from the microphone. He never strained the receiving set, however limited its capabilities, and made a much greater impression and won a wider reputation than many a famous artist

who had spent years in perfecting his singing technique. This same artist, appearing in vaudeville, was described by critics as a disappointment and advised to concentrate his energies on the microphone. The same qualities which made his voice particularly suited to radio reproduction made it inadequate for the requirements of a large auditorium.

Vocal Groups.

Male or mixed quartettes are popular because most music arranged for their presentation features vocal harmonies. As commercial features they are suitable, although there is danger of monotony in one quartette number after another. Relieved with orchestral specialties and variations, they are highly acceptable.

Larger choral groups are not nearly so effective. Their reproduction must, of course, be a very small volume counterpart of the original, and this entails a sacrifice of faithfulness. Microphone placement and amplifier control are exceedingly difficult, and complicated further by the effects of audience noise and echo. The most successful choral programs have been put over only by highly skilled broadcasting organizations, and even these, because of the limitations of reproduction imposed by the loudspeaker and the room in which it is reproduced, lack a realism and naturalness. Five hundred male voices do not fit in the modern apartment, and a small edition of that number is unrealistic.

Much of the prejudice against the soprano voice is the result of early imperfections in radio transmitters and receivers. On the very high ranges, receiving sets, amplifiers, and transmitters all vary in their amplification, so that almost invariably there were blurred, flat, and overloaded notes. Radio sopranos have been made the butt of much humor, but better reproduction will bring them into favor, especially if they observe the microphone's limitations as to volume.

Many a future radio success will be picked from the failures on the stage and in concert work; those who have failed because of appearance or lack of stage presence and those who lack voice volume. The essentials of the radio voice are personality and emotional quality in expression, and moderation and ease in volume. When program directors cease searching for their talent exclusively in other professional entertainment fields and those who have special radio qualifications have incentive to come forward, broadcasting as a specialized artistic career will come into its own.

CHAPTER XI

FORMULATING THE PROGRAM POLICY

Continuity in presentation is necessary to successful commercial broadcasting. Not only must there be continuity by regularity of appearance, but also there must be the continuity secured by the adoption of a definite program policy, a nucleus of unchanging broadcasting personnel.

By assuming a fixed program character and appearing at a definite time of each week through the same station or stations, a regularly established following is created, which, if a feature has a wide appeal, augments itself by word-of-mouth publicity. Fixed programs, offered by fixed personalities, become radio fixtures and their influence increases week by week and year by year.

Regularity of Appearance.

Tuesday night at nine, Eastern Standard Time, and Friday night at eight have become the times for the appearance of two commercial radio features which almost any radio listener can name as a matter of course. The goodwill value of so widespread and tangible implantation of a firm's trade name is incalculable. It is the product of years of well-planned broadcasting, a goodwill asset which cannot be attained by any other means. By what other method could a concern lead hundreds of thousands and even millions of people to expect, at a certain hour each week, in their own homes, a representative of its business for the purpose of delivering a goodwill message?

Spasmodic broadcasting efforts cannot attain any like measure of goodwill. There is broadcasting every day and every night of the year, yet only regularly appearing features are remembered and anticipated. To gain the

fullest benefits of commercial broadcasting, therefore, the winning of established recognition on the part of the audience is an important element. Wise selection of microphone personnel determines whether a program may please its audience; the showmanship with which it is presented, the skill used in program planning and the consistency with which a policy is maintained are the means by which habitual audience loyalty is developed.

Recognizable Program Policy Essential.

A program policy should lend itself to general description without requiring reference to published programs. The Jones Company is remembered because it presents weird oriental music late Wednesday evenings; the Brown program because it features the rollicking Brown Harmony Twins early Thursday nights; the Carter program on Friday evening because it offers unusual dance music presented by six musical saws; the Smith program because of its sports review just before supper every evening. The Lambert program, on the other hand, is not easily remembered because it is totally different each week; sometimes it appeals, sometimes it does not.

Consistency in program theme can be gained in a variety of ways—the type of music presented, the featuring of the same personnel, the utilization of a dominating personality as announcer, or the performance of a definite and useful service. By one means or another, a commercial feature becomes representative of some one thing, by which it is identified in the mind of the listener. The more tangible and definite that distinguishing element is, the more easily it becomes established in the audience's memory.

Stability of Policy.

The acceptability of a policy having been determined and its place in the listener's estimation having been won, it is unwise to make a shift of policy unless there is definite evidence that it is no longer appealing or that its possibili-

ties have been exhausted. More than one commercial broadcaster has bewildered the radio audience by constant changes of policy, undertaken in the effort to find *the* most popular program appeal. There is no such thing as *the* most popular program. Human desires for entertainment follow rules no more specific than those which dominate their appetites. A vendor of ice cream does not worry about the increasing popularity of chicken fricassée. If his ice-cream sales fall off, he seeks ways and means to make his product better and more profitable. He does not hasten into the business of raising chickens at the first sign of prosperity in that commodity.

Commercial broadcasters often reason differently. A new feature, presenting a new idea, causes consternation in their ranks, and shifts of policy ensue. This is no idle criticism; only one who has been close to the situation for a period of years can appreciate the panicky attitude of some broadcasters.

When Atwater Kent's spectacular programs were initiated, some of the most successful commercial broadcasters were thoroughly disturbed by the great attention they attracted. Many hurried conferences of directing staffs were called to consider changes of policy of established features, in the light of what Mr. Kent had demonstrated. "It's big names that count," reasoned some. "We must go out and do likewise. Our present policy is all wrong."

To cite only one instance, the thoroughly acceptable policy of one feature was completely changed because of the attention which Mr. Kent attracted by featuring only headliners. Now that feature also offers "big names" out of a field other than the concert and operatic in which Mr. Kent specializes. The large and responsive audience which appreciated the program policy maintained up to that time misses it greatly; the specially trained group of artists, experienced in presenting the former specialty, is recklessly disbanded. The newer policy may be as successful as the old, but it is doubtful if anything has been

gained by abandoning a novel and distinctive method of presentation.

The Radio Impresario.

The commercial sponsor is closely concerned in deciding the type of program to be offered, the artists who are to interpret that program, and the form of presentation to be used. Beyond that point of program direction, the sponsor should avoid too much detailed direction. A qualified radio impresario, given as free a hand as his skill deserves, should be selected to carry out the predetermined policy. The duties of the impresario are difficult and manifold; the less he is interfered with, the more individualistic and distinctive his work becomes.

Having learned what the broadcaster wants to achieve, he should be given the same freedom to work it out as the copywriter in an advertising agency who has thrashed out the details of a copy policy at a general copy conference. A copywriter, being charged with his task, is, or should be, left alone and undisturbed until his work is completed.

It is not unusual, however, for three or four executives of a manufacturing organization to follow the work of a radio impresario so closely that his problems are greatly increased. These executives freely inject their personal reactions, forgetting that one versed in the public presentation of entertainment does not do his best work when guided by the reactions of one or two individuals who are not specialists in showmanship.

Interpretation of a program policy, translated into the countless details of microphone direction, is a task comparable only with stage management and motion picture direction. That it is not of equal importance and has not yet won similar recognition is due only to the undeveloped state of the broadcasting medium as a whole.

On the other hand, a program director, given an untrammelled *carte blanche* is handicapped by lack of knowledge of a sponsor's objectives. Since consistency in style of pre-

sentation is important, and since the program director does his work most effectively if left to work out the sponsor's predetermined policy with the utmost freedom from interference, it is of great advantage to formulate a definite program policy before broadcasting activities begin. Thereby consistency of policy which builds up regular followings is most effectively attained.

Forms of Presentation.

The means of holding an audience from the beginning to the end of an hour's program is a specialized task of radio showmanship. It is a job for an artist, not a statistician or a sales manager. The planning of a program so that it develops and evolves in a manner which holds the listener from beginning to end is expression of the fine art of radio staging. Merely pleasing an audience is not sufficient, because rival features broadcast simultaneously may do the same thing. The program director's task is to build up interest and expectation so that sampling other programs is not considered until the sponsor's program has been completed.

There are many forms of program arrangement. Of these, the crudest is the offering of a mere succession of numbers, each introduced by the announcer. A succession without plot or purpose is the least likely to hold attention. Entertainment implies carrying the listener's mind from things about him. It should captivate the listener's imagination so that any distraction of his attention is resented. If there is no good reason why a feature should hold attention, a program's value is merely casual.

Succession is Crudest Form of Presentation.

A succession of classical numbers is appreciated by those who know something about classical music, but, to the musically uninformed, planned program arrangement helps greatly to increase the significance of classical music.

Dance orchestras are greatly handicapped in being limited to the succession style of presentation and to the

playing of numbers which are generally familiar. Changing styles in dance music make it almost essential to use only the latest music or a few select numbers which have withstood the test of time. All of these lack novelty to the listener. The only course open to the director of a dance orchestra lies in novel orchestration and arrangement and novel instrumental combination.

The conventional recital style of presentation is a series of classical numbers intended to bring out the technical abilities of the performing artists. Radio recitals generally follow this form. The announcer introduces the artists, gives the title of the number to be offered, and the name of the composer. After its rendition, he repeats the title of the number just sung and introduces the one to follow. This process is continued to the end of the recital. All the showmanship of the family stereoscope is displayed in this amateur style of presentation.

A method of avoiding complete absence of definitive program theme in the limited sway given the director of a musical organization which has only one form of expression, such as a classical trio or a quartet, is to center the program around the works of an outstanding composer or the music of one nation. The Eagle Neutrodyne Trio played a very fine series during a recent season, featuring the music of a different nation each week. To the uninitiated, this served an educational purpose without being overburdened with lecturing quality.

Unusual Selections.

Occasionally we find a musical director who has access to unusual music, either by reason of training in a foreign land or by aptitude in musical research. Even the best of classics are abused by too much repetition, but an untold wealth of music still awaits the attention of the microphone. The reason such music is not frequently unearthed is because musical combinations are satisfied to play the numbers which they are trained to play in concert, and do not have

any real incentive to add to their repertoire for broadcasting purposes.

Any experienced broadcasting program director can make a list of ten piano selections, ten songs suited to the baritone voice, and ten orchestral numbers, one of which at least appears on every tentative program submitted to him. So single track is the mind of the average musician that W.E.A.F. found it necessary, after a few months of operation, to prepare a list of banned songs which had been sung to death by radio. Every baritone seems to be badly in need of a horse he can ride on the Road to Mandalay; all tenors are descended from Mother Machree; pianists thrive on Rachmaninoff's prelude; and orchestras on the Melody in F.

There is an untold wealth of music which has been forced into obscurity because of the limited opportunities of presentation available in the past. Now, instead of an hour or so a month in which to enjoy classical music, radio gives the average listener several hours a week for the purpose. Musical repertoires have not increased proportionately.

Many forms of planned continuity in musical theme might be mentioned. The National Broadcasting chain has presented a series of highly successful tabloid operas. The announcer explains the theme, setting, and action before each act. An orchestra and singers recruited from opera singers go through the act without further announcing interruptions. By successful pruning, these features are kept within an hour, apparently the limit of sustained audience attention to musical features.

Eveready Hour has a policy of presenting guest artists from the theatrical world, oftentimes from the ranks of those who have retired. These arouse strong associations among those who were familiar with the artists during the height of their careers. They also appeal to other than New York and Chicago audiences, to which familiarity on a wide scale with headline artists of the past is largely

limited, when such artists have unusually good microphone qualities. Royal Typewriter Hour features musical comedies of past seasons, but confines itself to the utilization of specially trained microphone artists.

Featuring a Predominant Personality.

Another form of continuity depends upon featuring an outstanding radio personality as interlocutor and informal announcer. Without question, S. L. Rothafel, or "Roxy," as he is more familiarly called, has built up a greater personal following than any other radio personality. Admittedly, here and there are radio listeners who do not care for his excessive emotionalism, but for each one of these there are ten thousand others who glory in it. He has built up sympathy and friendship for himself and all his artists. He is exceptionally able in bringing them before the microphone in a spirit which makes them broadcast effectively. His quiet personal way of speaking into the microphone brings forth a sympathy in the singing voice and feeling in instrumental playing, adding measurably to the effectiveness of presentation. There is no assumption of emotion in Roxy; he is truly genuine and, were he not so, he would not have succeeded in gaining his great popularity. He cannot be imitated successfully. The microphone transmits the genuine feeling of the voice behind it, and any assumed feeling lacks sincerity which does not escape the attention of the audience.

Contrasting with Roxy are the slapstick and breezy methods of N. T. Granlund, WHN's rollicking announcer, who has won a loyal audience for himself in New York. He has quick wit and an easy familiarity which make his part as enjoyable as that of the artists he has to present—in fact, he is on occasions the only entertaining part of the program. Purists, of course, may shake their heads at the mention of his style of announcing, lacking as it is in dignity and grammar, but, if appealing to the tastes of the masses is an art, Mr. Granlund is an artist.

If dependence is placed upon a personality, such as impresario or announcer, to establish continuity and sponsor consciousness, extraordinary care must be used in selecting the individual for this role. Any voice failing, such as foreign accent, whining or nasal quality, affectedness or effeminateness, must be positively avoided. Recently, in going over a hundred questionnaires, indiscriminately selected from several thousand circulated by a publication in the radio field, asking the listener to list his favorite features, the author was surprised to find that about four per cent liked a certain feature "last year," but not "this year." Several even wrote across the bottom of the blank, stating that the announcer irritated them so that they could not listen to the otherwise high-grade presentation.

Centering on a personality usually divides the credit for a feature, unless the personality travels under a broadcasting name which identifies the sponsor as happily as the Gold Dust Twins and the Happiness Boys identify theirs. Roxy could go on the air for Campbell's soup successfully, but the Gold Dust Twins under a new name would start out as a new feature. Wendell Hall, when he appeared on tour as the Eveready entertainer, never failed to get over the name of the sponsor so that it was indelibly associated with his appearances. Few artists, appearing under their own names, are as conscientious as Wendell Hall in keeping the interests of their sponsor well in the foreground.

Educational Programs.

Entertainment is not the only possibility of the microphone, there being an important field in educational and information services. Dow, Jones, and Company, publishers of the *Wall Street Journal*, offer stock-market reports through WJZ, and everyone interested, taking advantage of this service, must be grateful to that concern. Betty Crocker's recipes, broadcast in behalf of the Wash-

burn Crosby Company, are appreciated by housewives, as evidenced by thousands of letters each month. The Metropolitan Life Insurance Company's broadcasting of setting-up exercises through several eastern stations, between 6:45 and 7:45 each morning, has earned a huge regular audience.

There is no end of possibilities for programs rendering some kind of service. The Phoenix Mutual Life Insurance Company broadcasts talks on the value of the family budget, and offers four lessons in budgeting to anyone who will write to the broadcasting station. A budget book, sold for twenty-five cents, is referred to in this series of lessons. Fully ten thousand of these booklets were sold in one year in this way.

One of the most difficult problems in the housewife's life is to decide upon the daily menu. If any commercial broadcaster would, at ten o'clock each morning, offer a menu for the day, taking into account economy and market prices of commodities on that particular day, the needs of both small families and larger families and the requirements of good nutrition, he would, little by little, build up an invaluable audience of housewives. Advice in building a home, bringing up children, finance information, language instruction, travel talks, educational story-telling for children, and a score of other subjects of general appeal, each suited to some particular kind of sponsor, are available as mediums of expression to the commercial broadcaster.

There is a distinct limit to the time in which an unrelieved voice can be listened to without fatigue. H. V. Kalterborn of the *Brooklyn Daily Eagle* is able to hold his audience for fifteen to twenty minutes with his interesting interpretation of news and politics, but there are few speakers who can hold the radio audience for more than ten minutes. Travel talks, when relieved by musical interpolation, are often extended to half an hour, but it is likely that they would be more effective if cut to twenty minutes.

In connection with educational and information services, the hour of broadcasting is a matter of paramount importance. The commercial broadcaster who keeps in mind the spectacle at any motion picture theatre when an educational film begins is likely to appreciate that educational matter, offered when entertainment is desired, is unwelcome. In the motion picture theatre, the departing audience forfeits the right to further entertainment but, with radio, not even this restriction holds it. Consequently, an educational feature, offered when entertainment is desired, appeals only to those greatly interested in the subject at hand. In Chap. XV, we will consider the attitude of the audience at different hours of the day.

Voice Quality for Service Programs.

The voice quality of the speaker offered in educational or information series is a deciding factor in its acceptability. Voice appeal is an indefinable quality which cannot be prejudged with finality. Oftentimes, an expert on the subject, well qualified by knowledge to give an informative talk, is totally unsuited to broadcasting. I have in mind a lady broadcasting daily recipes from a prominent station, whose sweet and ingratiating voice irritates her listeners to the utmost, completely disrupting the value of the service which her excellent talks might perform. There is no law to prevent a man from giving recipe talks, and a male voice would be at least as appealing to the fair sex. The fact that men are not supposed to know anything about buying and cooking does not disqualify them from being good radio speakers. Women speakers are especially difficult to select, but undoubtedly there are many women with fine microphone voices who have not yet come forward.

An educational feature, by using two voices in conversational style, eliminates the necessity for relying upon a single voice. This not only overcomes monotony of tone but helps to make both speakers more animated and expressive. The Department of Agriculture, in its informative

talks to farmers, uses two characters in conversation, who get over what would otherwise be colorless educational matter in an interesting way. The entertaining stories told by "Old Man Donaldson" to his granddaughter, Joan, hold WJZ's audience for a full half hour, yet either one, narrating alone, would be tiresome. There is no reason why voice monotony should be tolerated over the air, since a little thought to good showmanship can overcome the problem.

One valuable feature of an educational or informative series, presented by the same voice and maintaining the same general theme, is that it can be so tied in with general advertising, direct-mail and dealer display, that it wins a constantly increasing audience. Much experience is being gained in this field, and the next few years will see a great extension in the more serious services of radio.

Educational Features Should Be Unbiased.

Educational service talks come very close to being advertising in that they encourage the use of the sponsor's product, even though they may not feature his special brand. The commercial broadcaster who overplays his hand is quick to lose his shrewd, daytime audience. If a prune growers' association were to attempt broadcasting daily menus which worked prunes into every meal, it might increase business for a while, but in the end it would antagonize a large audience. A flour or a meat-packing concern can successfully broadcast recipes; so also can a chain-store grocer, but if a commercial broadcaster attempts to encourage the use of a commodity of limited utility, he is not rendering an unbiased service. In the building field, a maker of stucco material cannot do justice to its rivals, wood, brick, and stone, and consequently, talks on home building, considering only the interests of stucco makers, would be biased. On the other hand, a maker of plumbing supplies, fitting as they do into every kind of house, could do an excellent broadcasting job of giving

advice to the home builder. If a home builder got a single good idea which made his home more convenient or less expensive to build, he would be likely to insist on the brand of piping represented by the commercial program's sponsor.

Programs Requiring Listener Attention.

In the entertainment field, we have considered the disconnected form of program which depends for continuity on personnel and personality. All of these are programs of casual entertainment. That is, they do not require the undivided attention of the listener. He may enjoy them while conversing or reading. They may be interrupted in the midst of the program without serious loss.

Broadcasting features which require the attention of the listener from beginning to end by reason of their dramatic quality must be staged with unusual care and skill in order that the audience be held from beginning to end. Radio drama and radio continuity must hold the audience or else they fail to win the desired goodwill.

The presentation of radio drama requires the services of an experienced director specially trained in radio presentation. Artists must not only rehearse their lines but must try out before a test microphone in preparation for broadcasting. Their work should be observed through a loud-speaker by a fearless critic who is not within sight of the artists.

Requirements of Radio Drama.

The requirements of a successful radio drama are that the characters, which must be identified by the listener through their voices, are few in number, and that they possess such distinctive and suggestive voice quality that there is not the slightest difficulty in identification. The setting which the listener is called upon to imagine must be simple and familiar. He must not be called upon to remember such things as the location of exits or the posi-

tion of furniture. If such details have an important part in the unfolding of the plot, the production is not suited to radio presentation. No play depending on detailed action, conveyed by facial expression or gesture, is suitable to



FIG. 25.—KGO's dramatic troupe, under the direction of Wilda Wilson Church, attain realism through the microphone by acting their parts.

broadcasting. The work of the announcer must be confined to a preliminary description of the setting and introduction of characters. He cannot successfully explain during the unfolding of the plot any action which cannot be portrayed before the microphone, because his

voice in the midst of a radio play is an alien intrusion destroying the illusion created.

With modern stage lighting, drama has become greatly dependent upon such actions as a wink of understanding aside between two characters, the handing of a note from one to another, or a facial expression when reading a telegram. The radio play, however, must get over its story in words, and its action only through music. Violent struggle, love, joy, death, flight, anger, peace, and triumph can be successfully portrayed by suitable musical background, broadcast simultaneously with the speech or sound of the respective actions involved. Shakespeare's plays lend themselves to radio presentation because his masterpieces were written to meet the limitations of the stage of his day. These limitations were very similar to those of the microphone. In Shakespeare's time, there was little scenery, and there was no artificial lighting, so that no dependence was placed upon facial expression. Indeed, so meagre was the illumination that Shakespeare invariably mentions the name of a character as he comes on the stage, to identify him for the audience, and tells where he had come from and even how he is clothed, if these facts are essential to the understanding of the scene. The conditions, the scenery, and the mood of his actors are worked into the lines so that the audience is fully informed by the spoken word.

Radio dramas have not been generally successful because they have not been written by those thoroughly familiar with the microphone's limitations, and because they have been presented usually by artists accustomed to employing the artifices of the stage. A commercial broadcaster who trains four or five radio actors so that they become fully appreciative of the possibilities and limitations of the microphone, and places them under the direction of one skilled in selecting drama and adapting it to the needs of the microphone, will have a feature of great goodwill possibilities and attractiveness.

Radio Continuities.

The radio continuity has already been mentioned. It is the combination of speech and music in the development of a plot. In the radio drama, music is completely subservient, but the continuity uses every conceivable means of sound expression with equal emphasis. Continuities may be adapted from literature, although the few outstanding continuity features have been specially written for radio.

The selection of a theme for the preparation of a continuity is a delicate balance of several factors. First, the theme must have all of the elements of good radio drama—simplicity of personnel, easily imagined setting and vivid portrayal of the action by voice alone; second, its climax and minor climaxes must lend themselves to colorful musical interpretation; and third, it must stir the imagination sufficiently to arouse the listener to actual visualization of the scene, without, at the same time, becoming ridiculous by emotional extremes or vocal and musical excesses. This is by no means a simple formula, and there are few who have succeeded in the planning of continuities.

The stipulation that individual voices which the listener must identify shall be distinctive and few in number does not constrain the continuity writer to the utilization of few voices. Crowd and mob scenes are entirely successful so long as the principals, recognized as individuals, remain few in number.

One continuity, arranged by Paul Stacy, depicted a college football game. The scenario took the listener to the pregame celebration of the night before, to the game itself, with the radio announcer describing it just as if it were taking place before his eyes and with interpolations of cheering and singing. So vividly was this program presented that some listeners who tuned in late without being able to identify the station, wrote to newspapers and radio magazine editors inquiring from what part of the world they had heard a play by play football game broadcast at ten o'clock Central Standard Time.

Music as Background to Speech.

Music is used in the continuity both as a gentle background to vivify speech and in climaxes as a major and dominant element. The blending of voice and music is a delicate proposition, because it is difficult to refrain from drowning out the speaker with what is intended to be background music. But, properly done, musical accompaniment adds tremendously to the effectiveness of voice delivery. The music is, of course, judiciously selected to portray exactly the correct mood to fit the text moment by moment. Sometimes direct imitation of sound, like the beating of breakers, the howl of the wind, or the creaking of a wagon, is attempted, calling forth manifestation of considerable skill and patient testing to secure realism. With most sounds, it is difficult to transmit a suitable noise which will result in natural reproduction. One scene of a radio scenario called for a loud tearing of a telegram. In the tests, papers of all kinds and weights were torn, but observers at loudspeakers reported no sound. Success was finally achieved by ripping a heavy shade-roller cloth, requiring vigorous work on the part of two strong men.

Musical background of a symbolic nature gives the orchestra leader opportunity to go far afield in the selection of perfectly suitable music. When the tale narrated before the microphone describes a tempest brewing, waves breaking on the shore, terror, sorrow, or any powerful emotion, the continuity director, by skilful selection of suitable music, tremendously enhances the imaginative picture formed by the listener. As the scene works toward the climax, music gradually increases in volume until it takes the lead before the microphone, and swells to full loudness as the voice ceases. The musical theme continues, the length of time it remains in the foreground being a matter of artistic judgment. Sometimes a bar or two suffices; sometimes the orchestra may play to full volume for a minute or two, depending on just how much the

audience is worked up in its emotional illusion, for it must imagine action as long as the music continues, actually seeing the characters doing their part. If the listener relaxes a moment, sensing that the music ought to have stopped, he has actually awakened from his dream of illusion. Whatever the scene which music carries forward in the imagination, the climax of battle or combat, the height of storm, or the charging of a mob, only one possessing an artistic sixth sense is competent to determine.

Finally, music is used as a part of the plot in the well-rounded continuity. The lover serenades; voices sing songs of welcome; soldiers sing their way to battle; the mob charges with a battle song on its lips, and succeeds in its objective with a song of exultation.

The balance of all of these means of presentation—narrating voice, acting voices, voice with symbolic music background, musical climax in full foreground, music as part of the plot—calls forth a high art, a new art—that of radio showmanship. Nothing must continue too long to be monotonous, nor too short to fail to register. Radio continuities will be magnificent sound spectacles, some day, when the radio art has advanced considerably from its present amateurish and wholesale borrowings from the established arts.

CHAPTER XII

PREPARING THE SCRIPT

The shortcomings of the simple, succession type of program are made more emphatic by the practice of sending announcers into the studio with only a list of selections to be played. This leads them to use almost identical phraseology throughout the program, making monotonous announcing inevitable.

The script, which guides the director of the broadcast program, the artists, and musicians, should provide not only the lines for all spoken words but cues and full instructions for the accompanying music and tonal effects. It serves the same purpose as the motion picture director's script and, for a smooth-running program of the type which is slowly coming to the front in radio broadcasting, requires just as much detail and skill in preparation.

Script Essential to Smooth-running Program.

No matter how simple the program, a script should be prepared in advance, giving every word spoken by every person involved in the program. Hesitancy and repetition of phraseology are avoided by advance preparation. Following a typewritten script, however, is likely to lead to monotony of intonation, just as undesirable as hesitancy or monotony in choice of words. Radio critics are inclined to frown upon the use of typewritten texts for the spoken word, because they rob the speakers of spontaneity. Absence of spontaneity is an indication of lack of thought and practice on the part of the speaker, and is not a fault inherent in the use of a prepared text. No theatrical producer would think of sending his actors on the stage without making them learn their lines according to a pre-

arranged text; actors actually learn their lines and study the expression of every word in them. Radio presentation and particularly radio drama cannot be expected to rise to any very great artistic heights until the same conscientiousness in preparation is displayed.

The script for a succession program is quite simple, involving as it does only an announcer and the names of musical selections. It is preferable to follow the conventional style of theatrical script, using two-color typing so that the actual spoken word may be readily distinguished from supplementary information. The following is a typical sample:

ANNOUNCER: We now turn our microphone over to Mr. Guiseppe de Cazenovia, tenor of the Marseilles Opera Company, appearing in his first American recital. His initial selection is from Mascagni's "Cavalleria Rusticana," "Viva il vino spumeggiante."

TENOR SOLO: "Viva il vino spumeggiante."

Pronunciation Employed in Announcing.

Even in this simple announcement, nine out of ten announcers are likely to make several errors of pronunciation. The general standard of announcing is slovenly, to say the least. There are few who have the necessary qualifications to pronounce correctly the names of foreign composers and selections having titles in French or Italian. It requires years of linguistic education and contact with things musical to make the use of correct intonation and pronunciation fluent and natural. It is almost characteristic of the superior and self-centered announcer, who considers himself the ideal of numberless admirers, to fail in the pronunciation of such simple musical terms as *legato*, *scherzo*, *allegro*, *suite*, and *pianist*. Not one announcer in fifty could read this list fluently and with correct pronunciation.

To the musically uninformed, mispronunciation teaches wrong pronunciation, while to the musically informed, it is

thoroughly irritating. Why an announcer should be excepted from the necessary preparation to do his work correctly, required of people in other lines of work, is a little difficult to understand, but anyone, listening critically, will be convinced that a pronouncing dictionary is a most appropriate gift for an announcer.

Broadcasting offers unusual opportunity to improve the culture of its followers and, on the whole, the work of the announcer is most consistently deficient in taking advantage of this opportunity. A commercial broadcaster is entitled to announcements which are absolutely devoid of mispronunciations. The persons most pleased by musical selections, the titles of which are difficult to pronounce, are the ones most likely to be irritated and aroused to ridicule by mispronunciation.

Motion picture fans are familiar with the effect of a misspelled word in a subtitle of a magnificent feature film. So striking is such an incongruity in the general perfection of the film that it is difficult to overlook. A mispronunciation in a classical program is just as striking to the well-informed listener.

Even the simple succession script may fulfil an important function in raising the standard of a commercial program. It serves to eliminate redundancy and similarity in announcements between the numbers and, if properly rehearsed, gives opportunity to avoid mispronunciation of difficult words. "The next number will be," "the number you have just heard," and "please stand by," should be banned, and more original phraseology substituted.

The text of the announcements also embodies the all-important matter of directing attention to the feature's sponsor, the number of times, and the way in which his name is brought into the program. At the moment, however, we are not so much concerned with the text of announcements as we are with the actual structure of the script.

Scripts for Continuities.

The script used to guide the director of continuity and the radio drama is considerably more complex than the ordinary announcing script. Continuities involving the services of radio actors, soloists, choruses, orchestras, and noise-making devices are sometimes so long and so detailed that even in this crude day of radio presentation, it is not practical to furnish copies of such scripts to all participants in the programs. With such lengthy and detailed scripts, it is desirable to prepare special scripts, giving only essential cues to each class of participant.

The continuity director has a task of extreme complexity, having to coordinate the work of the radio actors taking individual parts, stimulate crowd effects at the proper moment, prepare and start soloists, quartets, and orchestras at precisely the correct moment in the program and with the volume required by the particular scene. He must also see to it that various noise-making devices, located in different parts of the studio, function at the proper time and in the proper balance.

When the full possibilities of the microphone are utilized, the director and his assistants are just as busy as the conductor of a symphony orchestra. Unlike the motion picture director, the director cannot shout his instructions through the megaphone. He is constrained to silence by the ever-vigilant microphone. He has just as much influence by his expression and gesture on the way in which his artists perform as the symphony director. Unlike the latter, being unable to hear the output of his efforts as heard by the radio listener, he must be experienced in sensing how the studio performance is actually interpreted by the microphone.

Introducing the Characters in the Continuity and Drama.

The master continuity script records in written form every sound, both spoken and musical, which contributes to the program. It begins with the announcer's intro-

duction which explains the setting and characters. Usually the names of artists and musical groups are centered and typed in a distinguishing color, while the actual spoken words are typed in black. The sample introduction which follows is unique in that the artists are actually introduced to the radio audience, and their characters are depicted so that the listener forms a conception of the person speaking to him. Miss Ferber's introductions were prepared by herself, but they were strictly limited as to length by the script.

OPENING ANNOUNCEMENT

ANNOUNCER: Announcing the beginning of another Eveready Hour, and, we believe, an Hour tonight of unusual novelty. Another of those departures for which these facilities are engaged regularly by the National Carbon Company, makers of Eveready flashlights and radio batteries.

Our advertisement of tonight's program describes it as something of an animated book review. It will be that only in so far as we can succeed in creating for you the atmosphere of Miss Edna Ferber's latest book, the title of which is "Show Boat," published by Doubleday Page.

A show boat means something to those of us who are listening in cities and towns that border on the Mississippi and Ohio rivers. In the East the term "show boat" doesn't mean very much, if anything.

One way to define what is meant by a "show boat" is to have Miss Ferber's characters tell us in their own words what it is all about.

And, to that end, we are fortunate in having induced Miss Ferber to step from the seclusion of her library, so that we may enjoy the novel privilege of having a famous writer take her characters by the hand, lead them from the pages of her novel, and introduce them to us personally. (As if turning to Miss Ferber.) Miss Ferber, will you please bring your characters with you to the microphone? Thank you! Miss Ferber.

MISS FERBER: (About fifty words introducing CAPTAIN ANDY HAWKS.)

CAPTAIN HAWKS: When you hear this drawlin' voice, you'll know that it is Cap'n Hawks speakin'. I ain't good for much, a river-boat captain, plying up and down the Mississippi, sorter tied to the river all my life, can't seem to get away from it, has a hold on me. 'Tain't my fault, though, remember. That's the way Miss Ferber made me an' I can't change, even if I wanted to, which I guess I don't want to do.

MISS FERBER: (About fifteen words introducing PARTHY ANN.)

PARTHY ANN: This old, strident, scolding voice is mine, Parthy Ann Hawks, and I ain't ashamed of it, neither. I know it ain't beautiful; ain't nothing about me very pleasing, for that matter. But, at least, I am somebody. I ain't no cipher, thanks to Miss Ferber. And Lord knows what would have become of Andy if I hadn't come along to manage his affairs for him and his parcel of good-for-nothings.

MISS FERBER: (About ten words introducing MAGNOLIA HAWKS.)

MAGNOLIA: I am gladder than I can tell to come out of those printed pages to greet you in person. Miss Ferber has been more than good to me. Most of her book is about me, you know. She has made me beautiful. She blessed me with a smile that I use lots of times when there are things that I want very badly. When you hear this voice, any time in the next hour, you will recognize me as Magnolia, won't you?

ANNOUNCER: Now that Miss Ferber has been good enough personally to introduce to us three of her leading characters, let us see what she makes them do.

(Orchestra or piano and string begins, pianissimo, back of following reading. To cue—some part of Dett's suite "In the Bottom Lands" or theme from Gershwin's "Rhapsody" or other. Sweeping theme to typify strength and, at same time, fickleness of Mississippi.)

ANNOUNCER: It is along the Mississippi river that we first meet the Hawks family, the Mississippi in flood time, the river "a tawny tiger, roused, furious, lashing out with its great tail, tearing with its cruel claws, and burying its fangs deep in the shore to swallow at a gulp. land, houses, trees, cattle, humans, even; and roaring, snarling, howling hideously as it whirls past."

(Pause for fraction of minute forte by orchestra which becomes quickly pianissimo, playing to cue.)

ANNOUNCER: The monster river that a pilot likens to the Nile, calling both rivers "old demons."

ANOTHER MALE VOICE: "Miss'ippi's enough for one man to meet up with in his life, though. It's sumpin like marrying. When you get to learn one woman's ways real good, you know about all there is to women and you got about all you can do in one lifetime."

(Orchestra comes to phrased ending.)

It makes no difference whether the continuity is centered around a principal narrator, as is done, for instance, when the text of a narrative poem is followed, or whether there are character parts as in the "Show Boat" program. The script fulfils important functions in the proper direction of

the musical backgrounds and foregrounds which are indicated in its text.

The sample which follows is taken from the Galapagos program, arranged by Paul Stacy for presentation at an Eveready Hour. This program was repeated several times on insistent demand of the radio audience. The two parts of the script are selected because they utilize in a brief space most of the contributing elements of the program. The plot has advanced to the point where the crew, becalmed for months in the Pacific, decides to abandon ship.

CAPTAIN: All right. The boats it is. Just this, men. Up to now, we've been captain, officers, and men. From now on we're just men—every man for himself, but we'll all work together to make the best of it. Man the life boats!

CHRISTIANSEN: The starboard watch went off in the captain's boat, the port watch with the mate in the other. Ten men to each boat. I was in the captain's watch. The captain was the last to leave the "Alexander." The old man cried. Never abandoned a ship before. She looked pretty, ridin' there as we pulled away, the Norwegian flag a-flyin' aft. We had less than a quart o' water apiece. We had ten-foot oars and we rowed, two hours each, four men on and four men off, day and night.

(Orchestra plays Volga or other piece; effect of oars' regular swishing; both continue during talk.)

CHRISTIANSEN: We rowed and rowed. (This is spoken in time with theme of Volga Boat Song or other selection by orchestra.) When we wasn't rowing, we was sleeping, lying down in the bottom under the seats. The third night, we lost the mate's boat. When it come light, we couldn't see him at all. We never seen him again. The third day, the food gave out. And the fourth day the water was gone. We rowed and rowed. (Spoken in time with the music.) We'd dip our hands in the sea and suck the water off our fingers. We knew it was bad but we had to have something. What with rowing and salt water, our hands got bad, all cracked and sore. This kept up for eleven days and eleven nights.

(CHRISTIANSEN stops reading, orchestra playing Volga alone.)

CHRISTIANSEN: Around dawn of the twelfth day, the cook said sumpin'. You'd thought he would a yelled it out. But he was too weak to yell, nothin' to eat, nothin' to drink, an' rowing—rowin'—rowin'.

(Stop Volga song.)

COOK (WEBB) (Quietly): Boys! Boys! This sufferin's near over!

VOICE (SLIKER): Whadderya mean, cook, near over?

COOK: There's land ahead!

VOICES:

MORGAN: That ain't land.

HARRISON: That's clouds.

COULTER: Yer seein' things, Louis.

SLIKER: That's a haze.

COOK: No, 'tain't. 'Tain't haze. 'Tain't clouds. It's land! It's land!

CAPTAIN: Now, boys, don't arger.

CHRISTIANSEN: When it got a little light, we seen it really was land. And, I want to tell you, weak as we was, them oars *bent*. (Start Agitato.)

We didn't have no four oars goin' then. All eight was working and that boat sailed! Water! Water! Water! That's what was in our minds as we pulled. We forgot we was tired or hungry. All we thought was—ahead there was water.

Along about noon we got near the island. It took a little time before we could find what looked like a safe landing. Mostly black rocks with a heavy surf on them. But we was so crazy to get ashore, we'd have run right into a cliff. (Stop Agitato.) As it was, the boat hit a couple of reefs and tore herself up some. Finally we sighted a little sandy beach—no harbor or shelter, just a little piece of sand that looked about thirty feet long. We headed for it.

(Agitato begins again. Noise of surf increases to imitate breaking waves (kettledrums) great splashing and sound of spitting water during following.)

CAPTAIN (excited): Look out there, boys! She's going over! Every man overboard! (Splash) Hang on to her! Tread water an' hang on to her! She's all we've got!

VOICE (MORGAN): Hey, Red, get that oar floatin' there. Swim. Dive! Get it! Good!

VOICE (WEBB): Here, Fred, grab my hand. Now, get hold. That's it.

VOICE (SLIKER): There goes the keg! It's out o' reach. Aw, Hell! (Agitato stop.)

CHRISTIANSEN: We got the boat righted and pushed her to the beach through the breakers. The minute we hit land, we beat it—scattered—every man for himself—huntin' water!

(Slight pause)

A few hours later, we all got together back of the shore a bit. We looked all in. Everybody had the same story. There wasn't any water! No water anywhere!

(The script continues with the adventures of the crew marooned on the Galapagos Islands. During this period, they lived entirely on turtle fat. The capture of the giant monsters with no weapons other than a knife entailed great difficulties and hardships. The script is resumed at the point when one of the crew dies and another loses his mind.)

(Orchestra plays strains of "Ase's Tod" softly.)

CHRISTIANSSEN: Poor Fred Jeff got worse. We had to go slow for him. One day, he laid down on a little beach. We all stood around him, captain and all. There wasn't nothin' we could do. Jeff knew it. He looks up at us.

JEFF (MORGAN): Boys, I'm done for! (Pause) Red, lean down. If you get out o' this, Red, promise ye'll see my father?

CHRISTIANSSEN: I will, Fred, I will. (Pause) We didn't have nothin' to dig with. We carried him back a piece and piled lava rocks over him so's the birds wouldn't touch him. The captain said a prayer. Fred was my shipmate on four voyages.

("Ase's Tod" alone to finish. Modulate to repeat home-longing theme for two or more instruments, oboe preferably.)

CHRISTIANSSEN: Nights was the worst time. All day, we was pretty busy. Movin' slowly over the rocks and gettin' seals and turtles. Kept our minds occupied. Nights was worst. We'd lie there and think about things and wonder how much longer we could drink blood instead of water. Then we'd set up and look at the sea and think where we was—and suppose a ship didn't ever come! Nights was the time we felt it.

(End minor strain)

One night we was all together stretched out and somebody said:

VOICE (COULTER): For the love o' Pete, start a song, somebody.

VOICES: Yes, let's have a song!

CRAZED VOICE (STACY) (mockingly but quietly): Yes! Ha! Sure. Let's sing! That's a good one. We're so blasted happy. (Becoming hysterical) Huh! Eh? We're so happy? Ha! Ha! We're so happy! Ha! Ha! Ha! Ha! Let's sing ha—ha—so happy—ha—ha—ha, etc. (Dying away in distance.)

VOICES:

GLENN: Take him down the beach.

MORGAN, COULTER: Come along, Pete! Here, here, now. Steady!

WEBB: Poor fellow.

HARRISON: That's tough.

SLIKER: He's goin' in his noodle.

ALL: Muttering.

STACY (in distance): Ha! Ha! ha-a-a-ah. Let's sing—ha! ha!

(SLIKER begins "Home Sweet Home." Sings a measure. Interrupted by maddened STACY.)

STACY: (Coming nearer and screaming.) No! No-o-o! Lay off that! No, I tell ye! Not that one—I'll—I'll—I—oh (very quietly) fellers! Please! I'm crackin'! You don't have ter tell me! My mind's crackin' here. If ye want ter help me save what's left of it, don't sing that song. Any other, all right. But (plaintively)—(questioningly) Home Sweet Home? Here—in this hell? Oh, don't sing it, fellers. (Hysterical again) Don't sing it—hah—hah—hah. Don't—don't (going away in distance) don't. Hah—hah—hah—ha-a-a-ah (winding up as if down the beach in wild crying).

VOICES:

GLENN: Afraid he's done for!

HARRISON: Poor devil!

WEBB: God, we gotter sing to drown him out.

COULTER: What was that we sung on the *Alexander*?

MALE QUARTET: (Start singing "We parted at the Shore." Carry through few strains, other voices joining in. In distance, mad "Ha-ha-ha's" heard. Voices try to continue song, break down.)

CAPTAIN (GLENN) (breaking, half sob): We can't do it, fellers. We ain't got any song left in us.

STACY: Ha! Ha! Ha! (in distance).

ROSE BRYANT: But all through that night, there hovered over them something that brought to their wearied spirits the songs they could not voice themselves.

BETSY AND ROSE: (Duet "All through the Night" with string choir.)

Director's Position in Studio.

During the radio performance involving a large number of artists and many different sources of speech and music, the director should select a place, preferably on a platform, from which he can easily point down to any of his artists and radio performers. The platform should not be placed in the middle of the studio because the orchestra leader must, when directing, stand with his back turned to the director. Every member of the cast, in his performing and waiting positions, must naturally face the director. The best place for the director is usually against the longer wall

of the studio, halfway between the orchestra leader and the end opposite which the orchestra is stationed. In this position, he is near the microphones and close to the speaking and solo artists and yet not too far from the orchestra leader.

The correct placing of microphones for various conditions is best left to the technical or announcing staff of the station. Every studio has peculiarities which are discovered only by experience; each has its individual characteristics requiring modifications of the standard arrangement.

For continuity programs and those involving many different kinds of artists, two microphones are generally employed. One serves the orchestra, which is disposed in a fan shape, radiating at an oblique angle from its face. The orchestra leader takes his position a little to one side of the instruments so that he can see the director over his shoulder. The first violins are close to the microphone on one side, the cellos on the other. The piano is usually quite close behind one or the other of these instruments and as far to one side as is consistent with facing the microphone. Wind instruments range farther back, with tympani and metallic string instruments toward the rear. The correct position for each instrument must be carefully determined in rehearsal to fit the special conditions of the studio.

The other microphone serves announcer, speaking parts, singers, whether solo or in group, and any special noise-making devices which may be used. Each speaker and singer must, by microphone test, know the best position for his particular volume and quality of voice. Experienced announcers and studio staff are usually competent to coach artists on this point very quickly. Long training enables them to judge in an instant, from listening to the radio output of their own or other stations, what error in position and voice quality affects the tonal output detrimentally.

Limitations of Carbon Microphone.

Microphones of the carbon type are in general use at broadcasting stations. If music is rendered too softly, requiring great electrical amplification and high microphone sensitiveness, a hissing sound, termed microphone hiss, is broadcast. On the other hand, too great volume results in the all-too-familiar blasting or blurred effect in reception. The program director should train his artists to avoid these effects. By constant vigilance and technically trained personnel, a high-grade broadcasting station can avoid all distortion attributable to microphone limitations.

When music is of a nature involving sudden and great changes of volume, the amplifier operator who manipulates the control affecting the sensitiveness of the microphone should be familiar with the music. Otherwise, blasting is sure to result at the beginning of sudden loud passages. The program director who knows his work usually reviews with the particular amplifier operator who will handle the program the places in the script which are likely to give him difficulty because of great volume variations.

A few stations employ condenser microphones. They are not subject to blasting. Because a sound wave impressed upon the condenser microphone controls a much smaller current, so small that a very delicate measuring instrument is required to detect it, extra amplifiers must be installed. Although the condenser microphone is of great advantage to the program force, the instruments are not yet accepted as sufficiently rugged for commercial broadcasting stations of the usual technical competence.

Director Must Have "Microphone" Ear.

The director in the studio hears his performers as they do their work, but only long experience enables him to judge how the broadcasting performance sounds to the radio audience. The modern microphone does its work accurately and without distortion, but it is very sensitive to effects of

distance and direction. An instrument moved but a foot or two, or a speaker turning his head to one side, has a decided effect on the broadcast output which is not discernible to the ear of the director in the studio. His experience must enable him to judge the effect of such movements on the program output. He must develop a sort of "microphone ear" which automatically changes what he hears in the studio into what is broadcast to the radio audience.

Modern broadcasting studios have adjoining them a monitoring room in which a loudspeaker gives the radio reproduction of the program. This is separated by plate glass from the studio, carefully sound insulated, so that the program may be listened to critically as heard by the radio audience and within easy signaling position to those within the studio.

The director's platform should be stationed so that he can easily signal back and forth to the music critic in the monitoring room. The critic also has a script which he follows carefully to see that every musical effect is actually secured. When the script calls for orchestral background to the speaker, the music may be too subdued to be audible, or so loud that the speaker is drowned out. The monitoring critic promptly signals the necessary correction. Sometimes small signs are used for this purpose, but hand signals are usually sufficient. Pointing to the orchestra and waving the hand horizontally downward, for instance, indicates that softening of the music is necessary, and an upward motion of the hand an increase in musical volume.

Two Studios Used Simultaneously.

Attempts have been made to utilize two studios simultaneously, one for a speaker and one for the musical source, and to blend and balance the two in proper relation by electrical means. Theoretically this is a simple method, but, since the speaker cannot hear the accompanying music and *vice versa*, it is difficult to synchronize the performance. Whether the final analysis will prove the single studio with

control over the artists for proper volume modulation or two or more studios with electrical balance as the more effective method of control cannot now be determined. The indications are, however, that the single studio will grow in size and that the director will have at his finger tips all the tools for his presentation.

The multiplicity of the director's duties in assuring a smooth-running program can hardly be appreciated by the broadcast listener. I have seen continuity directors, after an hour's work, leave the studio dripping wet and exhausted from the excitement and labor of gesticulating to forty artists in the effort to make each perform his appointed task precisely as it should be done. All of the director's work must be accomplished without making a sound which is heard by the radio audience.

Final Rehearsal and Time Schedule.

The final rehearsal preceding the broadcast is carried out with the aid of an assistant, who times each part of the program exactly. A marginal note of the time required by each musical number and each group of speeches is noted on the script. A running total of elapsed time is kept up and, with its aid, the feature is kept within its allotted time. Speeches and numbers are shortened or lengthened, if necessary, so that the full period, without running beyond the expiration of contracted time, is utilized by the program.

The final rehearsal is usually the first time that the various voice and music parts of the performance are coordinated. In preliminary rehearsals, the radio actors, the orchestra, the various soloists and vocal musical groups do their part individually until they have perfected their respective contributions.

From the information gained in the final rehearsal, not only is the exact length of the program adjusted, but marginal notes are made in the director's script, indicating the exact time by the clock that various parts of the program should be reached so that it fills the assigned hour

or half hour. Toward the end of the program, leeway is provided by optional rendition of musical numbers and choruses, or whatever other features are available, so that the program may be shortened or lengthened if it is running before or behind schedule. Thus, if the Hallelujah Chorus is due to be sung at 9:28 and it actually begins at 9:26, the director finds a place in his script where he can add two minutes by the playing of an optional number.



FIG. 26.—The Eveready Mixed Quartette preparing for a final rehearsal of a continuity program. (Courtesy of Radio Broadcast.)

Elaborate Presentations of the Future.

Very few genuine continuity programs have been broadcast. The directors have, in most cases, realized the handicap of being limited in the matter of rehearsals and in perfecting the details of presentation. It is likely that the big continuity spectacles of the future will require months of preparation, rehearsal, and changes, involving the work of the world's greatest radio artists. Instead of a few

hundred dollars' expense in artists' fees and music, the cost of preparation and presentation of a single feature may run to ten, twenty, or fifty times what is conceived as a large expense today.

We have only to observe the growth of motion pictures to realize how rapidly the cost of broadcasting features may mount. In 1909, Mary Pickford received \$3 a day from

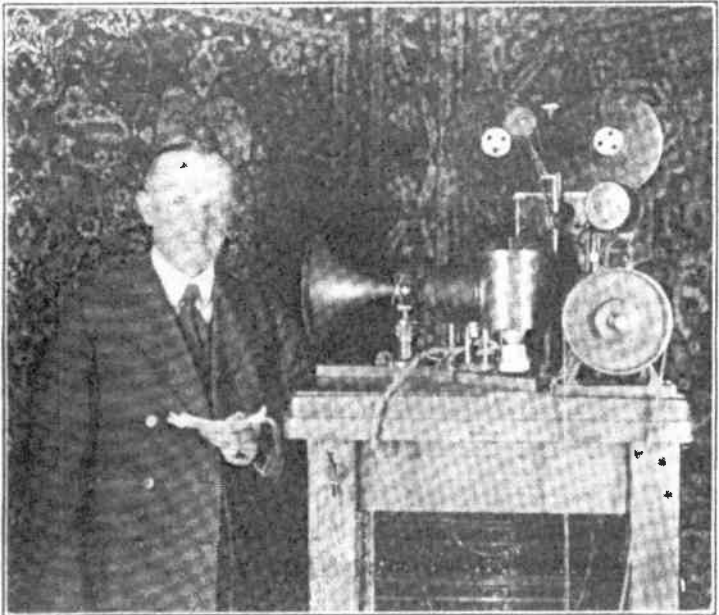


FIG. 27.—An early model of the Pallophotophone, through which Calvin Coolidge, then Vice-President of the United States, is recording an address, later broadcast with perfect fidelity. (Courtesy of General Electric Company.)

Biograph; seven years later she signed a contract with Famous Players involving \$1,040,000 salary in two years and a share in profits realized on her productions. The first feature film, a four reeler in which Sarah Bernhardt appeared, was produced in Europe, and Adolph Zukor purchased the American rights for the then stupendous sum of \$18,000. More than that is spent nowadays to provide

the costumes for one scene. Radio feature programs, costing \$100,000 for preparation and artists' fees, will be upon us before we realize it.

This expense of preparation will be justified by building up and securing a nation-wide radio audience through advertising so that, instead of a casual audience of a few hundred thousand, the great radio events will cater to audiences of many millions. Perhaps the radio performance will be electrically recorded with "scenes" made at different times, tested, and repeated until a satisfactory record is secured for each. "Cutters" will put together a complete radio performance from records which require months to prepare. This method of program preparation will give opportunities before final presentation for improving, correcting, changing, and editing, until the performance is entirely perfected. It will make possible repetition of programs and their distribution to stations in all parts of the world. The mounting expense of radio presentation will require some means such as this, attaining greater audiences and greater permanent value to justify it.

The advances made in electric recording make it possible to reproduce music so that the sacrifice involved in recording and reproduction is indiscernible to the average ear. It will be a strange paradox to return to programs emanating from phonographs, a program source abandoned in the early days of broadcasting because of its musical shortcomings. So greatly has the application of radio inventions to phonograph recording and reproduction improved the quality attainable that the phonograph once again measures up to standards required by radio broadcasting.

Telephotography and Television.

Eventually sound will be supplemented by still pictures, and later by motion pictures broadcast through the ether. That day will be here sooner than is generally realized, judging from the work being done in our various laboratories.



FIG. 28.—The first advertisement transmitted by telephotography from London to New York, as it appeared in the New York Times. (Courtesy of Dr. Alfred N. Goldsmith.)

The commercial broadcasters who are pioneering with the crude facilities available today are laying the foundations for a much greater capitalization of goodwill, which advancement in preparation, presentation, and reproduction will eventually bring to the radio broadcasting program. The fleeting radio performance of today will be replaced by a more permanent embodiment of the program in record form.

CHAPTER XIII

DIRECTING THE BROADCASTING EFFORT

Directing the destinies of a broadcasting feature is a fascinating activity, appealing, as it does, to the desire for artistic creation. Every man who has succeeded in a line of work, whether it be advertising, engineering, or accounting, has his own ideas about showmanship and audience psychology, based on his own personal feelings. The natural result of this tendency is that, when a firm undertakes broadcasting, too many self-appointed cooks are likely to participate in determining its flavor.

The Sponsor's Broadcasting Representative.

Lest this apparently unavoidable ambition to have a hand in the direction of the radio program result in confusion, it is desirable that the sponsor's organization appoint some one of its members having an understanding of broadcasting matters, upon whom the entire responsibility for directing the broadcasting staff is centered and who acts as the sole contact with the broadcasting staff. He transmits the reactions and desires of all those interested to the program director and thereby protects him from the individual complaints and suggestions of numerous well-meaning, self-appointed assistants.

The broadcasting representative may be guided by a broadcasting committee of the sponsor's organization and as many as may wish can contribute their influence to shaping the broadcasting policy, but experience has proved that a single contact with the program director is the best means of transmitting the sponsor's reactions and policy desires to him.

The Nature of Program Directors.

Program directors are not business men. They rightly consider their work as one of an artistic nature. They are called upon to deal with more or less temperamental artists and are naturally sensitive themselves. Artistic temperament is a term too familiar to be founded on imagination. Criticism too bluntly or too frequently offered robs artistic effort of its spontaneity and tends to force a program director to follow safe and conservative policies with the inevitable loss of distinctiveness.

The "morning after" of some well-known program directors is sometimes turned into a nightmare because of the failure to establish a single spokesman to represent the sponsor. One program director on the hectic morning following the staging of an ambitious feature which proved unsuccessful, received fourteen telephone calls from the sponsor's organization. Each call was offered in a helpful spirit but, by the time the fourteenth had been completed, the epithets directed toward the sponsor as the unfortunate director hung up the phone were doubtless unsuited to broadcasting.

A program director who has any ability as a showman is thoroughly conscious of and humiliated by a failure. Much better results are obtained if criticism is withheld until opinions are discussed and consolidated within the sponsor's organization, and then transmitted in person by the broadcasting representative alone. Executives concerned with hard-and-fast facts, like sales quotas, production figures, and cost accountant's reports, do not easily realize the deep personal pride which an artist associates with his creative effort and the effect of a failure on his personal feelings. It is a new departure for business to concern itself with dramatic effort, and the desk-pounding go-getter is a destructive element to mix with the temperamental. A sales manager would regard it as peculiar and impudent if his broadcasting program manager lectured him critically on his selling methods, and a design-

ing engineer would hardly welcome ridicule from a broadcasting director. Yet the reverse tactics are not uncommon.

Duties of the Program Director.

The program director is constantly faced with problems of temperament, usually unknown to the sponsor. He must deal with the feelings of the artists he directs, and oftentimes they call for delicate handling. Only a person accustomed to dealing with temperament can perceive, in the apparently harmonious conversation of a soprano and a contralto, the fire of jealousy which may be burning because a script may happen to give one of them two leading numbers and the other only one.

A competent program director fits the artists into parts suited to their talent without encountering temperamental difficulties. He originates ideas for program features and plans them in detail. He writes the scripts or directs their preparation. He conducts the preliminary and final rehearsals. He arranges with the station for studio rehearsals and microphone tests. The full responsibility for the success of the broadcasting performance should be centered upon the program director, and he should be given sufficient authority and freedom of action to warrant that responsibility.

The Musical Director.

The program director may combine with his duties that of musical director or, if the feature is sufficiently ambitious, he may have as his principal assistant a competent musical director. The latter's duties are collaboration with the program director on the selection of music to fit the script, and conduct of preliminary rehearsals of the orchestra and perhaps the singing voices. Usually he is the orchestra leader as well. Whether these duties—musical director and orchestra leader—are combined in the person of the program director is, of course, entirely dependent upon

the nature of the feature. A dance program, unassisted by a supporting specialty, requires no extra directing personnel, the leader reporting directly to the sponsor or, if the sponsor delegates his actual direction to him, to the broadcasting station program director.

Whatever the combination, however, some one person should be, in title and in fact, program director of the feature, fully responsible for the conduct of programs and the acceptability of the broadcasting result.

The Broadcasting Organization.

With a well-developed continuity feature, other assistants enter into the organization. An assistant program director may have special research work, either to discover literature suitable as the basis for scripts or to find music of unusual character. Another may devote himself to engaging special guest artists, to securing releases on copyrighted productions, and to general routine of artist management. The work of writing the scripts may fall upon the shoulders of a special continuity writer, who does nothing else. A publicity writer is necessary, when the feature warrants it, for the preparation of suitable news material and for the direction of the photographers and distribution of photographs to the press. Some routine must be established for handling of audience mail. Altogether, the broadcasting effort may become burdened with a large organization or many functions can be combined by a single individual, serving as program director. The publicity service of the broadcasting station may be utilized for that work, and the sponsor's direct-mail advertising force may take care of the correspondence with the audience.

Broadcasting Production Concerns.

As radio showmanship progresses, the tendency will be toward a specialized radio producing organization which cannot be profitably built up for the handling of a single

feature. The creation and production of radio presentations will become an established business engaging the concentrated effort of organized specialists, as does the motion picture producing industry.

As a separate entity, the broadcast production staff may be associated with a particular broadcasting station or an advertising agency, or may function as an independent organization. During the formative period, which is likely to continue for a span of years, the commercial sponsor may find program production organizations of each of the three kinds at his disposal.

Those associated with broadcasting stations have especially good opportunity to appreciate the possibilities and limitations of the microphone. They are assured of the best of cooperation by the broadcasting station and the valuable access to studios for rehearsal purposes without much restriction. Serving a large number of clients, however, they may lack in diversity of ideas, unless managed by exceedingly capable personnel.

Several prominent advertising agencies have, or are in the process of organizing their own broadcasting bureaus for serving their regular advertising clients. This arrangement has the advantage of assuring effective capitalization of the broadcasting effort through advertising and dealer contact. But broadcasting does not seem to be a natural function of the advertising agency, because of the inherent fallacy of associating an effort which is largely general publicity with an advertising function. Regardless of the conscientious care observed to assure newspaper editors that publicity offered them from advertising agencies has no bearing upon the selection of their medium for paid advertising, the advertising appropriation is, nevertheless, a hidden club, which even the most fearless newspaper does not always disregard. On the other hand, an agency following high ethical standards, with respect both to publicity and to broadcasting, is in a position to render exceptionally faithful service to a commercial sponsor.

The independent organization is most likely to succeed permanently, if a staff of sufficient size and competence is assembled. Microphone sense is of such great importance, however, that the prospective commercial sponsor should scrutinize with extreme care any organization which does not, by its affiliations, indicate a high degree of competence. Reputation, acquired by satisfactory service to responsible and prominent commercial clients, is a valuable guide in selecting a broadcasting producer.

Extent of the Complete Broadcasting Organization.

A complete and comprehensive organization will possess not only adequate program direction force, competent to initiate and originate special features for each client, but also continuity writers, musical experts, and publicity staff. Its booking service should be well enough established to have extensive contacts in the musical and theatrical worlds. A sufficient number of creative minds should be included in the personnel to assure variety in its presentations, offering adequate distinction among the types of work done for various clients.

Selecting the Program Director.

Since, in the last analysis, the commercial sponsor's return from broadcasting is determined by the distinctive quality and attractiveness which his program possesses, the selection of its director is a matter of vital importance to its success. Resourcefulness and ingenuity in discovering new and effective methods of utilizing the microphone are the most valuable assets of the program director.

Radio presentation is a new art, and men from all walks of life have been drawn into it. Theatrical and musical experience is invaluable, but it does not follow that a successful theatrical producer makes a good radio program director. Radio showmanship is a peculiar art, and experience in allied arts is helpful, although radio utilizes a different kind

of sense perception from any other art of presentation. A tea tester has a highly developed sense of taste and may be able to determine from one sip a great many facts, such as the place a tea was grown, the weather conditions prevailing during its growth, the skill used in packing and shipping, and its market value. But even the most exacting experience in tea testing is of little help in qualifying him as a wine tester, in spite of the greater similarity of the two vocations. A tea tester would have to start all over again if he were to undertake to become a wine tester. So does a radio program director, selected from the theatrical or musical fields, begin anew in the field of radio.

Technical Musical Knowledge Not Essential.

It is usually assumed that technical knowledge of music is an essential asset of the program director. It is valuable, but not essential. An instinct for appreciating the microphone's possibilities and shortcomings is vastly more important.

It is said that S. L. Rothafel, former director of presentation of the Capitol Theatre and later of his own motion picture palace, is not versed in the technical aspects of musical presentation. Nevertheless, he has a remarkable instinct for showmanship, which has enabled him to set the standards for motion picture presentation. In the rehearsals of his symphony orchestra, he feels what is lacking, although he may not know the technical word for it. His conductor is able to translate Mr. Rothafel's instinctive feelings into a roar of tympani or a greater emphasis on the first violins or wood winds. He achieves his result without the aid of technical knowledge, having the instinctive knowledge of the true artist.

The broadcasting director is concerned with tonal effects as reproduced by a radio set in the home. If he is able to conceive scripts and secure vivid tonal expression, he need not know the difference between *legato* and *allegro* any more than a motion picture director need know how to develop

films or need be versed in the psychological reactions of music upon emotional expression. He is dealing with an art, not a science.

As the importance of the program director rises with the standards of radio presentation, reputations will be established for a few masters of the art. There will be great directors to emulate, available to those who can afford them. In the meanwhile, the art develops and, with it, the men who will lift it from mediocrity to greatness.

CHAPTER XIV

OPENING AND CLOSING ANNOUNCEMENTS

Having laid before his audience, without direct cost to it, a sumptuous repast of radio entertainment, the commercial broadcaster feels entitled to a just reward of goodwill return. The value of that return must be sufficient to justify the cost of broadcasting; otherwise there is no excuse, unless it be philanthropy, for presenting radio programs. To assure an adequate return, a sponsor, inexperienced in the use of the medium, is likely to wish the inclusion of a few words of praise for his product. Broadcasting station managements of high-grade stations do not permit this practice, although a large number of smaller commercial broadcasters give the sponsor full leeway to do anything he pleases in the way of direct advertising.

Rarely is the matter of recognition to the sponsor considered in any other light than determining how far the sponsor can go in the matter of direct advertising without antagonizing his audience. The conclusion of reputable broadcasting organizations is that the broadcast listener resents *any* form of radio advertising, regardless of how well pleased he may be by the effort to entertain him. Why is the radio audience so touchy about being subjected to advertising, however subtly concealed?

Listener's Attitude toward Commercial Programs.

The broadcast listener regards any attempt at radio advertising as an affront. He feels no obligation to the sponsor of a commercial feature because he has enjoyed his program. He is convinced that some unseen and philanthropic power owes him enjoyable radio programs

as a duty which requires no recognition. He considers himself perfectly justified in complaining about an unsatisfactory program attempt to which he has contributed only a few moments of his leisure. Were he to be assessed an amount, however slight, for his share of the cost of presenting a program which he thoroughly enjoys, he would yell loudly about extortion and oppression. If he is gently reminded that someone spent a great deal of money to present a feature to him, he is insulted and antagonized. How has such an attitude grown up and how does it influence the value of broadcasting as a goodwill medium?

The greater the effort and expense involved in securing anything, the better it is appreciated. A friend may advise a dyspeptic about diet and be scoffed for his sound counsel, but the next day a specialist, who charges the patient a week's salary for giving the same advice, is praised and heeded. Motorists in a foreign country complain loudly about the quality of roads, the cost of which they have not contributed to in any way. Inmates of charitable institutions issue petitions of protest concerning the quality of food served them, while diners in an expensive restaurant cheerfully pay three times what their food is worth. Broadcasting is free and is therefore freely criticised.

The World Owes the Listener His Programs.

The broadcast listener's attitude is founded on no conscious thought about the economics of broadcasting. Newspapers frequently publish letters from readers complaining about "too many commercial programs on the air." Somebody has taught the listener that good broadcast entertainment is his just due.

A year or two after broadcasting began, a minority of thoughtful listeners expressed fears that broadcasting might not continue indefinitely because of the mounting cost of station maintenance. Then commercial broadcasting assumed proportions of sufficient magnitude to lead

listeners to believe that commercial sponsors would maintain it indefinitely. Since then, broadcasting of high grade has been expected with the same regularity as tomorrow's weather.

Most listeners believe that their purchase of a receiver yields sufficient profit to meet the cost of furnishing it programs. The set manufacturer, however, regards broadcasting in the same light as does any commercial user of the medium. He sells his radio set at a reasonable profit to himself and is under no greater obligation to furnish entertainment programs than a phonograph manufacturer is to furnish free records or a motor-car maker to build good roads. That he helps to pay for broadcasting by maintaining a station of his own or buying time from a commercial station is only a recognition of the goodwill value of broadcasting in promoting his set sales.

The sponsor of a commercial feature who tries to impress his listeners with a sense of obligation fails to take into account the attitude of the radio audience. "This magnificent feature which you have just heard is made available to the radio audience through the generosity of James, Brown, and Smith. It takes only a moment to write a card of appreciation, and your expression of gratitude will be appreciated by the artists and the sponsors of the feature who have made it possible," is a sample of the kind of announcement which irritates a goodly part of the audience. The radio audience, just as soon as it hears an attempt to make it feel an obligation to a sponsor, becomes conscious of the reason why concerns pay to broadcast radio programs, and any effort to make it appear as generosity merits the same reward as any other form of attempted deception.

Justification for the Listener's Attitude.

Broadcast listeners collectively actually go to greater expense to hear radio programs than do the sponsors to present them. The amount spent annually for receiving

sets and their maintenance is fully ten times the total cost of operating all the broadcasting stations in the United States. The listener's expenditure is made in order that he may be amused. When tuning his receiver to a station, he invites that station to furnish him a program of entertainment. If that invitation is abused by advertising, he feels that he has been cheated and imposed upon. The receiving set was sold as an instrument of entertainment and, regardless of who made the claim, every broadcasting program to which he listens must stand behind it.

It is of no concern to the commercial broadcaster whether this general attitude is justifiable or not. The fact is that it prevents him from appealing successfully to the listener's sense of obligation, because the listener has no such feeling. It eliminates the first method by which a commercial sponsor usually tries to secure his response from the audience. "You have enjoyed this program, so you really ought to write me," is the trend of thought expressed in most closing announcements. Those who are conscious of that obligation require no such direct appeal.

A pleasing program, introduced and closed with announcements written with full appreciation of this attitude, on the other hand, wins appreciative listener attention. The listener applauds it freely without being asked. He gladly offers his suggestions and reactions to a pleasing program.

Few programs are concluded without appeals for letters of comment, so that it is not possible to offer much evidence that they are unnecessary. *Eveready Hour* is the only important feature which has consistently avoided asking for letters, and apparently its mail response is not suffering as a result. A simple statement, giving the name of the feature and the call letters and address of the station through which the program is given, seems to be sufficient to bring forth the mail response of those inspired to write without antagonizing those who resent being begged for letters.

Centering Attention on the Sponsor.

Having dismissed the gratitude appeal as one likely to do more harm than good, what means are offered to capitalize the broadcasting effort? No element of the situation is more important than selecting the name for the feature which assures that listeners will habitually associate the sponsor's name with it. "The Aristocratic Dance Orchestra, appearing for the Imperial Shoe Company" is not a good designation, because goodwill credit is thereby divided between sponsor and artists. When artists require recognition by name, it should be accorded in a secondary way. For example, instead of "The John Smith Orchestra, presented by the Mennen's Shaving Cream Company," use of the phrase, "The Mennen's Shaving Cream Orchestra, John Smith conducting," keeps the sponsor's name uppermost in the listener's mind.

When artists of great repute are offered, it is necessary to keep the sponsor's name in the background. "The Nestle soprano, Galli-Curci," is an inconceivable announcing designation for the great diva. The sponsor, presenting artists of such note that their names cannot be too closely associated with his name, invites the penalty of secondary credit. This may be compensated by the fact that an immensely larger audience is attracted to such a feature, so that secondary credit of the larger audience is worth more than major credit of a smaller audience. The fact, however, that credit is thus divided should not be disregarded in appraising the goodwill value of a feature. There is no doubt that a sponsor may be completely overshadowed by a brilliant name.

Slogans in Announcements.

It is a peculiar paradox that the radio audience, which resents the slightest attempt at direct advertising, is quite willing to refer to a feature by a trade name. They discuss a striking solo rendered by the "Royal heroine," but would resent a phrase such as "the Royal Typewriter is

the best \$100 typewriter in the world." A feature must have a name and it matters not whether it is the trademark of a product or a musician's surname.

This fact gives the sponsor frequent opportunity to mention his trade name in a manner which is unobtrusive and acceptable. The word "company" or "corporation" must, of course, be omitted, but such names as "The Willys-Overland Orchestra," the "Imperial Imps," "The Kodak Chorus" are effective and acceptable.

The Happiness Candy Company, in its closing announcement, gets over the idea that their stores are conveniently located throughout New York, without resorting to a direct advertising statement, by working in the phrase that "happiness is just around the corner from you." An announcement to the effect that "there is a Happiness Candy Store near you" would be neither so subtle nor so favorably remembered.

Character of Opening and Closing Announcements.

In the opening and closing announcements, it is permissible to mention the product which is made under the trade name by which the organization is known. For example, "This program is presented by the Atwater-Kent Radio Corporation, makers of Atwater Kent one-dial receivers," before and after the program is not objectionable. During the program, such a reference would be resented for its advertising intent. "Royal Typewriter Musical Comedy Hour, presented by the Royal Typewriter Company, makers of the easy-writing Royal Typewriter," is acceptable as a program conclusion, although too strong for use during the program.

Even the briefest form of announcement is sometimes too long when a program has carried the listener away with deep emotion. A phrase of advertising, thrust upon an audience tensed with excitement produced by a successful continuity, may be a distinct shock. The Eveready Galapagos program, which carried its listeners through adven-

tures of shipwreck and suffering with vivid realism and finally brought them dramatic rescue, ended with the simple line: "And so another Eveready Hour comes to an end." The dignity and simplicity of this announcement was a fine recognition of the fitness of things. That it was deliberate was evidenced by the fact that this simple announcement has never been used in connection with any other Eveready programs.

The Royal Typewriter Company rather cleverly called to the audience's mind the fact that it had sponsored the Dempsey-Tunney fight. The announcer, in his description of the ringside, named several of the famous sports writers in the press box near the microphone and mentioned specially those who were using portable Royal typewriters. There was grave risk that this might be overdone, but the restraint used made it acceptable. The \$35,000 expenditure of the typewriter concern was deserving of some return, and there is no indication that anyone objected to the method used to bring forward the name of Royal.

Newcomers to the field of commercial broadcasting generally insist upon the strongest possible tie-up. Some of the earlier commercial programs employed such strenuous mention of the sponsor that they resulted in letters of protest from the radio audience. After making a hit with its first presentation of the A. and P. Gypsy String Orchestra, an executive of the grocery company made a compelling speech in the middle of the program, setting forth the magnificent service of his concern, its generous desire to please the radio audience, and its intention to serve them in every possible way. It thoroughly spoiled that first program, and the resulting protest in the mails and in the newspapers awakened the company to the importance of skill in tying in its broadcasting effort. Today it is still using the same popular string ensemble, and has evolved one of the finest systems of capitalizing its broadcasting goodwill without in any way antagonizing the listener.

Offering Booklets and Souvenirs.

Upon the closing announcement often falls the burden of offering a booklet or other souvenir, presented by the sponsor as a means of securing names for direct-mail solicitation or an index to the popularity of his program. Letter response to an offer is, of course, an index to the popularity of the souvenir proffered and not to the acceptability of the feature itself. Valuable mailing lists can be built up by this means, because no one will reply who is not at least willing to be subjected to direct-mail sales effort.

Booklets of a helpful, educational, and informative value are written for, and the response is proportional to the booklet appeal and the extent of the service it renders. Goodrich has tried a booklet on the care of the lawn as a means of encouraging the sale of hose and also has offered route books. Numerous concerns offer recipe books of all kinds and there is hardly any limit to the broadness of appeal which may be secured by this method.

The California Petroleum Company has distributed 50,000 booklets entitled "Tips for Trips" as a result of goodwill entertainment programs broadcast through KFI.

The broadcast listener who comments favorably on a program is deserving of some form of acknowledgment whether his comment is solicited or not. Broadcasters who have appraised audience mail as of minor importance confine themselves to the distribution of some form of printed acknowledgment, usually with a photograph of the entertaining group. The Capitol Theater sent out 180,000 cards of acknowledgment in one year, featuring its group of artists. Approximately half of the commercial broadcasters on the higher grade stations confine themselves to this simple form of acknowledgment. Half of the remainder use a machine-typed or multigraphed letter with a good facsimile or genuine signature of the principal artists. Others make a serious effort to capitalize the goodwill indicated by a sales letter or by the distribution of advertising material.

Special Offers to the Radio Audience.

For a time, the Gold Dust Corporation broadcast an offer of a dish mop to any of the radio audience who clipped three labels of the package in which their product is sold. This is an excellent example of close tie-in with the product. The returns have not, however, been made available for publication.

The Eureka Vacuum Cleaner Company, in its response to letters of comment received as a result of broadcasting through a western station, urges its listeners to turn in their old vacuum cleaners for an Eureka. Results are not directly traceable, but they must offer some justification for broadcasting, considering that their mail now passes the 2,000 mark during good months.

Several prominent broadcasters have offered advertising material which is intended to do its work over a long period because of its service. Ipana Toothpaste, for a time, offered a motto, neatly printed, entitled "A Smile," bearing a modest signature of the Ipana Company. At another time, they distributed a bridge score pad.

The Goodrich people offered a radio log, giving the wave length of the principal stations and means of recording the dial settings for each. William H. Rankin, the first advertising agent to test the broadcasting medium, in his booklet "Radio Advertising—Does It Pay?" discusses his experiences in connection with the Goodrich programs as follows:

Goodrich has had actual, definite, traceable results over the radio but I think this was largely due to the fine way the Silvertown Orchestra was merchandised to the 40,000 tire dealers through window displays, booklets, and the direct-from-the-radio inquiries asked for. The Silvertown Cross Word Puzzle Booklet was offered to every interested listener. More than 200,000 asked for this book, so many that the Akron Post Office Department protested. So Goodrich changed its offer and told listeners to call on Goodrich Dealers for the Cross Word Puzzle Book. Over 300,000 were distributed in this way. Every cross-word puzzle was a Goodrich advertisement when it was worked out, and the dealers paid for these booklets.

Here's how another test of the pulling power of Goodrich broadcasting was made.

We got up a disc radio log. With it the radio fan could keep a convenient record of his dial adjustments for all broadcasting stations. Then we had cards printed and distributed to Goodrich dealers. The radio audience was told it could get these radio logs free of charge by going to any Goodrich dealer, obtaining a card, and mailing it to the B. F. Goodrich Company.

The fourth day after the first announcement, 14,000 cards came in, 14,000 dealer-consumer contacts were made. Within two weeks the Goodrich Company received more than 100,000 cards. The whole campaign resulted in the distribution of over 600,000 station logs. And each card mailed meant that a prospect had actually been sent into a Goodrich dealer's store by radio advertising.

In writing of another client, Mr. Rankin says:

One of our clients, the Tyrrell Hygienic Institute, has found radio of the greatest value in stimulating sales in the metropolitan district. The Tyrrell Hygienic Institute broadcasts through Station WMCA ten-minute Health Talks written by a New York physician, and it traces the results in sales.

Tyrrell's is a mail-order house and is accustomed to checking returns and cost-per-inquiry very carefully. It found that after it had started broadcasting there was a considerable increase in sales in Greater New York which must have been due in the main to the radio because no other additional advertising media were used that could have accounted for this increase.

Some department stores that had been selling from three to half a dozen of the Tyrrell Hygienic Institute's appliances a year are now selling almost that number a week. Saleswomen in these stores say that they can, in most cases, trace these sales to radio broadcasting.

The G. R. Kinney Tie-up.

The G. R. Kinney Company, manufacturers of children's shoes, maintaining their own retail stores, worked out a unique and effective method of capitalizing the broadcasting effort. Their program consists of half-hour "Sir Hobgoblin Stories," presented by Blanche Elizabeth Wade, a very competent children's story-teller. Children are offered a membership in the National Kinney Club. In response to letters of comment, they are sent an applica-

tion for membership, which pledges them to take good care of their shoes. Upon its receipt, duly signed, they are sent a membership button, exchangeable at any Kinney store, upon the purchase of a pair of shoes, for a gold button. By this means, the actual sales result of broadcasting is closely checked. The entire effort was very cleverly handled, because the program appeal is directed to the element which forms the bulk of their sales prospects. Adequate inducement was offered to translate their interest in the program and its premium into a call at one of the numerous retail stores. As effective an appeal to adults is not so easy to work out. It cannot depend upon so simple a device as the desire for a gold button to produce the call on the retailer. A real service must be rendered.

Goodwill is Commercial Broadcasting's Prime Purpose.

If the broadcasting medium is considered only as a means of purveying printed literature, however, the user is certain to be disappointed. Certainly, a distribution of literature is a very secondary service of the medium which elicits response principally from those who habitually write for free booklets and free information. It is by no means representative of the average of the radio audience. Anyone who will examine ten or fifteen thousand letters from the radio audience which have not been selected or gone over, will not be favorably impressed by the quality represented. Scrawled handwritings, poor choice of words, and cheap paper indicate low purchasing power. The exceptions to this generalization, however, are by no means few, and they indicate a very high-grade and thoughtful element in the audience which is moved to write in response to the exceptional program appreciation. Even the highest and most exclusive strata of society are represented. The impulse to write by such persons is rarely stimulated to the point of fruition. On the whole, however, the attempt to classify the radio audience according to wealth and intelligence, based on the spontaneous mail received, is likely

to be unsound. Certainly, it is reasonable to concede that the habitual letter writers will outweigh the conservative class, and that consequently a lower class of mail predominates which does not accurately represent the whole listening audience.

Prize Contests.

Nothing is so indicative of the extent of responsiveness to free offers as the success of prize contests. They are

THE BRUNSWICK HOUR OF MUSIC



Tonight—by Radio!

over Stations Listed

Famous Brunswick
Record Artists in

Can you
Identify her?

Brunswick Music Memory Contest

Broadcast by these Stations:

WBZ Springfield Mass.	WJZ New York	WGY Schenectady	WRC Washington	KDKA Pittsburgh	KYW Chicago
	9 to 10 P. M. Eastern Time		8 to 9 P. M. Central Time		

\$5000

in 54 Big
CASH PRIZES

For full information
and how to enter
Blanks, go to any
Brunswick dealer.
Act now—today

TONIGHT'S CONCERT

The program will be selected from a list of famous artists which includes the following:

Michael Bohnen	G. Lauri-Volpi
Karin Branzell	Edith Mason
Mario Chamlee	Sigrid Oneglia
Giuseppe Danise	Elisabeth Reibberg
Florence Easton	John Charles Thomas
Josef Hofmann	Maria Tiffany
Maria Ivogun	and many others

FIG. 29.—A newspaper advertisement in behalf of an early Brunswick Hour using the prize contest appeal to attract listeners. (Courtesy of Dr. Alfred N. Goldsmith.)

invariably successful in securing a very large response, out of all proportion to the appeal of the program. Prizes are offered for identification of numbers or artists, for telegrams received from the greatest distance or any other

element which suggests a competitive opportunity, however remote. The value of any interest founded on chance is highly ephemeral and difficult to capitalize. Brunswick Hour presented famous artists and classical selections without introduction and offered substantial prizes to those who succeeded in identifying both successfully. This experiment subjected response to a very discriminating, selective process and served to heighten interest in the feature. But rarely do contests appeal to a better class than those who respond to the various circulation contests put over by the gum chewers' tabloid newspapers. Conservative stations refuse to have anything to do with contests.

Those commercial broadcasters who are benefited by getting their advertising story over by direct mail to all classes of society may capitalize to advantage the response to an offered premium or souvenir, having very broad appeal. Any effort, however, to secure a list of prospects for an expensive motor car by offering a booklet of a nature which will appeal only to such persons is likely to give disappointing results, even though the program may be making a decidedly good impression upon that particular class. Broadcasters who concentrate their attention on securing the maximum mail are working as hard to stimulate the business of the Post Office Department as they are for their own good. If the mail result of broadcasting is considered as an additional and incidental service of broadcasting and the goodwill effect as its prime purpose, much more satisfactory results are likely to be attained.

Adapting the Booklet Appeal to the Sponsor's Needs.

The title and brief description of the subject matter of an offer made to the radio audience can be gaged to secure just exactly the degree of interest desired in prospects. For instance, a booklet on "How to Judge the Value of Real Estate" opens a wider field of prospects than one on "The Beauties of Arabian Park." The latter booklet,

however, while bringing in fewer replies, will elicit correspondence from those who are interested in a particular development, presumably brought to that point not only by the radio program but by advertising and other selling methods. It depends entirely upon what use is to be made of the names, whether the broad or the narrowed appeal is the more useful to the sponsor.

Furthermore, an offer of a booklet made in the closing announcement with a title appealing only to prospects is useful in becoming acquainted with the purchasing power and desires of a radio constituency. The booklet offered, however, should not be titled to suggest advertising material; it should feature information for persons who are prospects, but the title should not be so closely related to the product as to discourage those who resent direct-mail advertising. A lumber concern, for instance, may offer a booklet giving plans of inexpensive homes, rather than one advising the selection of lumber for home construction. A tire concern secures a better index to the tire prospects which enjoy its goodwill programs by offering a booklet on road conditions or touring routes or on how to tune up a car for a long tour, rather than through a booklet about tires. The response to an offer is restricted if the material is obviously advertising information, easily distorted to bring out the advantages of the sponsor's product.

Notice of Ensuing Program.

When the program for the ensuing week offers some special feature, it is desirable to describe it briefly in the closing announcement. There is a decided limit, however, to the length of opening and closing announcements, and the amount of information which the sponsor can safely disseminate at the end of a program. Even after three years of commercial broadcasting, I heard from a famous central-western station a six-minute closing announcement to a one-hour program. A fifty-word limit is a safe

limit which will hold listeners without difficulty. Constant observation of the habits of listeners yields the conclusion that any long announcement is tuned out unless it is of great interest, while a short one holds the listener who may not be interested in his contents because he desires to learn about the next feature.

A closing announcement may be used to call attention to educational or informative talks broadcast outside of entertainment hours. Augmenting the audiences of morning or afternoon talks to women has been a problem which has concerned station managements. Reference to morning or afternoon talks made at a time when the station's maximum audience is attracted to it, may increase the effectiveness of such features greatly.

Sending the Listener to the Retailer.

Direct-mail response is only one form of return to the sponsor. A manufacturer of commodities distributed through local retail outlets may be desirous of increasing the number of customers who ask for his product by name. National advertising accomplishes this result, but it is difficult to make the dealer conscious of the national advertising support a manufacturer gives him. More often than not, the customer goes in to purchase without revealing the influence which brought him into the store. But broadcasting may be used to effect by national advertisers in bringing customers to the retailer bearing evidence that they are responding to the manufacturer's activities in his support. For example, when the cost of broadcasting is prorated among a group of retail outlets, as is done sometimes in the case of chain stores, automobile agencies of a given territory combined in a broadcasting effort, and similar cases where some of those forced to contribute by a majority feel uncertain as to the value of the broadcasting medium, it is of considerable importance to bring forth supporting evidence that it is a wise investment to the dealer or branch store. In those cases, the broadcast

listener is sent to the dealer or retailer for applause cards, booklets, or souvenirs.

When the United Cigar Stores Company broadcast a daily sports talk, applause and comment cards were available at every United Store. The use of these cards gave direct evidence that broadcast listeners were included in the patronage of any store. The Ipana Toothpaste people furnished a display for druggists which not only called the product to the attention of potential customers but also displayed the applause cards themselves, encouraging radio listeners to use them and to examine the product at the same time. Another concern included a radio applause card in its packaged goods and judged from the volume of returns that the audience attracted by its programs was substantially that to which its general sales efforts were directed.

Window-display cards sent to local dealers help them to capitalize on a successful broadcasting effort, and at the same time increase the audience to the feature. The Atlantic and Pacific Tea Company, for instance, uses attractive posters to build up the audience of the A. and P. Gypsies. It also secures much audience response through its own counter men, because of the conversation which these posters bring up. At the close of its broadcasting, it suggests that listeners tell the store manager of the nearest A. and P. store what they thought of the program. Local store managers who objected to their share of the cost of broadcasting, which is assessed among all the stores in the service areas of the stations used, have been made enthusiastic converts to broadcasting as a result of this policy.

The sponsor gains in two ways when he refers to his broadcasting effort in his national advertising. Broadcast listeners who are not habitual followers of his program have it called to their attention, thus increasing the chances of their becoming habitual listeners. On the other hand, listeners in whom goodwill has been built up

by successful programs are likely to read the advertisement simply because their recollection of a good radio program is revived.

How Mail Should Be Addressed.

Some clients prefer to have the radio audience write directly to their own offices, but it is always advisable to offer the alternative of addressing the station directly. Listeners are usually familiar with the station's correct address and do not trouble to make a note of the sponsor's street address. For this reason, it has become generally customary to suggest addressing the sponsor in care of the station.

Capitalizing the broadcasting effort requires a close attention to detail and the following of a predetermined plan, fitting the sales problem. The commercial broadcaster has his choice of developing:

1. General mailing lists of moderately interested prospects.
2. Limited mailing lists of highly interested prospects.
3. An augmented listener audience for the following week or for other programs presented by him.
4. Visits of potential customers to retail outlets.

The methods of accomplishing each of these results are considered in Chap. XVI.

But, more important than all of these, is the goodwill value which attaches to the sponsor's program without resulting in any direct and tangible response. This consideration places considerable importance on the correct naming of the feature and the centering of the goodwill gained by it upon that name which brings forward the trade name of the sponsor and his product.

CHAPTER XV

PROGRAMS FOR EVERY HOUR

There is a potential radio service for almost every hour of the day and night. Great extensions in the utility and influence of radio's daytime programs may be expected, as evidence is brought forward that audiences can be attracted to specialized program efforts at hours which are not now considered suitable for building up listener followings.

The educational possibilities of the microphone are frequently referred to enthusiastically by educators and sociologists. That radio has done much to familiarize people with cultural music is readily conceded, but there are few who believe that it has taken on its full responsibility along educational lines. This is due largely to the fact that no suitable hour, habitually offering educational features, has been established in the listening habits of the radio audience. Extending the educational service of radio is largely a matter of selecting the correct hours for presenting informative features.

Fitting the Feature to the Hour.

To the commercial broadcaster who, by the nature of his business, is specially fitted to do an educational task, the matter of selecting the hour for broadcasting is important, not only from the standpoint of the number of listeners habitually attracted to the loudspeaker at the time under consideration, but also on account of the varying acceptability of an educational feature at different hours. A lecture in the midst of the entertainment period, even though the largest percentage of the radio audience is then available, is not likely to win goodwill except among those particularly interested in the subject offered.

Recognizing that evening audiences want relief from serious discussion, many of the larger stations have established a policy of refusing all talks during evening hours. The greatest appeal to the greatest number is the only sound basis for planning a broadcasting program. The theory that a special group, whether antiquarians, psychologists, mathematicians, or salesmen, is to be singled out and pleased by a feature appealing to their special interests, when the entire listening mass is seeking entertainment, leads to audience dissatisfaction. All except the special class appealed to are, in effect, invited to listen to another station.

Pleasing Habitual Audience is Sound Policy.

Every person tuning out a program because it does not appeal at the moment has consciously thought, "I do not care to listen to the Jones program." No matter how many are pleased by the Jones presentation, the number who are displeased is a factor in appraising its goodwill effect.

The importance of appraising the audience mood may be illustrated by its attitude toward the effort to use the microphone for spiritual uplift. The audience listens to what pleases it, regardless of what educators or reformers think good for it. Sunday broadcasting periods have been seized upon by the religious element almost to the exclusion of entertainment. The result is that on the one day of the week when the largest audiences could be built up, certain receiving sets are invariably shut off until the evening. No amount of monopoly of the microphone will attract listeners to the loudspeaker who do not respond to the religious appeal. The bitter denunciations of the sermonizer, who considers his task as one of weighty and inspired admonition, fall on deaf ears, so far as those who conceive Sunday as a day for outdoor amusement and relaxation are concerned. The Sunday newspaper is a better appraisal of what people want for Sunday entertain-

ment than that made by radio program directors. A program must please the listener before it can accomplish any other purpose.

Yet, Dr. S. Parkes Cadman, by his vital and humanistic man-to-man talks, has built up a tremendous Sunday-afternoon audience through a chain of eastern stations. Dr. Joseph Fort Newton, in a tribute to Dr. Cadman, which appeared in *McCall's*, wrote, "Dr. Cadman is not simply a personality, he is an institution. To the vast audience which listens to him over the radio, he is also an oracle. He speaks through his whole personality and much of his address or sermon is lost in printed form." Dr. Cadman has won his audience by combining attractiveness of presentation with religious inspiration. He uses wit, subtlety, and human appeal freely so that one *enjoys* listening to him. That is the reason for the greatness of his service; it is successful analysis of what does the greatest good to the greatest number.

Experience of the Department of Agriculture.

By following the public mood around the clock, we find several periods of the day when educational features are acceptable. No organization has greater experience in planning the presentation of informative material than the Radio Service of the U. S. Department of Agriculture, of which Sam Pickard is the Chief. The Department prepared numerous series of talks on agricultural subjects which are used by a score of stations serving agricultural areas. Mr. Pickard's experience proves the noon hour, preferably between 12:30 and 1:00 p.m., as the best time of day for farm programs, with from 6:30 to 7:30 p.m. as the second preference. Later evening hours, he believes, should be reserved for music, because people want to forget their working-day problems.

"Certain rules must be observed by the radio writers in preparing the material for the department's twenty-two educational programs," said Mr. Pickard in a recent

interview to *The New York Times*. "That they are well received is evidenced by the thousands of letters and telegrams received daily from listeners in every section of the country.

"The subject matter must have 'teeth' in it—real punch in the form of fresh, new, helpful information. The program maker dare not bore his audience with restatement of old facts. He must sense the questions his audience may be asking and without waste of words or attempt at oratory.

"Information must be clearly and interestingly presented. Every fact must be dramatized to the fullest extent—be prepared with a friendly tone and ring true when spoken. All scientific terms and words are eliminated.

"The radio program maker edits both with his ears and his eyes to determine whether the copy 'speaks smoothly.' He reads it aloud to test its 'ear quality,' for words and sentences easily read may sound awkward when spoken. Difficult consonants are avoided. Construction is simplified. It is the listener's ear, not his eye, that must be made to register. He must be made to feel that he is being 'talked to' or 'visited with' rather than 'lectured at.' There must be dignity in the program. Cleverness must be genuine.

"But all these efforts are of no avail unless the voice at the microphone is pleasant, friendly, and effective. The microphone artist must show genuine interest in his audience and in his subject matter."

Early Morning Hours.

The early morning hours, between 6:30 and 8:00 a.m. are already being used extensively for the broadcasting of setting-up exercises. Before this experiment was begun, anyone suggesting to the usual broadcasting program director that six-thirty in the morning is a good time to begin a program, would have been recommended as a subject

for a psychoanalyst. The Metropolitan Life Insurance Company, broadcasting setting-up exercises between 6:30 and 7:45 a.m. through WEAJ, WRC, WGR, and WEEL, has been rewarded in the course of twenty-one months with 218,600 requests for its exercise chart. Apparently, huge audiences can be built up for almost any hour of the day if a suitable program subject is found.

Setting-up exercises appeal particularly to those whose occupations do not involve physical exercise. The white-collar class is one of the most important fields for the insurance company. The program represents an accurate analysis of audience needs of the hour at which it is presented.

There are other classes of society just as valuable to other commercial sponsors which can be brought to the loudspeaker in the early morning hours by evolving suitable programs.

A farmer's information and news service, broadcast after his arduous morning chores are completed and when he has returned to the farmhouse for breakfast, may be worked out. These programs might comprise brief news and weather reports, summary of market conditions, and timely advice on farm management. Of course, all farmers do not have breakfast at the same moment, but a program of sufficient value would encourage them to make slight readjustments in their schedule in order that they might take advantage of it.

Later Morning Hours.

From eight to ten o'clock in the morning is a period of problematical value because people are then going to their places of work and the duties of the home are too absorbing to permit attention to the loudspeaker.

An opportunity to appeal to housewives, prior to their marketing time, presents itself between ten and eleven o'clock, with obvious program possibilities. In centers of population, it is conceivable that even direct advertising of bargain

sales could be successfully broadcast without arousing antagonism. This is contrary to the general trend of broadcasting and is an exception to the rule that advertising in any form is destructive to the sponsor and the station presenting it. A brief bulletin of bargain sales, devoting a minute to each of ten important department stores, would attract an immense audience of women and be of direct sales value. But a half-hour period of advertising would be too great a demand on time and would not, therefore, attract nearly so large nor so attentive an audience. A similar service at any time during the evening would arouse a storm of protest.

The opposition to the use of broadcasting for direct advertising is based upon propaganda of printed mediums designed to destroy a potential rival, the certainty that short-sighted station managements would abuse the privilege of using radio for advertising purposes, as indeed they already do, and the obvious antagonism of the radio audience to having advertising forced down their throats, or rather, their ears. While there is no united guiding power to which broadcasting managements look for help in shaping their policies, radio is better off without any advertising at all. Nevertheless, could it be restrained along the lines just indicated, direct advertising would serve a useful and acceptable service to both listener and sponsor.

Special services to schools would build up the value of radio as an adjunct to education. Broadcasting of lectures for reproduction in schoolrooms has been attempted at various times as an experiment, but it will require a regularity of service before widespread use of radio in schools is an accomplished fact. Many rural schools have radio equipment and, in midwestern states, educational authorities have been urged to broadcast programs to supplement the work of teachers, especially for schools which have a limited staff. A microphone serving thirty or a hundred classes instead of one could attract great educators. Any

subject of sufficient appeal which can be effectively presented by lectures lends itself to microphone treatment.

Morning Not Limited to Household Talks.

The latter part of the morning is especially adapted to the interests of housewives. There is a tendency to confine morning radio talks to household subjects and to women's problems, but this is rather a narrow view of what attracts the interest of women. There is a wide range of cultural subjects, offering opportunity to win goodwill, open to the morning broadcaster.

Morning newspapers are not usually read by women, either because the wage earner purchases the morning paper on the way to work or takes a delivered paper with him to read on his journey. The absence of the morning newspaper in the home might well be taken advantage of by a radio "town crier" who interprets the news of the day, with special emphasis on features of greatest interest to women.

A steady outpouring of lecture material is unlikely to hold interest long. Speech requires almost the undivided attention of the listener, a thing which cannot be won for more than fifteen or at most thirty minutes of the morning period. A station management which balances talk with music so that the loudspeaker is kept turned on steadily, demanding undivided attention for only a short period, is likely to win an established morning following. Radio music is welcome in the morning, serving as a pleasant accompaniment to home duties. As much consideration to program desires should be given to the planning of morning programs as to those of any other time of the day.

The Noon Period.

Just before and after noon is the established time for the broadcasting of stock and grain reports, news flashes, and weather reports. Radio receivers are not yet accepted in business offices, but when information services of suffi-

cient value are available, the radio sets and the audience will develop. The entertainment value of radio is an added inducement for its use in an office, because it can be installed in rest rooms or be used where large bodies of workers are engaged in mechanical tasks. Music has been put to industrial use successfully in cigar factories and establishments where monotonous operations are carried on under quiet conditions.

In places where a radio receiver would interfere with work, it is possible to equip receivers with inexpensive lock-and-key arrangements, so that they cannot be used for entertainment purposes, but only for reception of business news broadcast at certain predetermined periods. Switches operated by clockwork arrangements might be useful in this connection.

From twelve to two o'clock, luncheon music for entertainment in the home and at public eating places is a natural function of the broadcasting transmitter. Casual observation in suburban sections, even during the summer season, indicates a large field of usefulness to such music. It is one of radio's inherent disadvantages that the size of such audiences cannot be determined to any degree of accuracy. Nor, for that matter, can the actual value of a page of printed advertising be computed. The position of an advertisement, whether in the front or the back of the magazine, whether a right- or a left-hand page, may affect the percentage of circulation which it has opportunity to attract by 50 per cent. It may be estimated, however, that a station which has been broadcasting acceptable luncheon music for six months or more may win an audience perhaps one-fifth to one-third the size of its regular night audience.

Early Afternoon Programs.

From two to three o'clock is another opportunity for a brief period of educational and informative matter, appealing to the woman in the home. Brevity and regularity of the service is essential to establishing a sizable audience. News

of available amusement features of the evening, since the scope of daytime broadcasting is practically local in character, is in order. When daytime programs are transmitted by stations of immense power or when chains of stations are utilized, the local appeal is no longer possible. But there will always be stations of local appeal which can serve by the dissemination of local news. As in the morning period, the listener's undivided attention cannot be expected for more than twenty or thirty minutes, and consequently there is a limit to the useful length of a "talk" period.

From three to five o'clock, casual entertainment features, which do not require listener attention but serve as a background to home duties, have a useful place in the program. This does not mean that that listener attention cannot be won in this period, but a program broadcast directly after the luncheon period is more likely to hold attention. Light music as suitable accompaniment to sewing or bridge has a greater possibility of holding a late afternoon audience than a recently arrived explorer from Siam.

Children's Feature in Late Afternoon.

A period of exceptional possibilities, so far used to little effect by broadcasting stations, is the one from 5 to 6. This is especially suited to the needs of children, because adults are usually preoccupied by the peak of home duties, or are returning from work. Mothers would appreciate this means of keeping their children occupied during the time when they are busy with the preparation of the evening meal. By this, I do not mean to encourage the revival of the whimpering bedtime story which became the butt of humor, but programs carefully planned to hold the interest of children of all ages. Interesting travel talks with good musical background, presented by imaginative speakers who do not consider their task as a perfunctory duty, would instill the desire to travel during the most impressionable period. Although a trip to Europe or to

Yellowstone Park may not be within reach of most of this audience for twenty years or more, the fact that travel is usually the gratification of a lifelong desire justifies the sponsorship of travel talks coordinated with the study of geography and history. This period lends itself to any subject which may combine music or drama with lectures in its presentation.

To win a large audience in this period requires the employment of good showmanship. A dry speaker on the signing of the Declaration of Independence will not serve; but a dramatic presentation, employing voice actors to take actual parts of characters of history, could give the events a lifelike realism. The mere reading of a history or textbook as a means of appealing to youngsters would not serve as a substitute for studying the textbook itself but dramatic presentation would make the subject of history and geography of much greater interest to school children. Literature, civics, music, languages, and many similar subjects lend themselves to radio treatment.

The dinner music period between six and seven thirty o'clock is already well established. Music should be planned to lend itself to subdued reproduction as a background to the evening meal without requiring especial attention to the names of selections.

Evening Educational Period.

Immediately following the dinner music period is a time suited to serious educational effort. Whether this period is from 7:30 to 8:00 or 7:00 to 7:30 p.m. depends somewhat on the habits of the listening audience. In rural districts, the evening meal is more likely to be ended by seven o'clock; in suburbs around very large cities, perhaps seven-thirty is the average. Those who have evening engagements usually find it necessary to make preparations for departure by seven-thirty. The most useful half hour for the serious educational talk therefore seems to lie between 7:15 and 7:45 p.m. This evening educational

period is the only one in which practically the entire potential audience of a station can be drawn upon for a serious purpose.

Half an hour a day devoted to serious educational effort is amply sufficient to bring about a significant change in the information and learning of the average individual. After school years only a small proportion of the adult population devotes that much time to serious self-betterment.

University extension courses, which give close cooperation with the listener, indicate the serious attention which may be won by a well-planned educational effort. Agricultural colleges, broadcasting series of lectures of an advanced nature, have reported student followings of thousands. On the other hand, many educational courses have failed because they have followed quite closely the university curriculum. The radio audience is a cross-section of the general public and its tastes cannot be judged on the university campus. Romance, drama, and imagination must be mixed with radio education if its value is not to be closely confined to those already well informed on the subject offered.

Evening Entertainment Period.

The remainder of the evening is best suited to entertainment purposes. A speech by the President of the United States or a visiting dignitary who has aroused national interest and attention has a right to the microphone, but no one who speaks only by the right of authority and knowledge of a subject is likely to hold an audience. Voice attractiveness, unusual microphone qualities, and a message on a subject then uppermost in the public mind is the least that can hold an audience in the face of a society dance orchestra. The announcement of a speaker is usually the signal to tune to another station. Fame and curiosity may attract; mere authority on a subject not recognized as of general interest by its title is rarely

able to change the listener's mood from a desire for entertainment into one for information.

Between eight and ten o'clock in the evening, the audience holds fairly constant. There is probably a small dropping off during the last hour, which increases fairly rapidly at the end. The normal audience, not augmented by any feature of special merit, is a surprisingly large percentage of the total potential audience. For one listener who claims he never turns on his radio set any more, there are a hundred who listen five nights out of seven. Radio cannot be properly compared with the phonograph, because the former has the advantage of continuing program variety and does not require constant attention after it is once adjusted to a satisfactory program.

Augmenting Audience by Special Appeal.

Large as the regular audience is, at this evening hour, a great broadcasting event, properly advertised, may augment the normal audience to immense proportions. This applies not only to sporting events upon which public attention is centered through newspaper attention, but also to entertainment programs which are supported by newspaper advertising and publicity. Faced with programs of average value, an outstanding feature is able to win to itself members of the audiences of all rival stations serving its area.

No matter how high the standards which may be established for the ordinary run of programs, it is comparative attractiveness and novelty which win any outside the regular audience of the station. The field for exercise of originality and ingenuity will never be exhausted in radio entertainment. What is extraordinary and outstanding today is commonplace and attracts no special notice tomorrow. If radio programs reach a final level and new ideas and greater sound presentations are no longer forthcoming, radio as a whole must face a waning public interest. It is the continuing novelty of radio which gives it ascend-



FIG. 30 — Range of WJZ, as indicated by letters received during the first few days of its operation on high power, indicating the large spread of listeners outside of a station's service range. (Courtesy of National Broadcasting Company.)

ency over the motion picture and the phonograph in the number of hours for which it holds the attention of its average follower.

Selecting the Hour for a Feature.

In seeking the best hour for a feature, the sponsor has to consider not only the normal audience of the particular hour selected but also the distinctiveness and attention value of his feature in comparison with all those on the air at that particular hour. Between eight and ten o'clock in the evening, he may assume that the largest potential audience is seeking radio entertainment of the lightest and most diverting type. A well-planned continuity may hold the listener effectively for an hour of that time, but his undivided attention cannot be secured for two major features in a single evening. At least one of two such features becomes of casual interest, serving as a background to other activities.

Showmanship for Time, News, and Weather Reports.

• Ten o'clock is a good time for the broadcasting of brief news reports, weather forecasts, and time signals. Ten minutes devoted to this may hold the attention even if the information is delivered in the customary cut-and-dried style. Rebroadcasting of time signals from the Arlington Naval Observatory is tedious and needlessly accurate. Novel ways of transmitting time could be evolved for the benefit of a watch or clock company, which would attract much greater interest and attention. Even weather reports and news items lend themselves to radio staging. A humorist could deliver a weather report which would not only get over the information, but could do it in a manner which no one would wish to miss.

From ten to eleven o'clock, we face a falling audience which is seeking entertainment of a lighter type. Dance music is highly acceptable; popular singers, military bands, and even symphony orchestras are useful in providing a background of music for social affairs. To most listeners at

this hour, radio serves as casual entertainment, although a great event may also attract an exceedingly large audience if suitably heralded by advance publicity. While there is a natural falling off of the audience, given sufficiently urgent stimulus by unusual program value, a huge special audience can be attracted at ten o'clock in the evening.

Long-distance Hours.

The long-distance element begins to exert its influence between eleven and twelve o'clock. In the winter season, the audience scatters far beyond the normal service range, but its thinned ranks and fleeting attentiveness to what is broadcast make its goodwill value problematical. The greatest goodwill value attaches to dance music programs, serving social affairs. Attentive listening to a continuity program could be expected only from a minute fraction of the late-hour audience.

The last hour of any appreciable audience is between twelve and one o'clock. Features presented so late should be interspersed with very frequent announcing, because at least two-thirds of the listeners then remaining at the radio receivers are hunting long-distance stations. Naturally the audience is small.

Seasonal Variations.

There is a heavy falling off of listening audience during the summer season. This is not due so much to atmospheric conditions and shorter reception ranges attainable as it is to the greater attractiveness of other ways of spending the time. A radio servicing organization in New York, employing a score of men in keeping radio sets in working condition, reports that although they are practically idle from the middle of June until September, there is always a great stimulus to their business immediately following a succession of rainy or unusually cold days. People, confined indoors, find their receivers out of order, and phone for a service man to restore them to full effi-

ciency. Likewise, in midwinter inclement weather causes especially heavy demands for their services. An important event, such as a world's championship boxing contest, the world's series, or an important presidential speech, causes a rapid rise in service calls. Apparently the falling off in summer listening is due largely to the more advantageous position of outdoor amusement in competition with radio rather than to less effective functioning of the radio receiver itself.

Thus the seasonal fluctuation in radio interest bears some relationship to the attractiveness of outdoor amusement. In actual sales, retail turnover in maintenance accessories falls to less than 20 per cent of the midwinter peak. It does not, however, follow that there is an 80 per cent fall in the size of the listening audience. People do not use their radio sets as often during the summer as they do in the winter months, thus prolonging the life of their maintenance accessories and tubes for an extra month or two. Those who would normally require battery renewal in July or August, find the old set of batteries serves until September because they cut their normal listening period in half. Lowered efficiency of the receiver does not make much difference in summer because reception is principally limited to high-power local stations. Reception from moderate and long distance is not enjoyable because of atmospheric conditions.

Building on Consistency.

The value to the sponsor of consistency in appearance in building habitual listener followings is usually sufficient to warrant continuance of broadcasting throughout the summer. Certainly a reduced audience is served, but that it fades to pearly nothing, as some believe, has not been proved. A trip through suburbs on a summer evening, where loudspeakers may be heard through open windows, often shows an encouraging number of radio listeners and sets in operation. A regularly expected feature has a

much better chance to attract casual summer listeners than a program event which has no established position in the radio calendar.

Regularity of appearance is easily emphasized by announcing and by regularly repeated program openings and closings. The A. and P. Gypsies call attention to their regularity of appearance in opening and closing announcements and by playing the same characteristic number, "The Two Guitars," as the first and last number of each program. The Happiness Boys begin every program with a tuneful ditty, "How d'you do, everybody, how are you," etc., closing with a goodnight song as follows:

"Goodnight, everybody, goodnight.
Goodnight, everybody, goodnight.
Don't forget you have a date
Every Friday night at eight,¹
So watch out and don't be late.
Goodnight."

The idea of consistency of appearance is firmly stamped in the listener's mind.

Selecting the time for broadcasting is not a matter of deciding upon the "best hour for broadcasting," so much as finding the most effective time to perform a radio service appealing particularly to a sponsor's regular and prospective customers. The indiscriminate quantity appraisal of the radio medium will gradually give way to a study of its powers of establishing selective audiences for particular purposes and appeals. The mass appeal in the evening entertainment hours by the presentation of programs which have as their object pleasing every possible class will always remain the most important function of the radio medium, so far as commercial broadcasting is concerned. The more limited audiences at morning, afternoon, and early evening hours, however, will be recognized as of great value, serving special audience groups with programs having constructive service rather than with casual entertainment as their objective.

¹ Recently this feature has been changed to 7:30 p.m.

CHAPTER XVI

GAGING THE VALUE OF BROADCASTING

It is an unfortunate quality, inherent in broadcasting, that it does not readily offer supporting evidence of its value. Occasionally a program event brings in a flood of letters bearing proof that a particular program has won audience approval. But an avalanche of applause mail does not answer the question whether the goodwill influence so demonstrated translates itself into buying power.

Test of Broadcasting's Effectiveness Desirable.

A sponsor who has been paying a substantial broadcasting bill for months, even with full knowledge and appreciation of the fact that the medium does not give unmistakable evidence of its value, is likely to feel uncertain, sooner or later, as to the wisdom of the expenditure. He then demands a check of broadcasting and the preparation of a brief as to why it should not be discontinued. The usual outcome is that the broadcasting appropriation is curtailed or cancelled, because facts in support of broadcast expense are not easily assembled. Therefore, gaging the value of broadcasting is a subject worthy of thought to every commercial broadcaster, regardless of how confident he is at the moment of the effectiveness of the medium. Sooner or later, he will regret any opportunity he has overlooked to secure a measure of broadcasting's value.

When beginning a commercial broadcasting plan, its sponsor should decide at the outset whether he will demand proof of the value of the medium. Evidence cannot be suddenly developed. Plans must be carried out over a period of months to develop any kind of case for broadcasting. In addition to thought, it requires expenditure

for printing and clerical help which must be reckoned in the broadcasting bill.

Sponsors Who Recognize Intangibility of Medium.

Some sponsors take a broad view of the influence of broadcasting and do not ask for figures to justify their expenditure. Usually such concerns are experienced in large advertising expenditure and have thoroughly studied the broadcasting medium until they are satisfied of its potential value. Their business probably meets the principal requirement of a successful broadcaster: a product of small unit cost with high turnover, facing close competition in price and performance, or sold in volume such that the percentage of broadcasting cost per unit of sale is very small. Their analysis of the radio audience convinces them that it is largely composed of sales prospects. The principal concern of such a sponsor is that his program be highly acceptable to the audience.

Those who are most distressed by the intangibility of broadcasting results are users to whom the broadcasting appropriation is a great sacrifice. Broadcasting should not be undertaken at the expense of curtailing newspaper and magazine advertising appropriations which have proved their results by tangible and profitable returns. Broadcasting is supplementary to such advertising. Its results are intangible, and it can never give the sponsor the same satisfaction which tangible results return. It takes time and consistent effort to build up broadcasting reputation. A spasmodic effort, curtailed because it has not yielded quick and definite return, is a total waste. It is wiser to defer goodwill broadcasting until it can be launched on a lasting scale thoroughly coordinated with uncurtailed advertising expenditure.

Relation of Broadcasting Expense to Advertising Appropriation.

Among the large national advertisers spending a million dollars or more a year in newspaper, magazine, and bill-

board advertising, only one or two spend an amount on broadcasting equivalent to 5 per cent or more of their advertising appropriations. Most of them spend sums equal to 1, 2, or 3 per cent of their appropriations. It is not possible to give an accurate scale of broadcasting costs because most concerns are secretive and do not reveal the cost of their artists.

Very few popular half-hour programs through the large chains, employing but two or three artists, cost less than \$250 a week for artists and \$300 a week for time on the air. Even this modest presentation would total \$30,000 a year. A six-piece dance orchestra can be hired for \$400 a week, making a broadcasting bill of not less than \$35,000 a year. A feature employing a good chamber-music orchestra, a quartet, and a guest artist of widespread reputation, may spend as much as \$2,500 for a single performance. Utilizing a long chain of stations may add \$4,000 a week to station time. Maintaining weekly programs on that scale brings the broadcasting bill up to \$300,000 a year. Justifying an expense of this kind to an executive accustomed to accurate production cost accountants' figures is often a difficult problem.

Excessive Expenditure for Broadcasting.

Small concerns of local influence sometimes spend an amount for broadcasting which is equal to a large percentage of their advertising appropriation. These are the most likely to demand unassailable proof that their relatively heavy expenditure is justified. This gives rise to most of the abuses of the broadcasting medium by the attempt to use it for advertising purposes. Only in those cases when a broadcasting exerts strictly local influence, without competition from near-by stations, is it possible to serve small local concerns without risk of incurring their ultimate dissatisfaction.

Among large concerns, there are few having justification for spending an amount equal to more than 5 per cent of

their advertising appropriation for broadcasting purposes. Exceptions are those able to demonstrate their products without detracting from the entertainment value of their feature. The United States Playing Card Company, with its bridge instruction, serves both a goodwill and a demonstration purpose. So also do the elaborate programs presented by the Victor Talking Machine Company,

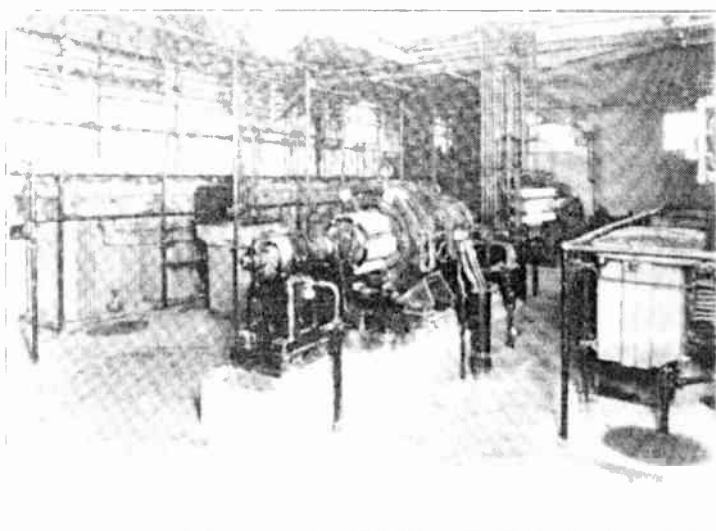


FIG. 31.—The filament current generator, chokes and transformers at WJZ, Bound Brook, N. J., indicating the magnitude of the power equipment used in the largest broadcasting stations.

because popularizing their artists is, in fact, a demonstration of the quality of their records. Manufacturers of radio accessories not only gain the goodwill of prospective consumers but win recognition in the trade by their support of the foundation of the industry, good broadcasting. Consequently, they may wisely spend a larger proportion of their gross revenue than may concerns outside of the radio field.

What is the Real Value of Broadcasting?

Those concerns which demand proof of the wisdom of broadcasting must face the fact that they cannot obtain conclusive evidence. The sales impulse of the ultimate consumer is too complex to bear analysis even if it were possible to cross-examine him each time he makes a purchase.

A sales manager who attempted to determine the influences which make his salesmen effective, with the accuracy sometimes demanded of broadcasting, would be regarded as an eccentric peculiarity. Such a sales manager might try to assign values to each of several influences contributing to the fruition of the buying impulse. He might conclude that a salesman who turns over \$147,000 worth of goods in one year owes \$84,300 of those sales to the good reputation of the product, \$17,450 to the influence of advertising, \$32,300 to the effective and engaging smile of the particular salesman in question and \$12,950 to his ability to tell good stories. Such an analysis would be regarded as ridiculous and useless.

The influences causing a purchaser to ask for a particular brand of soap chips, or any other article, are difficult to analyze. In one case, perhaps 32 per cent of the sales impulse may be due to the fact that the name of the brand is established in the customer's mind by the manufacturer's promotion efforts, 28 per cent to the attractive appearance of the package, 36 per cent to the satisfaction the product has given in the past, and 4 per cent to the effect of a conversation with a neighbor seven years previous. What percentage of that 32 per cent ascribed to name familiarity may be attributed to broadcasting, billboards, newspaper and magazine advertising, window displays, and souvenir calendars? Definite proof of the sales value of the goodwill influence produced by broadcasting is an averaging of the accurate answer of that question by thousands of retail purchasers. Until psychologists and scientists can look into the customer's brain, without his knowledge, as he

makes his purchases, the advertiser must content himself with indefinite and inconclusive analysis of the sales impulse. Broadcasting is no more intangible than any other form of sales propaganda.

Two Phases of Proof.

In the absence of more definite information, there is much supporting evidence which the commercial sponsor can gain as to the acceptability and sales influence of his broadcasting effort.

Proof of the broadcasting medium has two phases: first, that the program itself wins goodwill associated with the sponsor's name; and second, that the goodwill so attained actually helps to sell the product.

Spontaneous Program Approval.

In respect to the first, the most conclusive evidence that a program wins goodwill is the spontaneous applause of the radio audience gained without solicitation. Anyone who goes to the relatively great trouble of writing a letter of response without any inducement or direct request is certainly pleased with the program. No one can offer evidence that one such letter is an indicator of 500, 1,000, or 10,000 pleased listeners. What proportion of the whole audience sends applause mail is a matter entirely open to question.

Charles W. Burton, Broadcasting Manager of WEEI, Boston, Mass., stated in a report to the Boston Chamber of Commerce that he estimates the average number of listeners per letter received as 500. He indicates his acceptance of the fact that mail response will be even smaller in the future, as may be noted from the following quotation:

"Why should stations expect applause letters anyway? How many persons write to a talking machine company after hearing a record they like? Does anybody write to a publisher of a book he has enjoyed? Of course not; not

often, anyway. Then why should stations adopt the attitude that it is the duty of the public to acknowledge in writing every broadcast program that meets with favor? However, a great many listeners do write, and we love them for it. We hope they will continue to write and that their numbers will increase. But, we are not going to weep and wail if a half million letters don't follow every program that tickles the taste of the dial-twisting audience.

"Even sponsors of goodwill programs are not disappointed if their efforts are not productive of thousands of letters each week. If their program is talked about, they are satisfied. One advertiser who was hard to convince of the unimportance of mail bewailed the fact that an average of only fifty letters followed each weekly broadcast. He feared that the public was not listening. In order to test the efficacy of his radio campaign, we telephoned to several stores handling his product. Each store reported that it was temporarily out of the stuff, that evidently the manufacturer could not produce it fast enough to fill the demand."

How Many Never Write Applause Letters.

The proportion of letter writers to total listeners cannot be determined through questionnaires; people who answer questionnaires are preponderantly letter writers. It must be gained through personal inquiry. Questioning 160 advertising men resulted in admission on the part of but four that they had written applause letters. On that basis, one letter would represent forty listeners for an entire year, or perhaps 500 to 1,000 program events. Of course, the investigation in question is entirely too limited to be of any value. However, no matter how thoroughly the percentage of response is studied, with a view to obtaining the average number of listeners represented by each letter, no satisfactory figure can be deduced. The individual program or offer has an effect which makes average figures totally useless. A strong appeal to senti-

ment may tenfold or hundredfold the percentage of listeners who respond; so also may a desirable premium. A very pleasing and acceptable program, which does not work up its listeners to a high state of enthusiasm, lacking dramatic or emotional effect, may win very valuable goodwill, yet arouse a minimum percentage to writing a letter. There can be no definite value applied to a letter of applause.

Special Offers to Stimulate Response.

Another class of response is that gained in return for a special offer of some kind, a desirable booklet, a free premium, or a souvenir. Every person responding to such an offer is giving evidence that he listened to the program to the end. It cannot fail to have won goodwill if many did so.

The percentage of the total audience in this case to respond is proportionate to the desirability and appeal of the premium offered. The wider its appeal, the larger the percentage. But again, no one can say definitely that 3 per cent or any other percentage of those who enjoyed can be counted on to respond to a particular appeal. All that can be said is that such response is less in volume today than it was in the early days of radio broadcasting.

Employee Questionnaires.

Questioning of large numbers of a concern's employees is likely to result in misleading evidence. If the questionnaire is distributed through the entire strata of the force, comprising every grade of worker, a good many may express approval of a program which they never heard rather than incur any reflection upon their loyalty. Again, if the questionnaire is confined to executives who have learned to express their frank opinion, they are likely to be too critical, and they fail to represent an average group. In endeavoring to obtain an expression of opinion about a program, the opinion of the president of a half-million-

dollar corporation should rank no higher than the true expression of a file clerk.

Sometimes employees can give valuable aid, as did those of a publisher who questioned his 800 workers as to the popularity of a broadcasting station which he was about to purchase for a considerable sum of money. It was discovered that only one of these employees was able to hear the station in question.

Expert Critics.

Another method of gaining an insight into the attractiveness of a program feature is by the appointment of a group of competent program critics, selected for their enthusiasm about broadcasting and their regular listening habits. If the consolidated opinion of a group of critics is considered in an advisory way, it may be helpful, but a group of critics should not be permitted to become the dictators of a program policy. One has only to regard the predictions of success or failure made by dramatic critics to realize how often studied opinion fails when compared with natural, spontaneous opinion.

Once a person is specially appointed or assigned as a critic, his judgment is warped. A question from a superior who takes pride in his personal direction of broadcasting is more than likely to result in tempered and favorable criticism; acquaintance with the program director causes a personal bias, either favorable or unfavorable. When criticism is a perfunctory duty, it is likely to tend to the negative. The opinion of competing program features rises magically in the minds of appointed critics. Their reactions are not average reactions, tempered as they are by personal feelings and extraneous influences.

The opinion of a respected friend often completely overthrows the judgment of an inexperienced critic. Only long practice at unbiased analysis eliminates these various influences, which are more potent than is generally recognized.

Spontaneous opinion is most difficult to obtain. A program director, commuting to New York, secured his opinions of public reactions by overhearing fellow suburbanites discussing the program events of the night before on the twenty-minute ferry-boat trip which he took daily. After four or five years of broadcasting, discussion of radio programs still ranks with prohibition and baseball. It is not unusual to obtain ten or twelve spontaneous and unbiased reactions in a few minutes by this method, and they are worth more than fifty or a hundred requested opinions.

Using All Four Methods.

Although the individual effectiveness of each of the four methods, spontaneous response, response to special offers, employee questionnaires, and the opinion of special program critics, are each inconclusive, the commercial broadcaster may form a fairly sound opinion by analyzing the combined results of the four methods. For a number of programs, he may rely upon spontaneous response. Each two or three months, he may make a special offer of widespread appeal for two or three programs. At other intervals, he may experiment with booklets limited to those specially interested in his field of products. At infrequent intervals, he may question large groups of employees, and now and then enlist the services of qualified critics. By varying the sources of his evidence he is much more likely to secure constructive opinion than by entire dependence upon any one established source.

Testing the Sales Effect of Broadcasting Goodwill.

In securing evidence that the goodwill obtained by successful broadcasting actually translates itself into sales, the commercial broadcaster also has several courses open to him. In his applause letters, he will find occasional writers who state that they purchase his product in preference to others because they like his broadcasting pro-

gram. In thousands of letters written in response to Eveready Hour, only a scattering few mention that they are users of Eveready batteries, but the number is sufficient to be encouraging. It is safe to conclude that there are hundreds, if not thousands, of cases unnoted to each one writing specifically that broadcasting is the sole reason for the purchase of a particular product.

The vice-president of a large paper-box concern, to cite a specific case, included a paragraph in a letter of comment to Eveready Hour, as follows:

"In my small way, I try and reciprocate for your concerts, and in our factory we have been using Eveready batteries whenever we can, and I feel that is our contribution for your fine concerts and as for the batteries they are good too, as I haven't heard a word that they haven't stood as well as any we have ever used."

A prominent manufacturer of carburetors wrote: "I feel very much like placing an order for one gross of Eveready 'B' batteries as the result of the wonderful concert you rendered Tuesday, January 11."

The two following excerpts are from letters signed by women listeners:

"People who enjoy good music and clean entertainment cannot help but be impressed with the financial obligation that you must meet in arranging these programs and in this thought I can hardly picture anyone purchasing anything but an Eveready flashlight or battery when they are in the market for that commodity."

"I don't know how we listeners-in can repay you good people who supply us with entertainment on the air, only in this, that you have our everlasting goodwill, and that we do our little bit by calling for those products gotten out by you."

A prominent commercial broadcaster, distributing a food product, reports that the business within fifty miles of his factory has remained about stationary year in and year out, so that his salesman could tell, almost to a day, when it was time to go around for re-orders. Since broadcasting, there

has been such marked stimulation in sales that this broadcaster receives two and three re-orders in the winter months, his dullest season. The gross sales of the product since broadcasting are three million units above the previous level and there is nothing other than broadcasting to account for the increase.

Sometimes unexpectedly large orders result from a successful broadcasting effort. A jobber, listening in on a set rented at a New York hotel, wrote out an order for 60,000 radio tubes because he enjoyed a tube manufacturer's program. A manufacturer of radio accessories reports scores of dealers who buy his product in preference to others because he supports broadcasting with good programs. This is the rarest kind of evidence of the value of broadcasting, and its very existence in quantities however small should be encouraging to the commercial broadcaster.

Comment Cards with Product.

For packaged products, a return postcard may be included with various questions to check off about the broadcasting program, such as:

"Do you hear our regular radio program, broadcast at 8 p.m., through Station WPX?

"Do you like it?

"Did it influence you in the purchase of this article?"

Admittedly, it is a large concession on the part of the purchaser to go to the trouble of responding to such a request, but it gives satisfactory evidence that the program is making itself felt if even as few as one-fourth of 1 per cent actually reply.

Questioning the Trade.

Concerns having sales forces which solicit the retail trade may instruct their salesmen to question every dealer whom they visit during a given week to inquire about the effect of their radio programs. Very few dealers have

cause to know why customers prefer one brand of tooth paste to another and, if any evidence is brought forward or if an appreciable percentage of dealers say they feel sure broadcasting has helped, it should be considered satisfying evidence.

Applause cards furnished dealers with suitable means for display may be used to direct radio listeners to local dealers by mention in closing announcements. At the same time, a gage of program popularity is secured. An applause card should not be complicated or difficult to fill out. The best results are obtained if the cards are left with the dealer to accumulate rather than offered to the listener to mail himself. The trouble and expense is sufficient to deter many from filling out cards after they have taken them home. The display of cards also helps to impress the dealer with the value of the sponsor's support to his business.

In Chap. XIV, the subject of offering booklets in a manner which selects any desired class of the audience was discussed, and it was pointed out that a booklet of broad general appeal may be used, with the object of securing the largest possible response, or the appeal may be narrowed down to highly interested prospects in a limited sphere of special interest to the sponsor.

By experimenting with a number of different offers, the commercial sponsor may find a booklet which appeals to large numbers. If he would go farther to determine the sales influence of goodwill, he may include with his widely distributed booklet some form of coupon or premium offer which may be taken advantage of by calling upon the retail dealer. The radio program is thereby made the means of securing an actual call on the dealer by persons who have expressed interest in the product. This is a close tie-in of the broadcasting effort, and the response of only a few hundred to such an offer is indicative of a very much larger number who are influenced but not sufficiently

to carry through the various steps involved in an actual call on the dealer.

Although it is possible by the various methods suggested to secure some evidence by which to gage the value of the broadcasting effort, the more specific the evidence demanded, the greater the cost of securing it. There is not only the expense of preparing the booklet or souvenir and producing it, but a large outlay for postage and clerical work. The main objective of the broadcaster is the winning of goodwill and, once he has satisfied himself that he is accomplishing results, in most cases it is advisable to divert the expense of securing proof of the medium to the presentation of still better programs of greater effectiveness.

CHAPTER XVII

THE RELATION OF BROADCASTING TO ADVERTISING AND PUBLICITY

The opposition of newspapers, magazine and newspaper trade journals, and advertising periodicals to commercial broadcasting is the natural hostility to a newcomer threatening to disarrange the established order. Some advertising publications have waged a steady fight against the growth of commercial broadcasting, seeing in it a medium which will work to the detriment of advertising in general. Newspaper publishers have been hostile, believing that large-scale use of the medium will result in diminished newspaper advertising appropriations. Most of these fears, however, have been partly dissipated, as the function of broadcasting has been found to be only supplementary to established forms of sales promotion.

Broadcasting at the Expense of Advertising.

Broadcasting which is undertaken at the cost of reducing expenditure in proved and established mediums of printed advertising is better not attempted. The goodwill effect of broadcasting helps the work of other sales means but, without them, is comparatively helpless. A sponsor whose name is made familiar to the public through broadcasting must offer opportunity to capitalize that goodwill by widely featured advertising and well-distributed direct-sales effort. To sacrifice either of these is like removing a stone from the foundation of a building in order to complete its second story.

Commercial sponsors who meet the expense of broadcasting by cutting into advertising expenditures of proved effectiveness are frequently those who sooner or later

demand unmistakable proof of the wisdom of their course. Rarely does radio offer such evidence, and consequently the result is in the end a dissatisfied user of the medium.

Broadcasting Has Paid Its Newspaper Debt.

Although the newspapers have given liberal support to the growth of broadcasting, especially in its early days, they are now endeavoring to distinguish, in their publication of news and programs, between radio as an entertainment medium and radio as a commercial goodwill medium. In larger cities where newspapers are united in a publishers' association, rulings have been passed to the effect that no publicity of any kind be given commercial broadcasting events. The relation of the newspaper publisher to radio broadcasting is briefly summarized in an editorial appearing in the December, 1926, issue of *Radio Broadcast*:

Every invention faces the opposition of the service it replaces. Radio broadcasting is afflicted with an unusually large number of opponents, because its potentialities have been so greatly exaggerated in the public imagination.

Perhaps no group has better cause to watch the progress of radio broadcasting than newspaper and magazine publishers. The trade papers of those industries overlook no opportunity to point out that radio, which they claim to have "nursed from a failing infant to maturity," may some day slowly engulf them. Radio broadcasting threatens the future of newspapers about as seriously as automobiles threaten the shoe business.

As to radio's alleged debt to the newspapers: when broadcasting spread like wildfire in the first year of the radio boom, newspapers took it up with considerable enthusiasm. They published radio news because it stimulated the sale of newspapers. One New York paper, for example, by publishing a radio supplement, nearly four-folded its Saturday circulation. Another New York paper has taken in practically a million dollars a year in radio advertising for several years. Five radio concerns spend a total of a million dollars a year in newspaper advertising alone. Thus, by increases in circulation and by direct revenue from the industry, the work of newspapers in aiding the inevitable success of broadcasting has been repaid in dollars and cents. Radio advertising in newspapers is growing by leaps and bounds, and there are few men in the advertising field who would insist that radio advertising will not equal automotive advertising within five-years.

The interest of the radio reader is concentrated largely in the announcements of station programs. This interest continues day after day. Hundreds of thousands, if not millions, of newspapers are brought home every evening instead of being left on train or street car, because radio programs are referred to in the course of the evening.

There is much wailing and gnashing of teeth in the trade papers of newspaperdom when such events as the Dempsey-Tunney fight are broadcast. Perhaps not so many extras announcing the result are sold as in the past because of radio. Perhaps the few news events which radio handles successfully offer a little competition once in a great while. If this puts fear into the hearts of newspaper publishers, their hold on public interest must rest on weak foundations. Reader interest in radio, continuing day after day, and the huge expenditure of radio advertisers counterbalances any loss from this source many times over.

The newspaper has all the news of the world, outside of these very few outstanding events, with which to compete with the radio description. It can bring illustrations and cartoons and opinions of recognized sports writers to the reader, while radio limits itself to a description by a single announcer. Newspapers can outdistance radio in every field of news distribution, even in those few rare events which radio brings to the public effectively. Newspapers, broadcasting an event like the Dempsey-Tunney fight, could popularize their own sports writers and gain attention to their own special way of handling such events, if they used radio to their own advantage as successfully as do other commercial users of broadcasting.

Two fears are constantly in the minds of newspaper publishers: first, that radio broadcasting may become an advertising medium so powerful that it will react on their advertising revenue and, second, that broadcasting may eventually become a disseminator of news rivaling newspapers. Both of these fears, experience has already demonstrated, are quite groundless. Radio is established as an entertainment medium, and it has demonstrated that it is not an advertising medium. Anyone attempting direct advertising by radio insults his audience and is promptly tuned out. Broadcasting is a valuable goodwill medium and may win sympathetic and favorable association with a trade name. It serves as a card of introduction between producers of goods and services and their ultimate consumers. That is a valuable service, just as a card of introduction, presenting him to a prospect, is valuable to a salesman, but hardly any salesman would be foolish enough to attach an order blank to a card of introduction.

Printed advertising sells goods. Commercial broadcasting popularizes names. By so doing, it wins sympathetic attention to advertising and consequently makes it more effective. Commercial programs are themselves advertised, and it would not be surprising to find, in the

course of a few years, that the money spent in advertising commercial broadcasting programs, in order to bring them to the attention of newspaper readers, will actually equal the amount spent on the broadcasting itself.

Differing so in purpose, commercial broadcasting is no rival to the newspaper. And, even if it were a direct rival, it is one of such insignificant proportions that for the newspapers to regard it seriously is no more dignified a spectacle than that of an elephant running for his life at the sight of a mouse.

If the amount spent on commercial broadcasting should ever equal 1 per cent of the amount spent on newspaper advertising, commercial broadcasting could well be proud of its tremendous growth. The advertising revenue of many a small-town newspaper is greatly in excess of the amount spent on the largest commercial broadcasting chain in the country. With regard to news competition, aside from such news as has actual entertainment value, such as world series' games, prize fights, and a few other outstanding sporting events, broadcasting is totally unfitted as a disseminator of the ordinary run of news. Imagine a newspaper printed with invisible ink, which shows up one word at a time for a second, and you have a parallel to how broadcasting handles the news. It would take more than twenty-four hours to broadcast the entire contents of a metropolitan daily. The listener would have no choice of subject matter and no opportunity to refer to or reread a single line of what he gets by radio. Moreover, radio in no way threatens the editorial or the advertising purpose of the newspaper.

Ear Will Not Displace the Eye.

A fundamental reason why radio will not displace the printed page as an advertising medium is because the eye is a far more effective assimilator of information than the ear. The merit and utility of comparatively few products can be judged by ear, while those which can be appreciated by visual examination are vastly in the majority. Quoting Corley W. Kirby, directing the broadcasting activities of the George Harrison Phelps agency:

"I consider the function of radio advertising to be that of the popularization of names, giving the advertiser repetition which ultimately leads to reputation, if his product warrants that reputation . . . 80 per cent of our knowledge is gained through our eyes and only 20 per cent through our ears."

Although this estimate disregards the influence of the tactile sense, used, for example, in judging the quality of material such as fabrics, the sense of weight in deciding on the strength of material, and various other sense impressions, it is a reasonably correct ratio between sight and hearing impressions which contribute to the judgment of a product. Those qualities of a product which are appreciated through the ear cannot be effectively described on the printed page. Phonograph advertising campaigns have been little more than word contests between rival advertisers, because true impressions of sound cannot be distributed through the printed page. If broadcasting steps in and provides the missing link to widespread demonstration of the phonograph's capabilities—a thing which printed advertising has failed to do—it is serving not only the phonograph industry but also newspaper and magazine publishers. Greater turnover and prosperity of any business is quickly translated into greater advertising appropriations.

Substituting the Ear for the Eye.

The printed page may be transmitted through the loud-speaker by reading its text before the microphone, and radio might thereby be considered a possible rival to printed news and advertising. Two important factors prevent this possibility. First, the radio audience seeks to be entertained and will not submit to direct-advertising effort, and second, a lecture is not so effective as the printed page in transmitting information. Anyone who has listened to a subordinate read a report aloud and then asked for the copy in order to find out what it is about, has recognized the superiority of the eye over the ear in assimilating detailed information.

This situation is the outcome of an educational system which concentrates very largely upon the acquisition of knowledge through the eye rather than through the ear. Lectures are largely confined to the text and amplification

of material which is actually learned by the eye from text-books. The methods of recording information for the eye have become so far advanced over those available for the ear, that even the most sanguine supporter of broadcasting does not believe that radio can make a significant change in the proportionate influence of the two methods of acquiring information.

It is essential to the sale of products that facts about them should be transmitted to the prospective customer's mind. The printed page is, without a shadow of doubt, the effective way to get over concrete facts about a product. This is the function of advertising. It is firmly entrenched because radio cannot effectively undertake that function.

Commercial Broadcasting Costs Compared with Advertising.

Granting that the commercial use of broadcasting will be confined to increasing familiarity with trade names and the building of goodwill, it is hardly conceivable that it will ever make greater inroads into the duties and the amount of the advertising appropriation. The increasing cost of commercial broadcasting, through the requirement that presentations be more elaborate and through increasing station rates, will be justified, not so much by great extensions of its function as by steady increases in the size of the audience and the greater distribution offered to each program. The broadcasting industry can be handsomely maintained on an expense less than 1 per cent of that spent for newspaper advertising. The total spent on all forms of advertising is nearly a billion dollars; broadcasting, tenfold in scope, would still be insignificant in the face of its firmly established predecessors. Any opposition to the radio medium, based upon the fear that it is a potential rival to the publishing business, does not rest upon firm foundations.

The coming of telephotography is not likely to modify the situation, because billboards in the home will receive

no warmer welcome than radio advertisements delivered through the microphone.

Danger of Too Many Kinds of Advertising.

An argument brought against commercial broadcasting in the editorial columns of advertising trade journals is that any form of propaganda which increases the frequency with which the public's attention is called to advertising is harmful to the effectiveness of all advertising. Wherever one turns, one is faced with some form of advertising effort. Indeed, this is the corner stone of American prosperity, for out of it arises the ambition to own on a constantly rising standard. Ambition has made the worker more productive; capital and invention have enabled him to make with less effort more goods, which advertising and ambition have induced him to buy. Greater productivity has built prosperity.

There is no good reason why broadcasting should be singled out rather than car cards, billboards, or newspaper and magazine advertising, if there were any foundation for this unexpected urge to reduce the volume of advertising, advanced by some advertising experts as a reason for curtailing commercial radio broadcasting. Indeed, all advertisers might well adopt the note of temperateness which the better grade of commercial broadcasting has introduced.

Were billboard advertising guided by the same restraint which broadcasting observes, every sign erected would be designed to increase the beauty of its surroundings. The concern paying for it would confine itself to a modest signature. Instead, the billboard rudely thrusts its wild attention-attracting coloring into every landscape which gives it a foothold. While the commercial broadcaster studies ways to make his program more enjoyable to the public, the billboard designer invents new ways to make his art compel pleasure-seeking motorists and rail travelers to read his blatant slogans.

The magazine editor does not hesitate, by carefully planned runovers of editorial matter, to inveigle the innocent reader into the mazes of distracting advertising. Magazine and newspaper advertising is predominantly obtrusive and boastful. It hesitates at no subterfuge to attract the reader's attention at the expense of the information and entertainment value which he seeks from the reading matter of publications. There is no attempt at modesty by fitting the advertisement harmoniously into reading matter. Smashing attention winning is not frowned upon in advertising; it is admired as a mark of skilful copywriting. Yet critics single out commercial radio broadcasting, the most considerate, altruistic, and unobtrusive propaganda, for condemnation. If advertising is becoming too ubiquitous and conspicuous, reform is more urgently needed in toning down billboard, newspaper, and magazine advertising than commercial radio broadcasting.

Any new art and new method must inevitably face the opposition of what it tends to supplant. Commercial radio broadcasting is no exception. It is fortunate, however, in having a function quite unique, which is not accomplished effectively by any other means. As soon as the true field of radio is understood, its growth will no longer be opposed by newspaper and magazine publishers and their trade journals.

Function of the Advertising Agency.

Watching the sponsor's interests in connection with commercial programs is a natural function of the advertising agency. In recognition of this, stations accord the usual commission to advertising agencies. Some agencies have gone much further than mere direction of the broadcasting effort. These have established extensive broadcasting departments and have taken charge of actual presentation, hiring artists and staging broadcasting performances. N. W. Ayer and Son of Philadelphia maintains

a radio broadcasting department with a staff capable of staging the most pretentious programs. The George Harrison Phelps Agency of Detroit not only directs the program for its clients, but broadcasts it through its own station. Thus this agency is not only doing the equivalent of buying the advertising space in a magazine, but also that of preparing the editorial copy, editing the publication, and even printing it in its own plant.

Since commercial broadcasting is a new medium, the more detailed the study given by advertising agencies, the more rapid will be its development. It seems unlikely, however, that the advertising agency will permanently maintain its jurisdiction over more than what is its normal function; that is, deciding where advertising and broadcasting money shall be spent and how the client shall derive his benefit from it through the sponsor recognition in announcements and by tie-ups with advertising and direct-sales effort. The actual showmanship, the dramatic part of broadcasting, will remain in the hands of specialized radio showmen.

Advertising agencies are well fitted to study the relative value of stations, accustomed as they are to appraising advertising mediums. In the present stage of the art, the broadcasting industry gives them but little help; broadcasters having been satisfied to this time to confine their analysis of their station's effectiveness to glorified generalities.

Statistics of station effectiveness, embodied in widespread field-strength measurements for determining the true service area, population studies in the area, facts secured from the experience of users, tabulations of mail received, and numerous forms of data will be studied and compared. Rates, instead of being arbitrarily fixed, will have a definite and comparable basis, so that the advertising agency's radio buyer will have a background of facts upon which to base his recommendations.

Broadcasting as the Publicity Man's Outlet.

Commercial broadcasting has been attractive to the publicity man because it has, in the past, been the entering wedge for the publication of his manufactured items in the newspapers. The same principles of ethics which apply to all publicity apply to that attending commercial broadcasting efforts. There are concerns which one may suspect have gone into broadcasting because they regard it as a means of securing newspaper publicity. There are other concerns who take the view that their "generous" broadcasting efforts are worthy of newspaper recognition, regardless of their true news value. The only thing worthy of attention in properly conducted newspapers is news. When the presentation of a program involves persons or ideas which are news, most newspapers are willing to give it just space. The function of the broadcasting station's publicity man is to disseminate news and not free advertising, in which references to the sponsor's generosity are dragged in by various subterfuges.

The newspapers are generous in the matter of publishing news of broadcasting events so long as they are not compelled to dwell upon the sponsor's part in them. Publicity regarding an artist being featured is just as helpful to the sponsor whether his name is mentioned or whether it is not mentioned. The publicity serves to increase the listener audience, thereby increasing the value of the time on the air to the sponsor. He should be satisfied with such publicity because that is all he has a right to expect.

Abuses of Radio Publicity.

Broadcasting stations have made it a habit to send out news items to radio editors upon the most insignificant broadcasting events. The character of publicity emanating from radio stations is generally of a calibre and volume which discourages any city desk. A few stations, by restricting themselves largely to items of real interest to the

press, have won reputations among newspaper men for their conservatism and are rewarded by a better publicity return.

So widespread has been the excessiveness of broadcasting publicity that newspaper publishers are generally antagonistic to it, a decided contrast to their earlier liberality. Some newspapers have gone so far as to exclude any mention of commercial programs, regardless of the news merit of the item. This is the natural reaction to any habitual publicity excess. The motion picture industry has been subject to the same curtailment of news space because it has generally imposed on the press.

The commercial broadcaster and the radio station management which confine themselves to the distribution of items having real news value and general public interest, secure the best results with the newspapers. The fact that a commercial broadcaster is offering a radio program is, in itself, not worthy of news space. Only if the program possesses features of considerable novelty and service, should it be made the subject of publicity.

A broadcasting feat, having won publicity through its novelty, is thereby automatically relegated into the realm of things which no longer have news value. When Columbia University began its series of educational lectures through WEAf, the story on the subject was carried on the front page of *The New York Times* and equally conspicuously in other papers. Two years later, if Dr. Nicholas Murray Butler were to give a special radio address through a chain of twenty stations, the newspapers would probably brand it as: "8:00 p. m. Lecture, N. M. Butler."

One evening, WEAf's regular operating staff was displaced by the women of the station, who ran it successfully for several hours. This resulted in several full-page stories, profusely illustrated, in New York dailies, and thousands of clippings from all parts of the country. Three years later, the first program broadcast from the Pacific

Coast through stations in all parts of the country, a play by play description of the Alabama-Leland Stanford football game, received incidental mention on the sports page. The difficulties of the radio publicity man have increased tremendously.

Advertising the Radio Program.

An increasing number of commercial broadcasters are calling attention to their features by advertising in the program columns of the newspapers. The New York Edison Company spent \$80,000 in this way in New York newspapers during one year. The result is that thousands, consulting their newspaper program in search for the evening's entertainment, are attracted to that feature even in competition with that of their favorite station.

From time to time, the publishers' associations bar the use of commercial names in the designation of program features. Each time such a ruling is passed, radio programs become ambiguous so that the reader who consults them to find if his favorite program feature is due to be broadcast that evening is greeted by such useless information as: "orchestra," "cornetist," "speech." The publication of programs in this conundrum fashion is no service to newspaper readers. A newspaper adhering to such a policy might better discontinue the publication of programs entirely. Naturally, if the programs are printed in a way which is meaningless to their radio readers, the purchase of advertising space near them, to increase the listening audience to a commercial feature, is a poor investment. But, given a newspaper whose programs are edited in a way which enables listeners to identify listed features, the advertising of commercial programs is an effective way to increase the interest in them. This is especially true of outstanding and unusual program features. Sufficient revenue might be built up in this way by newspapers actually to justify the space used in radio programs, without considering their reader interest as a factor.

The argument that printing such a phrase as "The Maxwell House Hour" is free advertising for Maxwell House Coffee is a petty reason for declining to run commercial names in the program column. The list of stock-market reports might just as well be published anonymously lest railroads and industrial corporations secure free advertising through the financial columns. In every other section of the newspaper, including the front page, firm names are freely mentioned in connection with news matters. The radio programs are news, and to omit essential information from them on the ground that it is publicity is poor policy.

The radio listening public will have its detailed programs whether the newspapers supply them or not. Either special publications will have to be issued, which will mean a forfeiture on the part of newspapers of radio reader interest and the consequent available revenue in radio program advertising, or else newspaper publishers must appreciate the news value of adequate radio programs.

The opposition of newspapers to radio is possibly a recollection of their experience with professional sports, particularly baseball. They have found it necessary to devote a large amount of space to satisfy reader interest in baseball without securing direct advertising revenue in return. If every section of the newspaper must earn its way by advertising, as is indicated by the attitude toward radio, then the day of the newspaper as a faithful disseminator of news is over. But, even on the commercial rather than the service basis, the revenue from radio advertising, both radio sets and accessory advertising and program advertising, has made the radio section a very profitable one to the newspaper.

The relation of commercial broadcasting to newspaper and magazine advertising will become more intimate and mutually profitable as soon as the suspicion that radio will absorb some of the function and revenue of publishers is dissipated. This will be a slow and gradual process which

cannot be accomplished so long as broadcasting stations indulge in direct advertising. Although this practice is confined mostly to stations of secondary importance, advertising by radio is not easily eradicated. In the end, the interdependence of the radio medium and publishing will result in a harmonious and effective partnership.

CHAPTER XVIII

THE BROADCASTING STATION

The supplementary services which a comprehensive broadcasting organization is prepared to perform in addition to its technical operating activity, may be of great help to the commercial sponsor and his program director. A general understanding of broadcasting station organization is as valuable to the commercial broadcaster as is familiarity with typography to the advertiser in judging how well a magazine presents his expensive art work and specially prepared color plates.

With only a slight knowledge of the functioning of the transmitter, the efficiency of transmission can be checked by the commercial sponsor. The extent to which the human element enters into good quality of transmission is surprising, and the influence of an alert sponsor, competent to judge human errors in transmission, can be helpful in bolstering the service of a laxly managed station organization.

The program department can be of invaluable assistance in suggesting and securing artists and in offering expert and unbiased criticism of the effectiveness of presentation. The publicity department is available for the dissemination of news regarding commercial features. The sales department can offer aid in planning tie-ups in advertising and merchandising and in checking the returns secured.

The Broadcasting Station Organization.

The personnel of broadcasting stations varies greatly, and standardization of organization is far from accomplished. Some stations, maintaining short schedules, have as few as four or five men doing the entire work of station

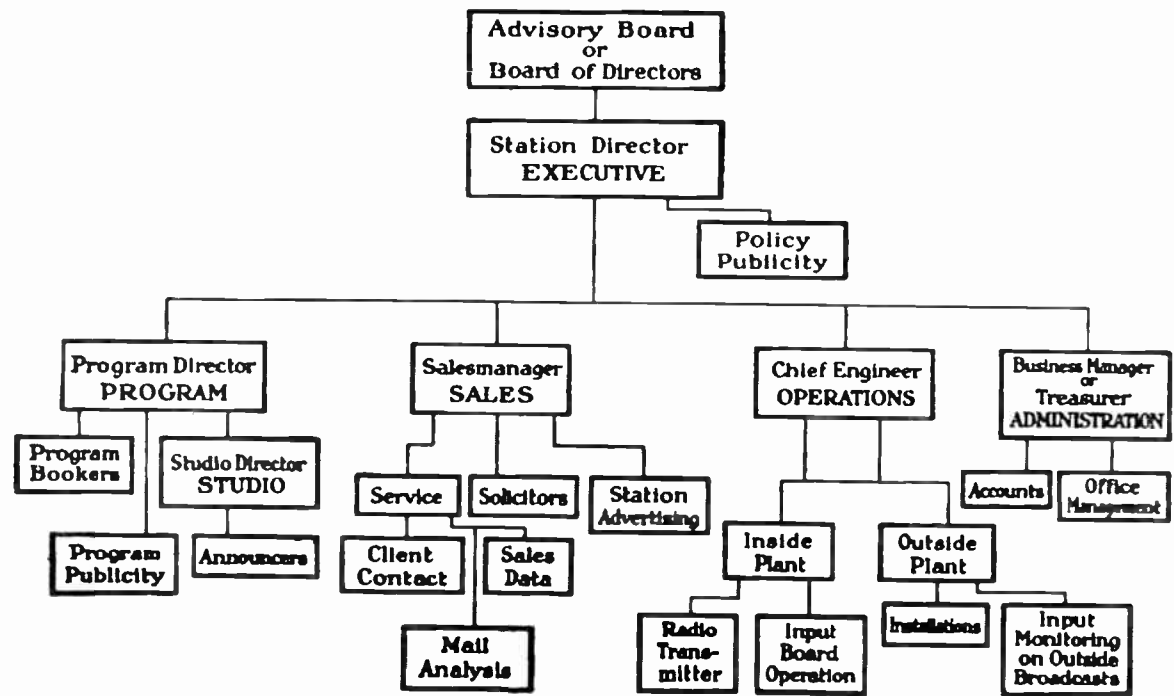


FIG. 32.—A typical broadcasting station organisation.

management and program direction. The largest station organization is that of WEAf, employing, at this writing, 105 persons in the operation of the station and the maintenance of its relations with the subsidiary chain which it supplies with programs.

The organization of a broadcasting station may be divided into five general departments, namely:

1. Program.
2. Operating.
3. Commercial or sales.
4. Advertising and publicity.
5. Executive and Administrative.

In a general way, the program department's responsibility is to arrange for the securing of talent and program material and for its presentation in the studio or before the microphone of the station.

The operating or plant department is responsible for insuring the uninterrupted and faithful reproduction of programs arranged by the program department, by means of the radio transmitter and its associated equipment.

The commercial or sales department is responsible for securing the income of the station. Its personnel not only solicits commercial accounts but provides the contact between sponsor and station. It is responsible for assuring the most effective utilization of the station's facilities from the sponsor's standpoint.

The publicity and advertising department maintains contact with the press and with editors of magazines and sees to it that adequate news and information regarding the activities of the station is made available to them. Sooner or later, it will also be engaged in the preparation and placing of advertising regarding the station's activities.

The executive and administrative department directs the activities of all the departments of the station, and coordinates them for most effective action. It is also in charge of finance and accounts.

The Program Department.

The executive head of the program department is the station program director, responsible for scheduling program features in a well-balanced order and for securing artists and features of a type fitting the general policy of the station. In that capacity, he governs the character of the habitual listening audience and the station's standing with relation to its rivals. This requires intelligent program planning and analysis of public tastes.

A predominance of any one type of program material—whether it be dance music, educational features, dramatic presentation, or classical music—tends to limit the habitual audience of the station to the particular group to which the predominant style appeals. A mixed program of high standard wins a mixed audience; specialization in one class, a loyal audience of a fairly definite class. Such matters are the principal concern of the program director. In addition to standard features, the program manager should secure a sufficient number of outstanding events to win great public attention; otherwise his station fails to augment its habitual audience and is therefore in the same class with a merchant who does not maintain an advertising and sales force.

Program Department Must Know Audience.

The order in which features are presented should be planned to give variety through the evening's program. If a commercial sponsor, offering a quartet, finds he has been preceded by two male soloists, or a classical trio by a string quartet, the program director has failed to observe the necessity for variety in program style.

In the maintenance of "program balance," the program director takes advantage of every possible aid in securing an appraisal of the public's tastes. He has available to him, not only mail directed to the station, but also all the essential facts regarding the response to the programs of all of the station's clients. He learns to sense when he is

offering too much classical music program matter or too much "speech." Whatever the audience he seeks to please—and the trend now is to please *all* the audience rather than to build up specialized audiences—he maintains sufficient variety of feature calculated to hold his listeners as long as they remain before the loudspeaker.

This constant study of feature appeal is valuable to the commercial sponsor in obtaining expert judgment as to the attractiveness of his program.

The longer that a program force has worked together, however, the more likely it is to become established in its ways of doing things and the less likely it is to possess daring initiative. Each unusual program effort is a risk and a certain proportion must be failures. Failures produce an attitude of caution which, in turn, tends to keep program efforts along the beaten track. This accounts for the better showing made by new organizations in introducing novelties and also their usual lack of skill in handling them. The happy medium is to take advantage of the program department's counsel, but not to be too ready to yield when they discourage novel and ambitious broadcasting projects.

Program Department's Contacts with Artists.

The program department has valuable contacts which should assist the commercial sponsor in suggesting features for broadcasting and in securing the services of artists suited to the nature of his program effort. The program department should be freely consulted in judging the broadcasting abilities of the sponsor's artists as they are being selected. The use of a studio for microphone tests and rehearsal should be available to the sponsor's artists as required, for only in that way is it possible to judge the effectiveness of a feature to be broadcast. A representative of the program department, qualified to render expert opinion, should be present when programs are rehearsed in order to suggest the best placement of artists and to judge the effectiveness of presentation from the radio standpoint.

Many stations permit commercial sponsors to flounder about unaided in their work of preparing and rehearsing programs, instead of offering their wide experience and expert judgment in helping to perfect the commercial feature.

The program department sometimes undertakes the actual staging and management of the sponsor's offering, hiring the artists, preparing the announcements, and managing the studio rehearsals. With an average program effort, involving no special script, the only additional executive personnel required to manage the feature is the sponsor's broadcasting representative. With more ambitious efforts, involving well-planned continuities, a special program director is generally required, who devotes his time to the development of the sponsor's program. The station's program director is the most natural person to consult when searching for such a program director.

The program department is responsible for the standards of announcing used in connection with its features. Usually the direction of the announcing force and the conduct of affairs in the studio is in the hands of a studio director, subordinate to the program director. He maintains the active contact with the sponsor's program director and should be ready to render all the assistance necessary to the smooth conduct of the program. When such cooperation is not secured, the station is not doing its full duty to its client.

The Personal Appearance.

Some of the larger station organizations include an artists' booking bureau, usually subordinate to the program department or else closely affiliated with it, which arranges for personal appearances of their program features at all kinds of public entertainments. Persons arranging charitable and social affairs frequently utilize the services of broadcasting artists. Personal appearances serve a double purpose, increasing the revenue of both artists and the

broadcasting station, which earns a booking commission, as well as enhancing the sponsor's goodwill return. The public appearance of the sponsor's artists is rarely capitalized directly, and a great deal can be done to increase the effect of public appearances if the sponsor has local retail outlets in the town or city where the performance is given.

Since personal appearances are usually in connection with a local charity or civic activity, such as American Legion Carnivals, Elks, Masons, and Knights of Columbus affairs, Chamber of Commerce rallies, church and civic associations, a commercial sponsor has excellent opportunity to win local goodwill by active cooperation, through his local representatives. The sponsor may present his artists personally at the retail outlets for his products and offer tickets for the public appearance at a discount to guests and customers. The local organization boosts these affairs actively for some time ahead, so that, if the personal-introduction plan at retail outlets is properly carried out, hundreds and thousands of friends and patrons can be drawn to these outlets for the opportunity to meet the artists personally. Incidentally, this contact with their listeners often helps to build up the interest of the artists in their broadcasting efforts.

Wendell Hall, on the afternoon prior to his numerous personal appearances, was usually featured at the local Victor stores. He was introduced to their patrons, who were invited by advertisements in the newspapers, and he personally autographed his phonograph records purchased during his visit. The sponsor and the retailer both profit as a result of such aggressive capitalization of the personal appearance.

The Operating Department.

The operating department's work begins with the microphone, and its staff is concerned with technical matters of pick-up and radiation. In that capacity, it is responsible for half of the effectiveness of a program. No matter how

well a feature is rendered in the studio, if the operating department garbles its part of the work, the program cannot be enjoyed by the listener.

The microphone marks the point where the broadcasting process ceases to be a matter of showmanship and becomes an electrical process. Up to the microphone, performers and the human element predominate; beyond the microphone, it is a matter of electrical equipment and its proper functioning. This point marks the beginning of the operating department's work.

Function and Operation of the Microphone.

The reader who is interested in the technical aspects of broadcasting is referred to one of the many excellent standard books on the subject, such as Dunlap's "Radio Manual"¹ or Hogan's "Outline of Radio."² Our chief concern here is only with those phases of transmission technique which concern directly the effectiveness of program presentation. A program director, thoroughly competent in handling artists, is often confused by the technical jargon used in the broadcasting studio and by a lack of understanding of the microphone's limitations. It is profitable, therefore, to consider a few of the steps occurring in transmission, in the light of their effect upon program presentation, without, however, attempting to master the functioning of the radio transmitter as a whole.

The first step in the transmitting process is the conversion of sound waves into electric currents. As sound waves are set up in the studio by broadcasting artists, an artificial eardrum, the diaphragm of the microphone, vibrates in the same manner as the human eardrum. Behind the microphone diaphragm are loosely packed carbon granules. As the diaphragm is pushed inward by an air wave, these granules are slightly compressed. Then, as the diaphragm reacts, when the air-wave impulse has receded, it pushes outward.

¹ Houghton Mifflin Company, 1924.

² Little, Brown, and Company, 1923.

A fixed electric pressure or voltage is applied to the terminals of the microphone. The current which flows is governed by the electrical resistance of the carbon granules, which changes as they are tightly or loosely packed. When they are compressed by the effect of an air-wave impulse on the diaphragm, more current flows; when they loosen as the air pressure of the sound wave recedes, less current flows. Thereby we secure what is, in effect, an electrical copy of the sound wave.

Condenser microphones work on a different principle, but the effect of their operation is likewise a minute electric current, varying as the sound waves impressed upon the diaphragm.

"Blasting the mike" is the term used to describe the result of a sound wave of such great intensity that the diaphragm is pushed inward to its limit before the maximum sound value is reached. Therefore, unfaithful reproduction, marked by a harsh, grating effect, results. "Blasting" is corrected by moving the artist farther from the microphone or *vice versa*.

"Balance" is the term used to describe the proper relative placing of instruments and artists so that they actuate the microphone in such a manner as to secure the proper sound relation of each instrument and artist to the whole group. Balance is most easily studied with small groups at first, such as a soloist with piano accompaniment, an instrumental trio, or a quartet. Predominance of one instrument or voice over another is corrected by readjustment of placing. With symphony orchestras and large vocal organizations, securing proper balance is complicated by acoustical conditions, and only one thoroughly versed in broadcasting technique and orchestral direction is qualified to criticize expertly.

The Input Amplifier.

The actual current variations resulting from the effect of sound waves upon the microphone and its associated

circuit are extremely minute. They are in the order of millionths of a watt, a unit so inconceivably small that we cannot make an understandable analogy in the realm of mechanics.

These minute currents are amplified until they are of sufficient magnitude to be radiated into space by the transmitter in the same general way that the audio-frequency amplifier in the receiving set increases its output sufficiently to give a good loudspeaker signal. This amplification is a matter of billionfolding, roughly speaking, the energy in the microphone circuit, without in any way distorting it. Several successive stages of amplification are used, each with its definite limitations of the maximum current which it can handle.

For our purpose here, it is needless to discuss just what these limitations are. Obviously, a tiny, fluctuating electric current, magnified billions of times, no matter how feeble the original fluctuations are, is likely to strain the capacities of the final amplifier stages, if the original fluctuations are not kept within certain definite limits.

Imagine a giant seesaw, balanced so that it swings on a pivot. One end is one foot from the pivot, the other 200,000 miles from it. If this device were so perfectly constructed so that, with the pressure of your hand on the short end, you could make the long end swing through space at will, you would control an amplification of motion no greater than that which the studio microphone currents control in the radio transmitter. Unlike the fantastic lever device, electric currents are so flexible and responsive that control is not difficult so long as we keep the fluctuations within certain limits, determined by the output capacity of the last stages of power amplification.

The Control Board.

Within a few feet of the microphone, usually in the "control room" adjacent to the studio, an "amplifier operator" or "input operator" is stationed. He is respon-

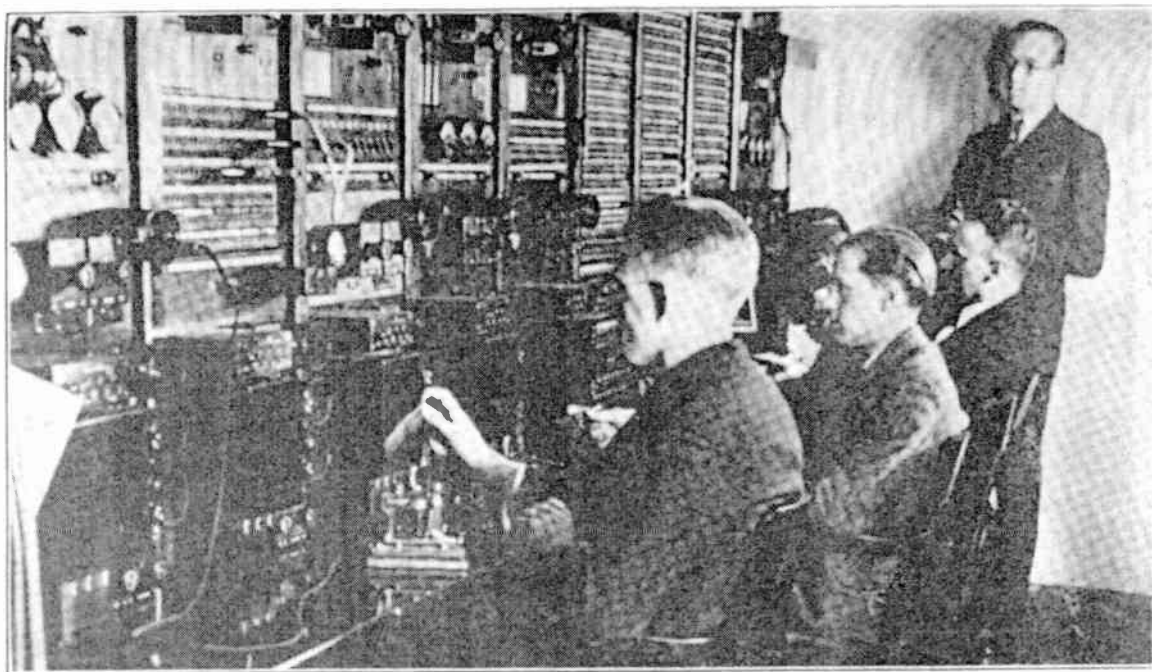


FIG. 33.—The input control equipment at WEAf, through which programs are supplied to stations all over the country. At the left, five input amplifiers; at the right, the terminus of wire lines connected with distant broadcasting stations.

sible for keeping the magnitude of variations in the electric sound circuit within the limitations imposed by the broadcasting apparatus. The amplifier operator has, to aid him, a loudspeaker which tells him how the program sounds when reproduced in a good radio receiver, and also a gain-control meter, which shows the maxima and minima of the current flowing through one of the earlier stages of amplification.

When the fluctuations in the microphone circuit are too great, he cuts down the amplification or "gain" so that a certain maximum current flow is not exceeded. During soft passages, he must, on the other hand, increase the amplification so that it has an appreciable effect through the user's receiving set.

The Input Operator's Task.

The amplifier operator, seated before his "input board," manipulates a knob called the "gain control." His task is called "monitoring." If he is alert, he is adjusting the gain constantly, unless there happens to be no variation in tonal volume in the particular program being rendered. He may overdo his task, however, and that is why it is explained in such detail here. In monitoring a symphony program, for example, he can completely modify the conductor's interpretation of the score by cutting down the loud passages too greatly and bringing up the weak ones too much. His part in the musical output is therefore very important, not only because it determines musical quality in reception, but also because it may introduce an undesirable monotony of tonal volume. He may obliterate the gentle musical interludes, swelling to grand finales, by smoothing out the volume to a monotonous, unvarying strength. On the other hand, if he is not sufficiently vigilant, he may permit the loud passages to blast and blare in the receiving loudspeaker, and cause the weak passages to be inaudible. Appreciating the nature of his task, the conscientious program director goes over the script with

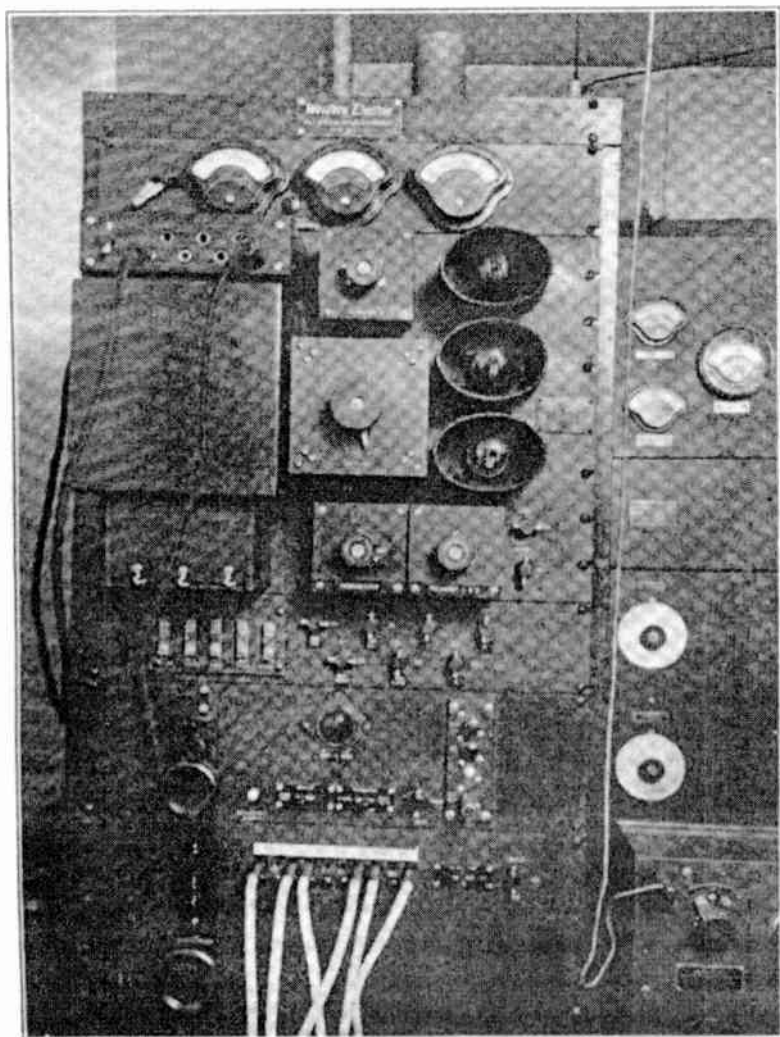


FIG. 34.—Close-up view of the speech input amplifier of KSD, St. Louis.

the amplifier operator to warn him of the pitfalls which await him.

Influence of Receiving-set Quality on Transmission Standards.

There is no hard-and-fast rule which may be set for the correct adjustment of the gain amplifier through a passage of music, because of the varying performance of different kinds of receiving sets. For example, a receiver giving poor amplification of low tones, gives better reproduction if the low tones are amplified excessively and the gain is set high when low passages are broadcast. At the same time, with a receiver giving good amplification on low tones, this results in overloading. The standard of receiving sets is rapidly rising, so that the receiver's limitations will not have to be taken into account indefinitely.

The commercial broadcaster should judge transmission quality with a receiver of average capabilities. One having unusually favorable or unfavorable characteristics, or operated near the limit of its volume capacity, does not give him an accurate guide to the effectiveness of the input operator's work.

Judging Transmission Quality.

A person unfamiliar with the technique of broadcasting is rarely qualified to distinguish the exact cause of unfaithful reproduction. With a suitable receiving set, properly adjusted, however, he may note any serious failures in transmission quality, without attempting to analyze their cause. Only an expert judge at a receiving set can decide whether excessive loudness of a high-toned instrument, for example, is due to the fact that it is too close to the microphone, or whether the transmitter amplifies the high notes out of proportion to the low tones. He cannot judge whether blasting or blaring is caused by microphone overloading or by excessive gain of the amplifier system. With attentive and critical listening, however, it is possible to learn to judge the causes of distortion.

The effect of the input operator's manipulations is most easily observed during the first two or three seconds of the broadcasting of a feature. When the program is switched from one microphone to another, a significant change in the adjustment of the amplifier is usually necessary. At one moment, the amplifier operator at the station may be handling the music of a string trio at a hotel. That program concluded, he switches to a studio microphone and an announcer begins to speak. For a second he may be hardly audible. Suddenly his voice rises to normal volume as the amplifier operator finds the correct adjustment to send his voice out properly. After the announcer, an orchestra may begin a number and again a new adjustment is made. The first note may be a loud blast or a very weak sound, and the next one of proper characteristics.

By listening carefully to the effects of insufficient and too great amplification with various kinds of music, particularly during the first instant a feature goes on the air, much can be learned about the work of the amplifier operator. Although the effect is not so easily noticed, he is just as busy with his manipulations throughout a program as in the first notes. His hand is constantly on the gain control; his ear should be vigilant and his hand quick to act if the program is to sound well through the loudspeaker of the receiving apparatus. In a single line of music, several adjustments may be necessary as the voice rises from a soft passage to a powerful high note. Manipulation of the gain control soon becomes second nature to the alert operator, so that he handles the control as easily as you use the accelerator on a motor car in driving through hilly country.

Wire Lines in Broadcasting.

The amplifying equipment near the microphone brings up the intensity of the electric copy of the sound waves to about that used in the ordinary telephone circuit. This electric copy is then passed directly to the radio trans-

mitting apparatus or to wire lines of whatever length is necessary to reach the radio transmitter.

When a program is broadcast from a point other than the station's regular studio or studios, it is called "an outside job," "remote-control broadcasting," "broadcasting by remote control," or a "nemo job." The derivation of all but the last term is obvious. The latter is a coined word, chosen for its brevity by the plant operators of WEAJ while that station was still run by the telephone company. The phrase "remote control" is incorrect to a telephone-trained engineer, because it implies the control of the transmitting apparatus through telephone wires; actually, transmission is controlled at the station, and wire lines are only program feeders.

The wire lines have electric characteristics which must be adjusted or corrected so that the music is transmitted without distortion. An improperly balanced wire line may completely block the passage of higher tones, just as a truck passing under a low bridge may have the top of its load clipped off as it goes through. The use of the long-distance telephone circuits sometimes introduces extraneous effects, such as induction from power lines, hums, cross-talk, noises, and telegraph clicks, which would not be transmitted if the line were properly adjusted. The commercial broadcaster is entitled to a quiet line and should not hesitate to report any serious extraneous noises, because they can often be corrected during a program.

After listening intently during lulls in the program when neither speech nor music is being broadcast, an extraneous sound may be thoroughly fixed in the critic's mind. Then he should tune to a nearby wave length to make certain that the noise is not one picked up at the receiving point rather than one transmitted by the broadcasting station. If it comes to him from the broadcasting station the extraneous noise disappears when he detunes.

Occasionally, a broadcasting station is in a position where it cannot avoid these extraneous influences. Tem-

porary wiring, rigged up at sporting arenas with a score or more of telegraph wires for news services, may prove unexpectedly noisy. No quick substitution of a quiet line is possible under these conditions. Under ordinary conditions of pick-up from local hotels, auditoriums, theatres, and from distant broadcasting studios, no such difficulty should be encountered.

Studio Signal Lights.

The announcer cuts the studio microphone in and out as required by means of a relay controlled from a button on a flexible cord. He is thereby enabled to disconnect the microphone instantly when something occurs in the studio which should not be broadcast. The microphone switch is used to prevent the broadcasting of improper matter, such as person-to-person communication attempted by inexperienced radio performers or dancers at hotels and cabarets who occasionally think it clever to slip up to the microphone to shout a word of greeting to their listening friends; but it may be used also to permit an essential conversation with program director or orchestra leader. A properly planned program, however, requires no conference of any kind, so that the microphone may be left switched on throughout its duration. Orchestras can be placed before the program begins, and individual artists can change their positions during the program without causing unnecessary noise, so that microphone cut-offs are unnecessary.

A red light is usually employed to indicate that the studio is "live," in other words, that the transmitter is radiating what is going on in the studio. A green light generally indicates the fact that the radio transmitter is in operation, awaiting the red light and the studio program.

How Chain Announcing Is Done.

In studios supplying a large number of stations, more complex switching arrangements are sometimes used.

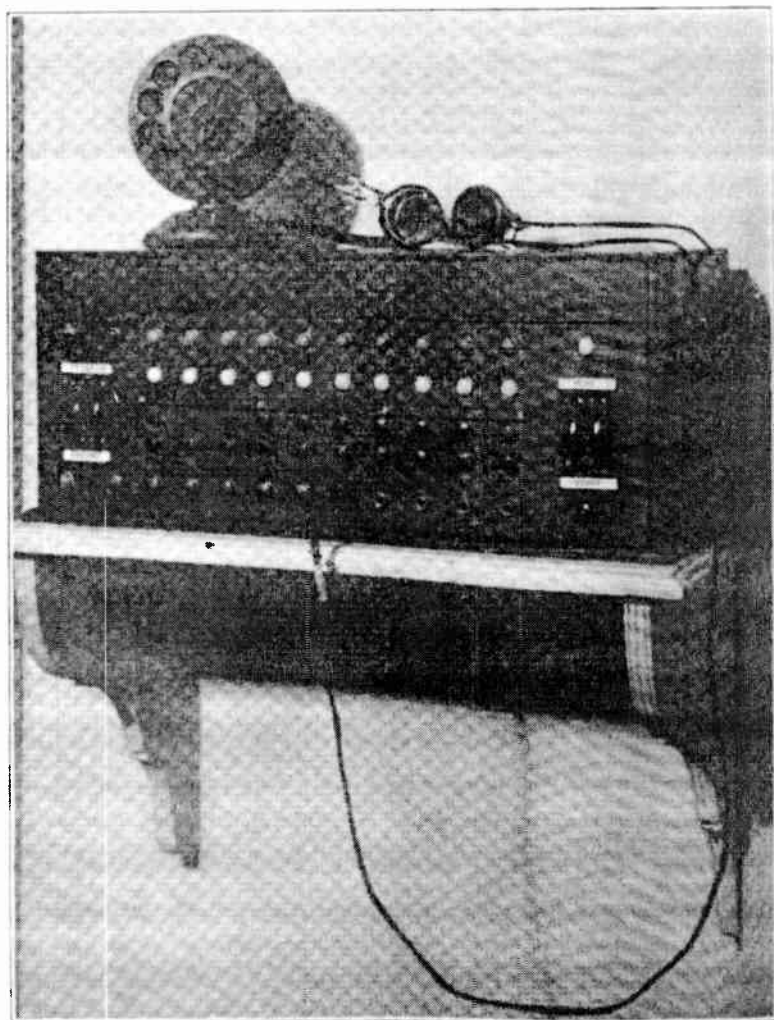


FIG. 35.—The studio switch equipment by means of which announcing for chain programs is controlled.

Usually there is a switching panel with a row of green lights. Underneath each light is a small switch and a label, indicating what station the switch controls. With this arrangement, the announcer can see at a glance at the beginning of a program whether all the stations which should be supplied with it are ready to broadcast.

At prearranged intervals during the program, the announcer cuts off all outside stations by pressing a button, installed for the purpose, leaving only his microphone, connected with his own local broadcasting station. During that interval, which is of prearranged length, he announces the call letters of his own station, while announcers do likewise at each of the outside stations. At the end of the period, usually thirty seconds, the announcer again throws his switch, which cuts in the long-distance lines again so that his microphone is supplying the network of stations as before. This eliminates the long and tedious announcing which was the practice in the past, requiring a reading of a long list of stations broadcasting the program.

Stations Removed from Congested Districts.

The studio of the broadcasting station is often located in the center of a city so that it is conveniently accessible, while the transmitter is located twenty or thirty miles outside. This permits the use of high power without blanketing reception in congested areas, thus feeding a higher signal volume to set users. The louder the signal input, the less proportionately is the strength of atmospheric and electric noises, thus contributing greatly to better reception. The sensitiveness of most radio receivers is adjustable by manipulation of filament rheostats or some other sensitivity control. If maximum sensitiveness is required to pick up a station, the influence of extraneous noises, such as static and radiation from trolley and power lines, is enhanced proportionately. Consequently, a program enjoyable with the receiver adjusted to minimum

sensitiveness gives the clearest reception. The improved service of high power to listeners is shown in Fig. 30, which indicates the points from which letters of comment were received in response to the first few programs broadcast by WJZ's 50-kilowatt transmitter at Bound Brook, N. J.

Improved reception at long distances is not the important result of high power, because doubling a very weak signal is far from sufficient to bring it to a level of enjoyable volume. The significant effect of high power is in the quality of reception obtained within the station's service area. Except during periods of excessive summer electrical disturbance, reception may be improved by high power to the point that extraneous noises heard in reception are considerably weaker than the record scratch heard on the highest grade phonograph.

Where "Radio" Begins.

So far in the transmitting process, explanation has been confined to audio-frequency currents, that is, currents which may be converted directly into sound waves by a telephone receiver and which may be sent over wire lines. Audio-frequency currents range between 16 and 10,000 cycles, although, in broadcast transmission, good reproduction is obtained if the apparatus is suited to handling a range between 100 and 5,000 cycles. We now come to the "radio" part of radio.

The property of setting up ether waves which radiate in all directions is possessed by alternating currents of very high frequency. When these are supplied to an antenna system, an ether wave is set up which induces a similar current in receiving systems within its influence. They are called radio-frequency currents because they have this radiating property. The exact frequency or number of alternations per second supplied the antenna system is determined by the design and adjustment of the transmitter. The frequency determines the wave

length of transmission. Tuning the receiving set is simply adjusting it so that it responds to the transmitted frequency. Radio-frequency currents, used in broadcast transmission, lie between 550,000 and 1,500,000 cycles and are therefore of much higher frequency than audio-frequency currents.

The Meaning of Modulation.

At the transmitter, the audio-frequency currents from the studio are amplified until they are of about the same magnitude as the radio-frequency current used for transmission. They are then combined in a single current and fed to the antenna system. This process of combination is called "modulation," a term in constant use at the broadcasting station. In its strict sense it is limited to describe this combining process, but is often used loosely to apply to any tonal effect resulting from the technical operation of the broadcasting transmitter. Thus a station is described as having "poor modulation," whether the distortion noted in reception is due to the modulation process or to any other cause.

The radio-frequency current, in effect, takes the place of wires in telephony. As wires "carry" audio-frequency currents through conductive circuits, so radio-frequency currents carry them through the ether. Hence the radio-frequency current is often called the "carrier," and the wave-length space it uses, a "channel."

Modulation is perhaps the most difficult process in radio transmission for the layman to understand. We are not concerned with how it is accomplished electrically, but we must understand its effect sufficiently to appreciate its influence on program presentation. An analogy may be helpful.

Analogy to Explain Modulation.

Imagine a beam of light set up by a powerful arc. A light wave consists of very high frequency vibrations in the

ether, several times higher than the highest frequencies used in radio transmission. The color of a beam of light is determined by its frequency, just as the wave length of a carrier is dependent upon frequency. The brilliancy of the light is proportional to the power used in setting it up. A dimmer is a device to vary the power supplied to a light. One could conceive the use of an adjustable dimmer to transmit intelligence according to a prearranged code. Such a light might be said to be "modulated" by manipulation of the dimmer. The color of the light waves would not be affected by modulation; merely the variations in intensity would be noted by the eye.

The radio-frequency currents used in transmission correspond to the light waves; the variations in intensity modulating the light correspond to the audio-frequency current. The radio frequency is thus the carrier, while the audio frequency is the one to which the senses respond. The detector in the receiving apparatus separates the audio-frequency from the carrier, which is then amplified and converted into sound waves by the loudspeaker.

Received Volume Depends on Degree of Modulation.

The volume of reception is, therefore, dependent upon the audio-frequency fluctuations, not upon the strength of the carrier itself. Consequently, in transmission, the audio-frequency current is made as large as possible, to secure the greatest degree of modulation. In other words, we engrave audio-frequency variations upon the radio-frequency carrier just as deeply as we can, so as to secure the strongest possible signal.

"Overmodulation" is the term used when the audio-frequency current is larger than the radio frequency which is to carry it. It is analogous to printing which cuts through the paper or engraving which has pierced a plate because it is etched too deeply. Overmodulation manifests itself in a blasting, scratchy, harsh effect. The amplifier operator, by his manipulation, keeps down the peaks of

audio-frequency variation to limits thus imposed by the carrier wave.

A clear conception of modulation enables the program director to appreciate the reason why certain instrumental combinations and certain types of voices broadcast better than others. It accounts for many of the suggestions made in previous chapters regarding voice quality and instrumental volume which make for the best broadcasting.

The fact that the radio frequency used in radio transmission must be larger than the maximum audio-frequency current used accounts for the fact that the carrier wave exerts an influence over a much greater distance than the modulation or sound impression. When two stations, operating on wave lengths too closely adjacent, are heard simultaneously in the receiving set, a steady whistle results, audible even though the program of the distant station causing it cannot be distinguished. Heterodyne amplification in the receiving set still further increases such interference. When carrier-wave interference is of serious proportions, such that it mars the enjoyability of the program, it means lessened value to the station's time on the air. With improvement in broadcast regulation, such conditions will not long continue, but where they exist, they should be taken into account in appraising the station's value to the sponsor.

Other Duties of Radio Operators.

The radio operators of the broadcasting station have the responsibility for listening in to ship traffic for SOS calls. Broadcasting stations are compelled by law to maintain a continuous watch on ship wave lengths and to shut down their transmitters as soon as distress traffic is heard. The safety of life at sea is of vastly greater importance than public entertainment, and it naturally has priority over broadcast transmissions. It is customary for the broadcasting station to credit commercial sponsors for any time which is deduced from their program because of distress calls.

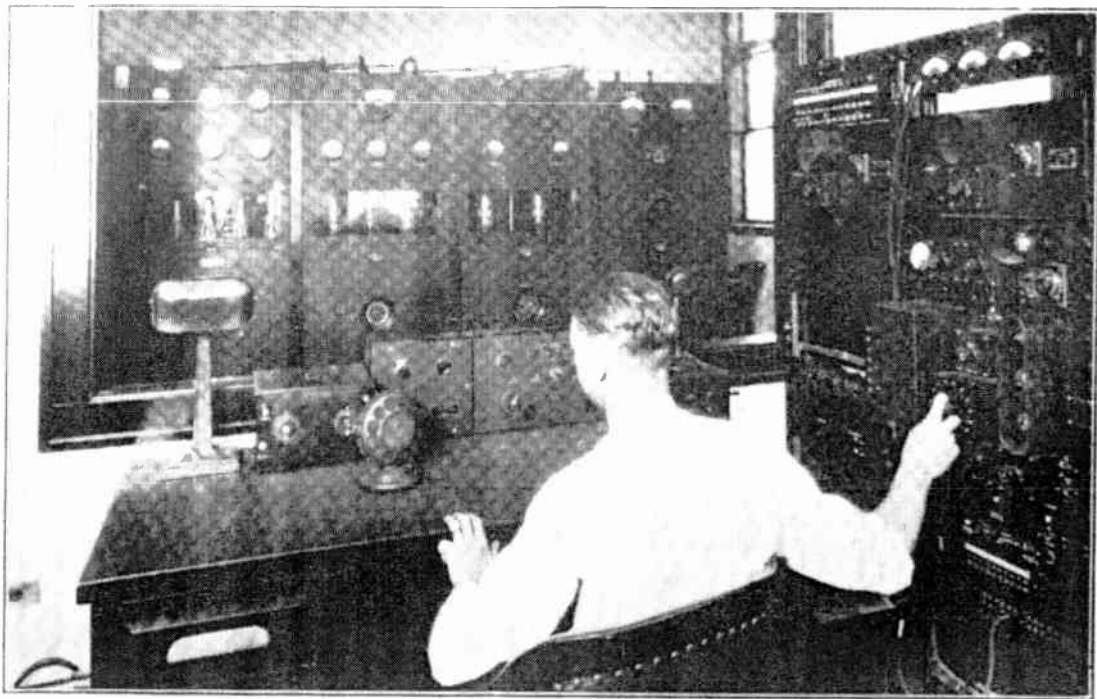


FIG. 36.—An operator at the control desk of WJR, Detroit. The 5 kilowatt radio transmitter can be seen through the window; the radio receiver for keeping the SOB watch and the emergency announcing microphone is before him; the speech input equipment at his right.

Once the operating department has done its work of radiating the program from the antenna system, its control over broadcasting ceases. A transmitter, so located as to have poor transmitting characteristics in one direction or another, cannot, in our present knowledge of the art, be substantially improved even by great increases of power.

The success of a program director is greatly influenced by his ability in adapting presentations to the limitations of the broadcast transmitter. But the artistic temperament of many impresarios seems to demand that they cast off all considerations of "technical" matters with a shrug of the shoulders. The sooner it is realized that broadcast presentation is unlike any other kind of presentation and must, to be successful, be planned with the limitations of the transmitter clearly in mind, the sooner will specialized radio directors displace concert managers and theatrical producers as the outstanding figures in radio presentation. A thorough appreciation of the factors which should govern the planning of features in the light of the radio transmitter's limitations, is an asset of great value to the conscientious and progressive radio director.

CHAPTER XIX

SUPPLEMENTARY SERVICES OF THE BROADCASTING STATION

The commercial broadcasting station which confines its attention to its technical operating function and leaves to the sponsor the full burden of capitalizing the goodwill program and gaging its value, fails to render certain essential services. All first-class stations, therefore, have well-organized sales departments, maintaining helpful contact with the sponsor, and publicity departments serving the press to advantage.

The Sales Department.

The commercial or sales department of the broadcasting station has, as its prime function, the solicitation and sale of the station's commodity, time on the air. Having sold the client the facilities of the station, it maintains active contact to see that he secures satisfaction by his use of the medium. This entails not only the maintenance of harmonious relations with the various departments with which the sponsor has contact, but a continuing check on the sponsor's activities to capitalize the value of his broadcasting effort. A commercial representative of a station who neglects to see that his clients use suitable tie-ups, posters, program advertising, and mention of their broadcasting in national advertising, accomplishes only half of his task. Thus, the radio-station contact man has about the same responsibility as the advertising-agency contact man, not only soliciting accounts, but making certain that the service and results obtained by the client are the best possible.

The sales representative also sees to it that the applause letters sent to his client in care of the station are properly handled. They should be forwarded in bulk at intervals agreed upon with the client. If the client is not interested in studying his mail closely, the acknowledgements may be handled by the station itself and, in that case, a monthly summary of response to programs, tabulated by districts and supplemented by excerpts from unusually interesting letters, is generally prepared.

Development of Sales Data.

In the solicitation of clients, the sales representative should be adequately supported by specific facts, supplied to him by a statistical bureau subordinate to the sales department. He should go to the prospective client with a definite plan for the utilization of the medium based on a careful study of the client's business. His solicitation must be the complete broadcast service and not restricted to selling the time value of his station. The average concern is not equipped and does not understand the broadcasting medium and, if left to flounder without aid from the station's sales representative, is not likely to make a happy selection of program feature nor to capitalize the feature successfully.

The least-developed phase of broadcasting solicitation is the marshaling of adequate facts which are of interest to the prospective client. Radio has been sold largely on enthusiasm, with the consequence that few conservative buyers have taken advantage of the opportunities which it offers them. In spite of greatly reduced mail response, it is still desirable to tabulate the mail received geographically, so that a general idea of listener distribution is readily gained. In the service area of the station, the number or percentage of the total mail received by all clients and for all sustaining programs should be tabulated for the smallest available geographical boundaries, preferably by districts in large cities and by municipalities

outside. The number of letters per capita received from each of these districts is also a helpful sales figure, because it makes fairly clear the concentration of the service area in the more populous section which the station serves. Prospective users are entitled to this detailed information, and the expense of gathering it can be justified by larger sales of broadcasting time. The tabulation of 100,000 or 200,000 letters received in a period of a year or two is much more convincing than a general claim that a certain district or area is adequately served by the station in question. As the purchase of time on the air becomes more scientific as a result of the study made by advertising agencies, a station which does not make a statistical study of its audience will be seriously embarrassed.

Field-strength Measurements.

As we have seen in previous chapters, signal strength and transmission quality account for about half the interest in a station and program popularity for the other half. Classification of all the mail received by a station gives an index to the latter, and field-strength measurements, made by a competent engineering organization under specific conditions, may furnish an accurate index as to signal volume. Field-strength measurements are expensive and difficult to make and can be accomplished only by an experienced engineering organization. When a station solicits an expenditure which may run into hundreds of thousands of dollars, however, its prospective customer has a right to demand a field-strength measurement survey similar to that shown in Fig. 40, or at least an approximate equivalent of such a study.

The author, in compiling information for this book, has written scores of broadcasting stations, asking for detailed information from numerous standpoints, and has been surprised by the almost universal absence of specific facts from the records of station managements. Some stations offered evidence, deduced from mail, that they were serving

relatively immense areas with quite small power. A cold analyst would certainly find it difficult to buy time on the air with any feeling of confidence. Statistical surveys of mail received and field-strength measurements will be standardized eventually on a basis which will permit rate studies to be made with some degree of intelligence.

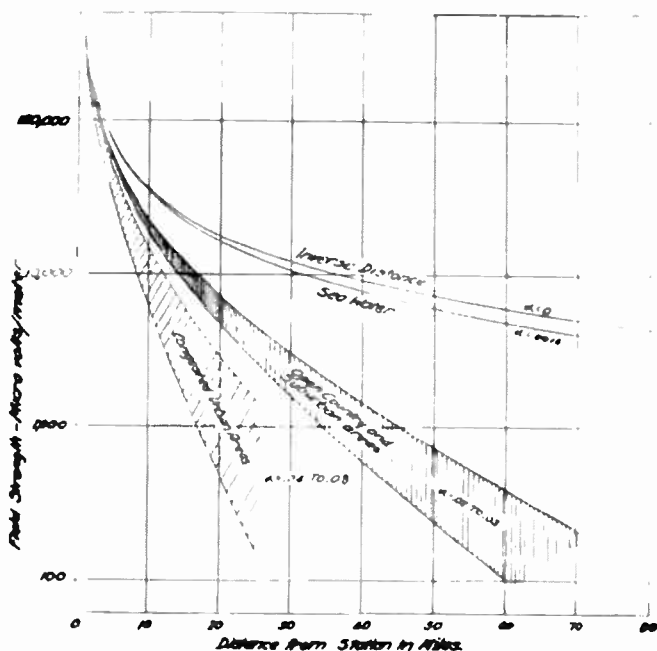


FIG. 37.—Field strength in microvolts per meter attained by a 5 kilowatt transmitter over various kinds of terrain, as compiled by the American Telephone & Telegraph Company. (Courtesy of American Institute of Electrical Engineers.)

In the absence of these facts, the buyer of time on the air will do well to check up all claims regarding extensive service areas with a person familiar with the vagaries of radio reception.

The following table of reception volume, based on signal field-strength values, taken from Dr. Alfred N. Goldsmith's

paper, "Reduction of Interference in Broadcast Reception," appearing in the October, 1926, issue of the *Proceedings of the Institute of Radio Engineers*, is offered in the hope that field-strength surveys will eventually be a part of every commercial broadcasting station's solicitation. The limit of the normal service area of a station lies between 1 and 10 millivolts per meter and is, in general, nearer the former figure than the latter.

Signal Field Strength in Milli- volts per Meter	Nature of Service
0.1	Poor
1 0	Fair
10.0	Very good
100 0	Excellent
1000 0	Extremely strong

The Publicity Department.

Subservient to either the program or the sales department is the publicity bureau of the broadcasting station. It is charged with the dissemination of news to the press, the preparation of feature material on special events, the taking and furnishing of news photographs and the supplying of program listings to the newspapers.

What is legitimate news from the broadcasting station has already been discussed in Chap. XVI. A publicity director possessing a keen insight into newspaper mediums is able to prepare acceptable and ethical publicity which is of indirect value to the client. The greatest difficulty usually encountered by broadcasting station publicity men is the fact that they are not informed sufficiently in advance of the ambitious program projects to be able to supply the newspapers with the type of story which they want. Program directors find it difficult to understand why a publicity man must know three or four weeks ahead just what a program event is to be in order to secure it the publicity which it justly deserves.

Much of the radio news is published in special weekly sections or weekly radio pages, discussing the events of the succeeding week. These pages usually go to press several days before publication, so that the news with which they concern themselves must be in their hands from a minimum of five or six days to a maximum of nearly two weeks in advance. Before it can be placed in their hands, the publicity writer must prepare his story, have it printed or mimeographed and delivered to the newspaper. This requires, at the very least, an additional week, if the weekly publicity statement form of distribution of news is used. Thus, three or four weeks is a minimum working schedule for the publicity man.

The Search for Free Publicity.

The commercial sponsor is inclined to regard the publicity man's duty as the dissemination of news prepared for the purpose of securing publication of the sponsor's name. Much better results are obtained if news and feature material regarding the artists themselves and the problems of staging the program, is unearthed and furnished the publicity man for dissemination. Although such publicity places little or no stress upon the sponsor, it serves to interest newspaper readers in the feature and thereby increases its goodwill possibilities.

The following is an excerpt from a leaflet issued to WEAf artists, prepared by the writer, which sets forth some essential points regarding publicity in connection with radio programs:

The kind of data which you send us is important. Many artists have circulars which give many newspaper criticisms and but little actual information. Newspaper editors are not interested in other people's opinions: what they wish are facts regarding the life and work of artists. For instance, the general statement, "a skilled concert singer who has played in all parts of the United States," has much less significance than the specific statement that an artist recently gave "a special recital

for the Aldine Club of Paterson, N. J.," even though the former may refer to a more prominent artist than the latter. Please give specific facts and names regarding your training, previous recitals, and professional associations.

Another kind of story that is acceptable to newspapers is a "human-interest story"—incidents which had a salutary effect on your career, particularly if they are concerned in some way with radio broadcasting. For instance, one of our artists from a western city, when a little girl, was determined to possess a revolver. She earned the money to purchase one by giving music lessons to children of her own age, and walked proudly up the Main Street, until she encountered the sheriff. He took his six-year-old prisoner in hand, much to her ultimate discomfiture. The little story received considerable publicity. It was linked with her radio performance by the statement that she pursued her musical studies with the same persistence and was consequently well able to entertain the radio audience.

Many photographs are submitted to radio editors each week. There are ten or fifteen broadcasting stations which offer from twenty to thirty artists each week, but, since the average newspaper can print but eight or ten radio photographs weekly,¹ it is impossible to promise the publication of any photograph.

The newspapers assume no responsibility for photographs submitted to them and occasionally lose the prints which you submit. Consequently, we are not in a position to assume any responsibility for your photographs, although we always endeavor to return them in good condition.

Advertising by Commercial Broadcasting Stations.

Commercial broadcasting stations have not yet been able to make use of advertising columns on a wide scale to increase the service of their stations to their clients. As a business, commercial broadcasting is not generally profitable, and it is therefore limited in its ability to conduct advertising campaigns, a condition which only time will remedy. WABC, operated by the Atlantic Broadcasting Company, uses advertising space in New York newspapers to present its programs to the radio audience through the radio columns. By this expedient, the listings are made

¹This situation is greatly altered since this statement was written. Photographs of artists make their way into newspaper sections now, only if they possess exceptional news value.

Listen in *To-night to* **W R C**

**New Radio Broadcasting Station
in Washington, D. C.**

Open August 1st

The Radio Corporation of America announces a new broadcasting station of the very latest type. On top of the Riggs National Bank Building—one of the highest points in Washington. With a transmitter of great power, range and clearness, the equal of any station now in operation. From coast to coast, Washington may be heard—with fine programs of music, lectures and fun; with important Governmental news, and vital information. To residents of Washington this new "Voice of the Capital" means a home station surpassed by none. Listen in tonight! See daily radio programs in your favorite newspaper.

Wavelength, 469 Meters.

**Radiograms
via R C A
to Europe and Asia**

**R C A
Marine Radio**

**R C A
Radiolas for
Every Home**

**Radio Corporation of America
233 Broadway, New York.**

FIG. 38.—The first advertisements inserted by a broadcasting station to aid it in winning a listener following. (Courtesy of Dr. Alfred N. Goldsmith.)

exactly as desired by the sponsors of the station, with full credit to their commercial broadcasters. Ultimately, all broadcasting stations will probably advertise their programs, using display space for their important events.

When there are competing chains of sufficient magnitude and with sufficient revenue to justify the expense, they will not only advertise their programs in the daily newspapers but use large space in important general magazines to foster interest in their commercial features and the goods which they seek to popularize. The public has not been taught to patronize commercial broadcasters in preference to those who do not broadcast, nor have they been sold the economic advantage of buying from successful users of the medium. The effect of large production on lowered costs is, however, quite generally appreciated, and it would not be difficult, once broadcasting is sufficiently influential to have a significant and obviously stimulating effect on sales, to show that broadcasting makes goods cheaper.

The Executive and Administrative Departments.

The functions of the executive and administrative departments are those usually assigned to that part of any organization. The station manager or broadcasting director, whatever his title may be, usually has reporting to him the sales manager in charge of the station's solicitations, the program director, the office manager or chief accountant, and the chief engineer or director of operations.

The commercial sponsor comes in touch with the executive department only in rare instances, even though it is, or should be, constantly watching the nature and success of his program effort. Perhaps the most spectacular demonstration of its influence is when it exercises its right of censorship over what may be broadcast through the station's facilities. The right of censorship which broadcasting stations exercise over the use of their facilities has been made the subject of considerable flaming oratory. Its necessity would not be so acute were stations not limited

by the inexorable laws of time in presenting but so many features in an evening. Unlike a newspaper, which can expand or contract its space to meet the needs of news and advertising, the broadcasting station's commodity is inflexible time. The value of that commodity is dependent upon popularity of program features. Therefore features of doubtful appeal must be excluded.

It is characteristic of those who believe it is their heaven-sent duty to reform the world by the magic of their oratory that they make the least appealing broadcast features. They are also equipped by nature to make the loudest howl when a broadcasting station management excludes them from the microphone. This is a difficulty which the executive department of the broadcasting station is continually faced with and it subjects them to much unwarranted criticism. It is inherent in the nature of the medium that all who wish cannot broadcast. The press sometimes gives disgruntled persons, who find the microphone closed to them, considerable publicity because it makes interesting newspaper reading. Nevertheless, it is safe to say that, if five hundred uninspired, bona fide requests for an available speaker were received from the radio audience by any broadcasting station, he would receive an invitation to its microphone.

Another contact which the commercial broadcaster has with the executive department is in connection with contracts and accounts, because the accounting department is usually directly subordinate to the executive department.

It is not my purpose to discuss the organization of a broadcasting station from the standpoint of a station manager, but only from that of the commercial sponsor. Hence details of station routine are not included in this volume. The organization chart on page 274 shows the interrelation of the various departments of a typical broadcasting organization. This is not, by any means, a standardized practice, but it is fairly representative of the organization of most large stations. It depends somewhat

on the station's own policy whether the client's broadcasting representative contacts with the station organization through the sales representative or through the program department.

The Arrangement of Broadcasting Stations.

In those stations where the transmitter is located at a great distance from the studio, the commercial client may



FIG. 30.—A corner of the reception room of station WEAf.

never have occasion to see the radio equipment of the station. In that case, his inspection of the station may be limited to the reception room, where the artists congregate to wait their turn to rehearse or to broadcast, the two, three, or four studios, the control room where the input operator is stationed, and the various offices. The trend of station design is toward studios of increasing size so that larger groups may be accommodated. The transmitter is beginning to assume the appearance of a power substation.

The physical investment in the larger broadcasting station will soon reach figures so large that only concerns very well fortified financially will be able to center any great attention in the field. The more elaborate studio arrangements and transmitter installations have direct bearing upon the program quality and signal strength which, in turn, affects the station's value as a goodwill medium. The broadcasting station served by long-distance wires from program centers, however, does not require elaborate and expensive studio arrangement, so that it is in a position to give service in its area at a lower cost than the station at the point of origination, where studio facilities are provided.

The most important developments in station organization in early prospect from the standpoint of a commercial broadcaster are better organization of statistical compilations of the value of the station, significant development in forms of program presentation, and high power of transmission, giving better service to listeners.

CHAPTER XX

THE CHANGING STRUCTURE OF COMMERCIAL BROADCASTING

The progress of commercial broadcasting depends upon the growth of radio broadcasting as a whole. With the present alignment of only a single important broadcasting chain and a host of smaller, unassociated rivals, overcrowded and greatly handicapped in securing high-grade features, broadcasting is approaching the limits of possible development. Until these stagnating conditions are upset, it is not economical for the larger commercial users to greatly increase their expenditure for talent, because the audience reached is no longer growing rapidly in numbers or in enthusiasm. Before an appropriation of a million dollars a year by any single commercial sponsor is fully justified, broadcasting must undergo a significant revitalization.

It is, however, quite unlikely that broadcasting will remain stationary. In time, there will be much larger audiences for each station, fewer second-rate stations excluding listeners from high-grade stations, and much keener competition among capable broadcasting organizations. These conditions are necessary if radio is to grow to the point at which everyone not possessing a radio set is anxiously awaiting the day that he can afford to purchase one. The automobile industry did not progress rapidly until the only barrier to automobile ownership on the part of almost every normal individual was lack of the necessary down payment.

The National Broadcasting Company's Position.

The National Broadcasting Company's predominance in the situation gives it a virtual monopoly upon important

program events, still further entrenching its commanding position. Were broadcasting like a manufacturing business, such concentration of facilities and experience in one organization would be highly advantageous, because the larger the production, the lower the cost per unit. But broadcasting is not a business which thrives on uniformity. It depends for its success upon creative ingenuity and diversified originality. Therefore the greater the competition on an equal footing, the more rapid the progress and the greater the following of the art.

Even two years of virtual monopoly of extended broadcasting has already brought its unmistakable signs of waning creative initiative. Better artists and better features are being constantly brought forward, but novelty and ingenuity in presentation is rarely evidenced. Programs are offered today in about the same way that they were offered two years ago, and what was then an amazing event is now received with complacent acceptance by the audience. If radio has in fact exhausted its surprises, it might be well to close up shop. Real rivalry, however, would bring forth a surprising wealth of new ideas.

That radio showmanship has definitely reached stagnation is fairly well indicated by the fact that only outstanding sporting events stimulate the radio audience to great enthusiasm. When the first Victor program, for example, was presented on New Year's Day two years ago, not a radio receiver in the area through which it was presented was out of service. Dealers reported wiping out of their stocks of sets, batteries, and tubes, and everywhere there was evidence that the whole radio audience was enjoying the feature. Two years later, a new Victor series, inaugurated by a program of greater musical value, presented at the same hour, was acceptable to those listeners who happened to be near their radio sets. It aroused no perceptible wave of enthusiasm. The novelty of that kind of feature, presented in that familiar and conventional way, was gone. It was a good program, enjoyed by

those who liked that kind of thing and were not otherwise engaged.

What is needed is new blood and new ideas to make possible the constant stimulation of a blasé audience. Competing chains and larger audiences will justify greater expenditure and the employment of impresarios earning salaries comparable to those of motion picture stars.

There are those who claim that the present one-sided broadcasting situation is the result of monopolistic policies on the part of the National Broadcasting Company and the huge corporations of which it is an offspring. Small broadcasters complain that they are discouraged by patent complications and difficulties in securing wire facilities and equipment. Aside from the usual red tape inherent in all dealings with immense corporations, these charges are wholly without foundation and have never been adequately substantiated by those who make them. If they choose, independent stations are free to combine and to form rival chains. Officials of the National Broadcasting Company have frequently expressed the hope that they will be faced with spirited competition. They welcome real rivals because that means larger radio audiences and greater value to commercial broadcasting.

The Overcrowded Ether.

The real cause of lack of competition on an equal footing in the broadcasting field is the overcrowded condition of the ether. Stations are faced with so many near-by competitors that only those long established in the affection of large groups of listeners can offer facilities of any real value to commercial broadcasters. Independent stations, with comparatively few exceptions, serve only a neighborhood audience. Naturally, under these conditions, all good features gravitate to the National Broadcasting chain, still further reinforcing its dominating position. The independent station, not served by chain programs, does not have an equal opportunity to win a huge following because it

has too many independent rivals serving the same area, all vainly striving to make a place for themselves in the ether. And until the independent station is in a position to offer commercial broadcasters high-grade facilities and large and loyal audiences of real goodwill value, independent chains of a magnitude and influence sufficient to offer real competition to rival the predominant chain will not spring into existence.

Radio Industry Lacks Foresight and Leadership.

The radio manufacturing industry, which is, in the last analysis, the group most vitally interested in the growth of good broadcasting, has assumed little or no responsibility in correcting the present unhealthy situation. When faced with chaotic broadcasting conditions in the 1926-1927 season, due to the overthrow of the regulatory power of the Department of Commerce by an adverse decision in the Zenith case in Chicago, it placed its hope for the alleviation of conditions entirely in the hands of Congress. It took no effective action to prevent wave length jumping or to discourage publicly the tremendous increase in the number of broadcasting stations then in operation. It did not even emphatically and courageously suggest to Congress that the law should require a drastic reduction in the number of stations then operating. It criticized those who foretold the chaotic conditions which were impending, on the grounds that such prophecies would hurt its Christmas trade. It spread false propaganda to the effect that there was no chaos in radio, even up to the time that heterodyne whistles were affecting more than half the programs on the air.

So long as the industry takes no active leadership in broadcasting, upon which it depends for its very existence, conditions will remain in their present impasse. Radio is no longer a novelty. To win large numbers of new and enthusiastic converts, broadcasting must become so attractive that no one is willing to be without a radio receiver.

Good commercial broadcasting can bring such conditions, but only when the value of individual microphones becomes great enough to warrant the necessary expenditure in program talent and, what is more important, in professional directing talent, special radio training of artists, more extended rehearsals, and more competent scenario and script writers. To reduce the number of broadcasting stations as an inducement to better broadcasting is a duty of the radio industry which it must sooner or later assume, or content itself with a small proportion of its potential market.

What are Ideal Ether Conditions?

Ether congestion is usually regarded from the standpoint of determining the largest number of stations which can be fitted into the broadcast band without heterodyne whistles. Were that attitude adopted with transit problems, they would be considered solved as soon as all who must ride can be jammed into cars by sheer force.

The apparently democratic theory that to give the listener the best possible service the largest possible number of stations should be crowded into the broadcast band is based on false premises. This view has come into general acceptance because of the assumed right that any individual who desires should be given the opportunity to broadcast. The nearer to the limit of the capacity of the wave-length band we come, the closer we are to this supposedly ideal condition. The cry for a wider wave-length band comes from those who believe the right of an individual to broadcast is proportionate to the intensity of his desire and is not in any way related to his ability to render a needed and essential service to the radio audience.

Freedom of Speech and Freedom to Broadcast.

Freedom of speech and freedom to broadcast, however, are two different things. There are enough street corners in the United States to accommodate everyone who wishes

to speak, and a rostrum could be provided for every citizen. But radio is a medium of definite limitations. If we over crowd it, we completely destroy it; if we permit congestion, we rob it of its value.

The only sound formula for the establishment of ideal broadcasting conditions is this: The listener has the widest choice of program sources and the best possible receiving service when the number of broadcasters is reduced to the point at which every station has a complete monopoly of its channel to the limits of its carrier range.

Why Fewer Stations Can Give Better Service.

This statement is not clearly obvious without some study of the situation. No one thoroughly familiar, however, with the problems of wave-length allocation and not biased by his own interests in a broadcasting station will deny the truth of the statement. It calls for a monopoly of channels to the farthest distance that a station's carrier is heard. That means exclusive channels to stations of 500-watt power or more in the center of the country, only two 500-watt stations per channel not less than 3,000 miles apart, and only six 250-watt stations per channel with 1,000-mile separation. Such a structure provides for about 250 broadcasting stations in the present wave band.

Certain technical improvements may increase this number, such as the use of the same wave length for all stations broadcasting the same program. The possibility of technical improvements and their influence on broadcasting are discussed in Chap. XXI.

The principal excuse given for not prescribing in radio law a definite limitation to the number of stations is the plea that discoveries may make possible great multiplication of the number of stations, which would have to await the revision of the radio law before they could be placed in operation.

Although radio has been the subject of intensive research for three decades, since Sir Oliver Lodge's discovery of

"syntonized" or tuned circuits, patented in 1897, no new principle for the separation of stations suited to use in broadcast reception has been discovered. Development has been confined to perfections in the application of tuned circuits so as to secure more perfect filter action by excluding the influence of undesired stations on different frequencies, and to the use of directional effects by loop reception. But there is no discovery or invention which permits the simultaneous operation of more than one broadcasting station on a channel narrower than 10 kilocycles.

Single side-band transmission is not yet developed to the point that it can be economically applied to broadcast reception, because the receiver required to respond to single side-band transmission is too delicate and expensive. The caution of our legislators in failing to prescribe limitation of stations on the basis of our present knowledge of radio is therefore unjustified.

Chicago Has Freedom of the Air.

Well-meaning persons, unfamiliar with matters of broadcasting technique, naturally incline to the view that the more stations that can be squeezed into the broadcasting band, the greater the "freedom of the air." The Chicago area, which has the maximum number of stations operating which can be accommodated, is, according to this theory, the ideal broadcasting center of the country. If, by a miracle of good management, Chicago's forty or more stations could be so allocated that they did not interfere with each other and that their programs were not marred by heterodyne whistles, it would meet the idealist's view of democracy of the ether.

At an early evening hour, when as many of these stations as it is possible to accommodate are on the air, we usually find three or four stations offering classical chamber music, seven or eight broadcasting dance orchestras, and the remainder presenting specialties, such as talks, song and

humor teams, glee clubs, and choruses. During the late evening, sometimes ten or twelve Chicago stations are offering dance orchestras, relieved occasionally by powerfully lunged cabaret singers. There is duplication of service and consequently division of audiences which would be as well served by a single station. The listener gains nothing by a choice among ten mediocre dance orchestras.

The idealist may claim that such program choice is not an indictment of the principle of freedom of the air, but merely a matter of poor program management. Instead of ten dance orchestras, one of these stations might offer a reading from Voltaire; a second, a health lecture; a third, a classical string quartet; a fourth, a glee club; and so on. But the fact remains that, during late hours, the bulk of the audience wants dance music and would not listen to features requiring attentive listening. The program managers have correctly sized up the audience's desires for each period. It requires but four or five general styles of presentation to meet the tastes of 95 per cent of the listening audience and the operation of an additional number of stations in any one locality is pure waste.

Who Gains by Duplication of Service.

What does the broadcaster gain by duplication of an existing service? He gratifies his personal desire to assume the responsibility for the operation of his own private broadcasting station. But that is all he gains. Every duplicated service antagonizes listeners because it shuts out at least two or three, if not five or six, distant stations.

The most frequent animating motive which leads to the establishment of smaller broadcasting stations is the desire of those in charge to play with radio on a large scale under the cloak of a business excuse. Some sponsors pride themselves in the possession of showmanship ability, and expect by its exercise to win large audiences. Under the guise of winning publicity for their business, they assume

the exalted position of manager of a radio station. Others believe in broadcasting as a goodwill medium, but erroneously consider that the best way to attain goodwill is through their own private transmitting station.

Another group resents the censorship applied to their programs by reputable toll stations. Such censorship is an exercise of ordinary business prudence to prevent the use of a station in a manner which will detract from its audience. Censorship is a harsh word to apply to the prerogative asserted by every newspaper and magazine to establish a definite standard and character for its columns. The speakers excluded through the editing of radio programs are almost invariably those who seek to impress their limited and personal views on the listening public during the time they are seeking radio entertainment.

Finally, there are a few who have found that they can make an impression in the ether at a lower cost with their own installation than by the purchase of time from a high-grade station. A cheap transmitter makes an impression of a kind on the broadcast listener, but it is hardly one of commercial value to the station or its sponsor.

Every one of these sponsors, operating his own station, has a right to broadcast, provided he has a needed feature of interest to the audience. The only serious problem which these sponsors introduce under present conditions is that they conceive it their duty to utilize a special private broadcasting station to get their program on the air.

Extending the Broadcast Band.

One proposal frequently made to accommodate more stations is to extend the broadcast band to 150 or 100 meters. This would be only a temporary stop-gap, because it would encourage still more applicants to desire broadcasting licenses. From the standpoint of the broadcast listener, it is a pernicious proposal, because it would mean that millions of radio receivers would have to be scrapped in order to meet the new conditions. Widening the band

would eliminate simple, efficient, and easily tuned radio receivers, and would require the substitution either of simple receivers of low efficiency, or receivers with complex plug-in coils and switching systems, placing broadcast reception out of reach of all but the technically inclined.

More important than this reason for not extending the broadcast band is the fact that frequencies below the present band are vitally needed for point-to-point communication, the transmission of pictures and aircraft communication—a service destined to grow immensely in the next few years, and one in which congestion would endanger lives and property. The only persons served by increasing the broadcasting band would be a few radio receiver manufacturers who want to force the public to buy new short wave receivers, and a few publicity seekers who wish to operate their own stations in preference to using the ample facilities already available.

Excessive Number of Stations an Aid to Monopoly.

The excessive number of small broadcasting stations is responsible for the continued and growing position of leadership which the National Broadcasting chain has deservedly won. The smaller stations which cry most vociferously about "monopoly" are themselves collectively responsible for its existence. By elimination and consolidation, they could become real factors in broadcasting. But, in their present status, they are not even able to rise to a position of local importance.

This may be illustrated by the situation in Chicago. Assuming a maximum potential audience of a million in the area, it is safe to say that 50 per cent of this number listen to the three leading pioneer stations. That leaves 500,000 potential listeners to be divided among thirty-seven rival stations, an average of 12,000 to 13,000 per station. Making proper deduction for persons not listening at the particular moment under consideration, even during the best evening hours, these smaller stations do not ordi-

narily have more than 2,000 to 3,000 listeners. Under the circumstances, commercial broadcasters are not justified in paying toll charges or in presenting costly program features through such stations. There is no chance that a real rival chain can develop with such puny audiences to justify the expenditure of establishing it.

Consolidation of Small Stations Essential to Growth of Broadcasting.

If each five independent broadcasting stations which have made no headway in winning real standing throughout their service areas, were to combine resources, they would be able to fight for the position of leadership in their areas. Having audiences fully five times as large, at only a fraction of the maintenance cost which they now bear individually, they could command higher charges and purchase the best of sustaining features. Chain interconnection would develop as a matter of course. Each of the five sponsors, using the combined stations for one hour a week and spending for talent only half of what he saves by reduced operating costs, could win greater goodwill and public attention than by thirty hours weekly operation of his private station.

At this writing, it is impossible to determine how many broadcasting stations will be in operation in the near future. The indications are that about 1,000 stations will attempt to crowd into the already overburdened ether lanes. Of these, only 100 are recognized leaders; the remaining 900 are of limited scope and audience. Were these 900 to combine in groups of five, they would have immensely greater influence, and radio would be more attractive to the listener. There would then be about 280 stations on the air, each having sufficient value to have high program standards and each free of heterodyning interference. Every station within easy range of the listener, even in the most crowded centers, could be tuned in without local interference.

Even more important than the gain to the individual stations would be the enhanced interest in radio on the part of the general public. Four or five chains, each trying to outdo the other, would be bidding for public favor. Listeners would not be limited to their local stations; they could, under those conditions, reach out three and four hundred miles during the most popular evening hours. The entertainment value of the radio receiver would rise tenfold and the potential radio audience would grow until it would include nearly the entire population of the country.

Prosperity of Industry Depends on Better Broadcasting.

Long-distance listening, while of little commercial value, is one of the most important incentives to the purchase of a radio receiver. If a dealer in the space of an hour can tune in three or four good local programs and then ten stations more than 500 miles away with only moderately good quality, he can sell the most hardened and stubborn prospect on the ownership of a radio set. With only 280 stations on the air, this feat will be possible on almost any good winter night, with any well-constructed, five-tube receiver. Instead of a blanket of thirty or forty near-by stations, which confine reception to a hundred miles or less, there will be but five or six stations in congested areas, leaving ample gaps for out-of-town programs. The fascination of listening under those conditions, as well as the program value of individual stations, would be immensely augmented.

Although I have stressed the secondary value of long-distance listening from the commercial standpoint, it is responsible for a large proportion of converts to radio. It is similar to the high-speed argument in selling an automobile. Although few drive at seventy miles an hour, a car capable of making that speed has a powerful selling argument in its favor. The radio industry has permitted a sales factor of tremendous value to disappear in allowing broadcast congestion to grow to its present proportions.

Legislation Will Not Bring Ideal Broadcasting Conditions.

How long it will take the radio manufacturing industry to assume leadership in assuring good broadcasting conditions is uncertain. No industry has ever shown less ability or foresight in assuring its growth and well-being. It has made no real attempt to align its twenty million listener followers against the increase of broadcasting stations, nor has it taken steps to consolidate existing independent stations. It has hoped that the government would assume full responsibility for broadcasting conditions.

But no matter how effective the government's regulatory power over radio becomes, it cannot be expected to bring ideal ether conditions. The government's function is merely to prevent abuses, to control serious heterodyning, and to exert ordinary police powers over the ether. The industry's hope that the effects of government regulation mean an end to its problems is an utterly false one. The industry must exert itself in its own behalf if it is to grow to its fullest potentialities. It must establish and support its own broadcasting board, which will work for the consolidation of stations and the establishment of rivaling networks. It must have a radio czar over the stations which it controls, to assure the progress of commercial broadcasting, lest the competition between stations foster the growth of radio advertising; and it must exert what influence it can over those stations which it does not control. It must interpret the radio audience's desires, advance the art of radio presentation, develop impresarios and announcers, and unearth new broadcasting features. This is a responsibility of the industry which, so long as it is disregarded, will stifle the growth of radio.

Commercial Broadcasting Awaits Better Conditions.

The value of commercial broadcasting is bound up with the solution of these problems of congestion and management. A single broadcasting chain, however dominant its position, can accommodate only so many commercial

sponsors. More opportunities for effective commercial broadcasting are needed, and growing audiences and greater enthusiasm on the part of listeners are essential to greater broadcasting. Commercial broadcasting needs stations worth \$1,000 to \$5,000 an hour and consequently justifying an expenditure of \$10,000 for the preparation of a single program through an extended chain of such stations. A \$10,000 program expenditure must serve millions of listeners. With such facilities and audiences, the radio industry would grow to be one of the ten largest in the country.

Chains May Bring Undesirable Program Uniformity.

Four or five chains of national scope, which would quickly develop if the number of stations were reduced to 250 to 280, would ultimately bring a new problem to broadcasting. These chains might be so widely interconnected that the listener would find himself limited to but four or five programs, even though he could tune in fifty stations with ease. Stations might become mere electrical extensions of a few centrally located studios. That would be an improvement over the widespread program mediocrity now obtaining, but it would not encourage individuality in stations. Uniformity of any kind is deadly and inimical to broadcasting progress.

Already, however, we have projected our broadcasting picture somewhat into the future. It is a temptation to go one step further, because there are good grounds for objecting to a broadcasting system devoid of individuality and limiting the opportunity to use the microphone to a comparatively small number. Several suggestions might be made as to how this system of program centralization might become diversified. Clearly, the development of several chains will bring with it a divorcement of station operation from program rendition. It is no more reasonable for the program presentation to be identified with the individual station than for a motion picture theatre to prepare its

own films. Specialization in station operation and in program presentation is a natural and desirable development.

New Basis for Chain Services Possible.

There is no good reason for assuming that the future of the chain system need be patterned exactly after the present chain. Stations are now definitely affiliated with a chain, or else they present their own programs exclusively. With lowered wire costs, a certain outcome of extended chain broadcasting, and research and development in the use of wire lines, it will be possible to organize many program chains. These may become rival syndicates, each duplicating the other geographically, as do numerous newspaper syndicate services and news services.

The individual broadcasting station, under those conditions, may select its features from a number of program services, receiving revenue for commercial programs and paying out for non-commercial sustaining programs. It will book features in the same way that vaudeville artists are booked. Program features will be bought on the basis of merit and cost. A commercial feature of exceptional attractiveness and program value will not be compelled to pay such high charges as one of doubtful and restricted value. Good program features will be rewarded by many acceptances from stations all over the country, without the payment of excessive broadcasting fees. And conversely, sponsors of features will base their payments upon the true value of broadcasting stations. A station which concentrates on lower grade commercial features, will have lowered audience value. Thus, supply and demand, program value and station value—normal economic factors—will rule the situation. Consistent high program standards will mean large audiences for the station so that it will command relatively higher rates. Stations will assume individual character, catering to more specialized audiences. Their programs will reflect as

definite a character as do magazines both in the character of their "advertising" and editorial matter.

Scientific Appraisal of Station Values.

Such a system would not long survive without a definitely organized system of station valuation, based upon program standards, power, and audience. It might lead to the formation of a single organization, performing the same service for broadcasting that the Audit Bureau of Circulations does for the publishing field. Such an organization might establish an arbitrary figure of merit for every broadcasting station, based upon field-strength measurement surveys, house-to-house canvasses, and population studies. This figure of merit, generally accepted, could be used to determine station charges. Commercial broadcasters could offer their features at a single basic figure, which each station would multiply by its figure of merit to determine its charge; likewise, sustaining features could fix a single base charge, which, multiplied by the figure of merit, would fix the amount paid by each station for its exclusive use in its service area.

The development of an unbiased and scientifically accurate station valuation service would change commercial broadcasting from a blue-sky proposition to one on a business basis. The sponsor must now rely on very general data and upon the experience of predecessors for guessing at the true value of a broadcasting station's time. But there is no good reason why the purchase of time on the air should not be reduced to the same simple terms that apply to the selection of media in printed advertising. Such definite facts, based on unbiased surveys, will enable the better stations to command higher revenue, eliminate the worthless proposals now made to advertising managers by stations without substantial audiences, and, to a large measure, place commercial broadcasting in the category of sound business expenditure, which can be justified on a basis of proved facts.



FIG. 40.—Field strength contour map of distribution over the New York metropolitan area affected by WEAF. Note the superior radiation south, east and west. Prepared by Department of Development and Research, American Telephone & Telegraph Company. (Courtesy of American Institute of Electrical Engineers.)

Field surveys, at the present stage of the art, are quite expensive, but great strides have been made in the development of simple portable field-strength measuring apparatus. If a survey of all important broadcasting centers were undertaken, trained crews and more easily operated measuring apparatus would greatly reduce the cost of surveys. The latest portable field-strength equipment has a capacity of nine measurements an hour. A crew could not make a survey of the New York district with this equipment in less than three or four months. But even with such facilities, the surveys are well worth while because they are the guide in the selection of radio media upon which millions of dollars a year will be ultimately spent. The advertising space buyer is entitled to conclusive information as to the coverage of a station, and his reliance upon the generalities of enthusiastic station solicitors is a confidence not always justified by the facts.

Possible Development of a Program Booking System.

To make the workings of this imaginary system clear, let us visualize the station manager of 1935 in action. He is consulting the weekly program magazine, which lists all the available features for all hours of the day and night. He glances through its advertising pages in which there are photographs of artists, descriptions of features, quotations from radio critics and comments of prominent listeners. He looks over the station ratings.

Perhaps his station has a rating too low to make its operations profitable; consequently, he has decided to concentrate on high-priced sustaining features. Or, on the other hand, the revenue of his station has not been sufficiently high to please its management; therefore he searches for a paying feature which is sufficiently good not to entail any sacrifice of audience. Here may be the announcement of a new entertainment troupe, offered at unusually low rates in order to build up its reputation; there a commercial entertainment feature well known for its consist-

ently good program value, but offered at a low rate to secure the widest distribution attainable. On another page, he may find a novelty, a new electrical music-making instrument, demanding high rates but deserving them because of its uniqueness. Here are educational and news services, programs for farmers, for women in the home—a complete range of program material which leaves no need unfilled. He may select good sustaining features for the best part of the evening and use revenue-paying features at later hours. If he is doubtful about the value of a certain feature, he may have the opportunity to hear it through his program circuit at off hours in “try-out programs” sent for the information of program directors. By weighing program value, audience appeal, charges, and payments, he decides on the features best suited to his needs and wires his application for exclusive rights in his service area.

This is only one of a number of possible ways in which the broadcasting system may develop. The author does not attempt to forecast the future; his purpose in presenting this detailed picture of what may happen is merely to show that the entire fundamentals of broadcasting may undergo a complete evolution which will ultimately bring a sounder foundation of program value, better conditions for the listener, keener rivalry among stations, and opportunity for all who wish to broadcast to sell themselves on the basis of merit.

Danger of Broadcasting Monopoly.

Much has been said and written about the dangers of monopoly in broadcasting. It is conceivable that the present National Broadcasting chain may grow into an organization of such great strength that economic pressure will force all independent stations out of the field. Centralization of broadcasting in the hands of a single organization has to commend it a definite gain in efficiency. It could offer commercial broadcasters the entire potential radio audience, thus justifying much greater program

expenditure. Its large resources under those conditions would permit of program research and development and would give it access to any public event which it desires. Consideration of the situation, however, will show that no monopoly of broadcasting is likely.

Government-created Monopolies of Broadcasting.

The broadcasting systems in Great Britain and many of the smaller countries in the world are based upon a monopolistic system. Instead of support by commercial sponsors, however, listeners are taxed annually to maintain their own broadcasting. Under this system, danger of wave-length tangles is eliminated because no monopolistic system would permit one of its own stations to destroy or impair the service of another. Their programs have the greatest possible audience and their substantial revenue eliminates problems of support.

But nowhere has broadcasting flourished so well as in the United States. We have more listeners per capita, in spite of congested ether conditions. Competition has encouraged program ingenuity; monopolistic systems have stifled originality. A study of the comments of British trade publications and the reports of American observers indicate many disadvantages to the monopolistic system. The editorial opinion of *Radio Broadcast* on this subject, in its February, 1926, issue, supports this point:

Those who dislike commercial broadcasting in principle always suggest, if they have any constructive idea, the establishment of a taxation system to support broadcasting. The experience of South Africa, as described in *Broadcast and Wireless Retailer*, a leading British trade publication, is enlightening. In the prosperous South African province, two stations have been given a monopoly, one at Johannesburg and one at Durban, the former now showing a deficit of over \$25,000 and the latter about \$35,000. The magazine complains that there are 20,000 "pirates" in Johannesburg who do not pay their broadcasting fee and incidentally points out that the cost of collecting the \$50,000 revenue from listeners was more than \$2,500. The annual license fee is about \$10.50.

In Great Britain there are 2,105,000 licensees, but whether listeners are wholly satisfied with their much-vaunted broadcasting system is indicated by another item in the same publication. "The British Broadcasting Company carries on remarkably, but many promises and long-overdue improvements, such as high-power stations and alternative programs, are held up, amongst other reasons, because of lack of funds.

In view of the fact that of the £2,227,000 received by the Post Office in license fees for the three years ending March 31, 1926, only £1,166,000 has been handed over to the B.B.C., the Wireless Retailers' Association has instituted a campaign to recover the bulk of the balance for the purpose for which it was subscribed."

After outlining the activities of the Wireless Retailers' Association in stimulating the Postmaster General, the article continues: "The Wireless Retailers' Association's activities are far from finished in this connection and dealers throughout the country will undoubtedly do all they can in this endeavor to secure better broadcasting."

A well-known New Yorker, a zealous radio follower, is quoted anonymously in the *Times* as follows: "What makes British radio rather dull for an American is the heavy official way in which they run it. Red tape swathes it. Parliament is constantly talking about and laying down rules for it. Every set owner pays a license fee and the really huge sum thus raised does not appear to go back into broadcasting. The general impression one gains is that the government is everything, individual initiative nothing—in radio.

The American public would never incline favorably to a taxation system for the support of broadcasting. The problem of collecting such a tax would be well-nigh insurmountable. Radio receivers are easily concealed and, even in the most law-abiding countries, it has been found impossible to collect a tax for radio without opposition and attempted evasion. A radio tax would be received with even less enthusiasm than are the prohibition laws. It has already been demonstrated to the American people that broadcasting can be supported without direct taxation and the enthusiastic support of listeners, essential to the success of a government-controlled system, could never be won. The chances for the establishment of a tax-supported monopoly of broadcasting in the United States are too remote to be worthy of further consideration.

Public Opinion an Infallible Safeguard against Broadcasting Monopoly.

Nor would public opinion permit of the establishment of monopoly by gradual absorption of stations into a single chain. When the American Telephone and Telegraph Company operated WEAf, for a long time it held a monopoly on commercial broadcasting. Controlling, as it did, the manufacture of radio telephone transmitters, through the possession of essential patents, it prohibited, with entire propriety, the use for commercial purposes of radio telephone transmitters not of its own manufacture. A station operating for profit was compelled to contribute to the research and development entailed in the perfection of the radio telephone by using transmitting apparatus made by the Western Electric Company, the American Telephone and Telegraph Company's manufacturing subsidiary. But when a number of stations chose to disregard the American Telephone and Telegraph Company's patent rights and were therefore sued for payment of license fees—a clear right under the patent law—these stations raised such a hue and cry about monopoly and aligned such powerful newspaper support that the American Telephone and Telegraph Company promptly offered licenses to all stations under its patents, upon payment of a moderate license fee, even though the transmitters were not of their manufacture. The incident showed that the public would not, for a moment, permit the establishment of a radio monopoly of any kind.

Moreover, a monopoly of broadcasting microphones would not be an advantage, even to the National Broadcasting Company, even though it were conducted on a plane which would not permit of the slightest criticism. Suppose, for example, that the number of stations fell to 250 by natural economic elimination and that these stations were combined in four duplicating networks, served by the National Broadcasting Company. Assume that these networks were sufficiently diverse in program appeal to offer

real competition to each other and such that they offered a standard of service which would be so satisfactory that no one would think of objecting to it.

Now imagine a commercial sponsor preparing to spend an immense sum to present an extraordinary feature. He would have the right to complain if one of the duplicating chains, operated by the company, were seriously to rival his program effort. The programs of the other three chains would have to be planned with due deference to any important user of the medium. True competition would be impossible.

Nor would individual stations be long satisfied under such a system. Suppose there were four stations serving the area, each taking a different program service from the National Broadcasting Company. There would be frequent complaints that one or the other chain was being favored with more desirable programs. If that criticism were frequently met by giving the same program to two or more stations in the same area, the radio audience, in turn, would have good reasons for objecting.

Monopolies in patented necessities are capable of working hardships upon the public. But a monopoly of artistic abilities and the facilities for presenting them is quickly and easily destroyed. Broadcasting is not a necessity; hence, if it wins disfavor by the way in which it is conducted, the public is in a position to destroy its effectiveness without recourse to law or force. Broadcasting stations win their position by pleasing and lose it by displeasing. Under such conditions, monopoly is attainable only through public approval and is immediately destroyed by public disapproval.

The trend of development at the moment is toward strengthening the power of the National Broadcasting chain, but it will continue in this direction only so long as it raises the standards of broadcasting. Even now, it is suffering from lack of forceful initiative in originating program features and confining itself to presenting more

skilful and expensive artists in styles of presentation evolved several years ago. As soon as the congestion problem is solved, others will try to match the National Broadcasting presentations and a period of constructive competition will set in. Whether it follows the lines which I have indicated is of course problematical, but its effect, in the end, will be tremendously stimulated public interest in radio, with consequently increased value and service to the commercial sponsor.

CHAPTER XXI

THE FUTURE OF COMMERCIAL RADIO BROADCASTING

Those commercial broadcasters now supporting the medium are not only receiving direct goodwill return but will be further rewarded by the possession of loyal and established audiences and valuable broadcasting experience when broadcasting itself rises to its full power. A better understanding of the goodwill utilization of the broadcasting medium, the attainment of wider coverage by extension of chain systems, and improved showmanship by specialization in radio training and personnel will bring commercial broadcasting to its proper importance in the spectrum of sales promotion. The present chapter will suggest some of the possibilities of the future, which may be realized through the application of improvements in the technical facilities to be available to the commercial broadcaster.

In previous chapters, we have considered sufficiently the possibilities of new forms of presentation and the problems of congestion in the broadcast band, to dismiss them without further comment. Progress in these directions depends upon the intelligent use and organization of existing facilities and does not await new technical developments. Important as these contributions will be, those arising out of prospective technical improvements of radio are even more spectacular.

From the standpoint of the advertising profession, we need not only clarification of the utility of the medium and methods of using it, but more accurate appraisal of station coverage. Experienced and conservative space buyers have difficulty in approving large expenditures in a medium which gives so little direct evidence of its true value. Were it possible to place a precise valuation upon

a commercial broadcasting effort, there would not be a national advertiser having a product and sales policy suited to the medium who would not seek the opportunity to employ it.

New Means of Charting the Ether.

An invaluable adjunct in this connection is the development of easier means of charting the extent of a station's radiation, so that its coverage can be established with accuracy. Ether surveys made with existing equipment entail labor and expense which limit them to highly congested districts. A nation-wide survey under present conditions would be a task of such magnitude that it could not be undertaken profitably.

An automatic-signal energy-recording system which would enable a survey crew to measure and record field strengths by a stop of only half a minute at each observation point would cut the cost of surveys considerably. Field-strength measurements have the same significance in broadcasting that distribution data regarding magazines and newspapers have in advertising space buying. While the development of such equipment is of little interest to the broadcast listener, it would have considerable significance to the space buyer because it would help to place the purchase of time on the air on a business basis.

Developments in Studio Equipment.

Most of the progress in presentation depends upon the development of imaginative radio directors and the necessary resources to support their efforts. Nevertheless, technical developments, placing greater opportunities in the hands of the program director, will continue to appear from time to time.

Although the tendency is apparently toward larger studios in which may be assembled every kind of artist, both vocal and instrumental, to be used during a program, new facilities may bring changes in the methods used for

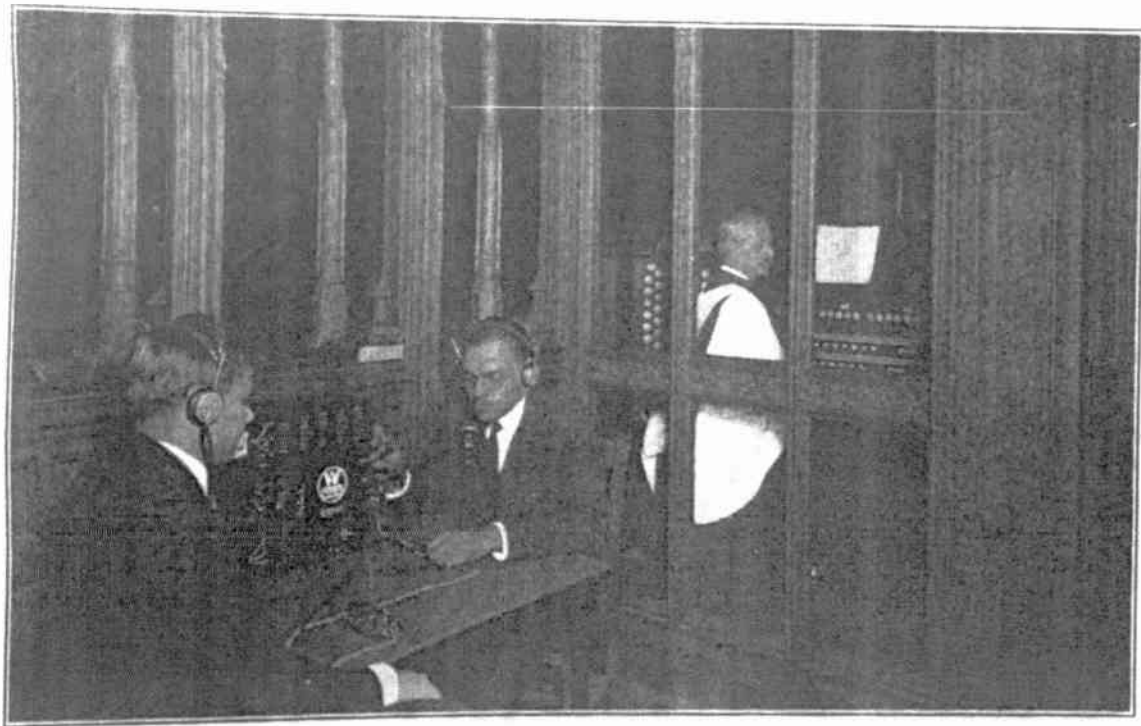


FIG. 41.—The announcer's switch equipment, by means of which he cuts in microphones, as required, for organ, choir, preacher and announcing, at a church service broadcast.

the rendition of radio drama and continuity. We may find the use of half a dozen small studios, each with its separate microphone and group of artists, more flexible, once the problem of coordination between isolated studios is better in hand. The microphone output of each of these studios may then be brought to a "mixing room" and assembled into a single electrical sound wave in proportions controlled at a "mixing panel." The artists under such a system would do their work unrestrained by considerations of correct volume proportion to other parts of the performance, because volume proportion would be adjusted electrically at the mixing panel. An orchestra, furnishing the background to a speaker, could play with natural volume, and its relation to the speaking voice could be adjusted at the mixing panel to the point of easiest understanding of the speaker. This same principle, applied to more extensive combination of voice parts, choruses, quartets, orchestras, and special noise-making apparatus, would greatly simplify the work of the director, provided some kind of noiseless communication or signaling system enabled him to assure perfect coordination of the separated groups. Naturally, each contributing element of the program must be perfectly coordinated with the others; the orchestra and chorus must begin their parts at the correct moment, speaking voices must fit in with musical numbers; all of these, working in the sight of the impresario in a single studio, are easily directed by signals. The simultaneous use of several studios is feasible only if the director's control over each artist is in no way sacrificed. How essential good coordination is can be appreciated by reference to the excerpts from the Galapagos script in Chap. XII. "Fading-in" and "fading-out" effects of such striking and unusual character could be secured by improved mixing panels handling the output of separate studios with a satisfactory director's signaling device, that great developments along these lines may be expected.

A statement of the National Broadcasting Company, describing the arrangements made to handle the broadcasting of the Chicago opera for the Brunswick-Balke-Collender Company, indicates the degree to which the use of many microphones, with their outputs controlled at a mixing panel, contributes to the effectiveness of a feature.

National Broadcasting Company engineers, who have been in Chicago for more than a week solving the difficult technical problems involved, have reported that with the arrangement of microphones and mixing panel which they have developed it has proved possible to blend every portion of the music, both vocal and instrumental, into a smooth, balanced unit which has satisfied the ears of trained musicians who have listened to test pick-ups during rehearsals.

E. F. Grossman, Assistant Plant Manager of the National Broadcasting Company, in charge of the technicians in Chicago, states that the present pick-up arrangement has proved so flexible that it will undoubtedly lead to the solution of heretofore impossible pick-up problems in broadcasting direct from theaters and auditoriums. At the same time, pick-up arrangements as elaborate as the one now installed in the auditorium will be required only on rare occasions.

Fifteen separate microphone channels are being used, each one consisting of one or more microphones, all of which lead to a specially designed mixing panel, where the music absorbed by the various microphones is first amplified separately and then blended so that each portion carries proper emphasis. The microphones have been distributed at points of vantage on the stage, in the flies and wings, along the apron of the stage, in the orchestra pit, and high over the heads of the audience in the auditorium proper. Even the back wall of the stage has its pick-up arrangement. In this manner, no matter what the position of the artists on the stage, every portion of the vocal music, as well as the orchestral accompaniment, can be absorbed by the microphones and carried to the mixing panel.

During the performance, an observer located in the auditorium proper will follow the action on the stage in detail and make sure, through telephone communication with the control board, that the proper microphones are cut in or out.

Practically all the microphones have been concealed, so that neither the artists nor the audience watching the performance will have a visible reminder that the "Garden Scene" is being broadcast. Many of the microphones have been stripped of their cases to accomplish this result. Guards stationed in the wings and backstage will prevent

any unwanted noises, such as footsteps or whisperings, which might be picked up and sent out to the radio listeners.

Possibilities of National Coverage.

The constantly growing chain system leads the advertiser to look forward to nation-wide broadcasting coverage at a reasonable cost by a single chain. National coverage is, in fact, already available, having been employed for presidential speeches and sporting events of national interest. The three hours of time difference between the Atlantic and Pacific Coasts, however, means that a program offered in New York at eight in the evening is presented in the Central belt at seven, in the Mountain belt at six, and in the Pacific belt at five. Such time differences render the employment of nation-wide networks for any but programs of exceptional and timely interest unlikely.

Possibly the development of systems of recording programs, as suggested in Chap. XII, may be applied to the attainment of national coverage overcoming the problem of time difference. While it is by no means certain that program recording will be used to piece together radio presentations as motion picture films are assembled, that proposal does suggest a means of sending a program to all parts of the country at the same relative time of the day without requiring two or three separate studio renditions to accomplish the result. A broadcasting feature in recorded form may be distributed to two or three studios, each the program feeder for a network covering a different section of the country. Thereby the national advertiser could offer his feature at the hour best suited to its character without limiting its scope to one or two time belts or requiring the expense of more than one set of artists and directors.

International Broadcasting.

International broadcasting is a spectacular development which is certain of early consummation. The toll charges for the transatlantic telephone link at this writing are only

two and a half times WEAF's regular commercial rate. The British Broadcasting system is contemplating, by a series of radio and wire links, permitting the broadcasting of London programs throughout the British dominions.

The element of time difference, again, renders the frequent and consistent use of such a system quite unlikely.

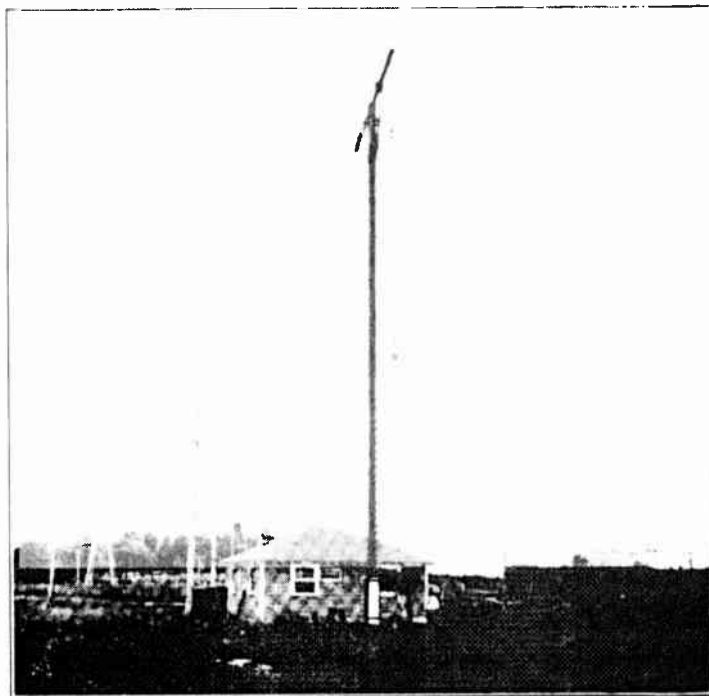


FIG. 42.—WGY's short wave antenna, through which its regular programs are re-broadcast on a wavelength of 32 meters, serving listeners in England, South Africa and Australia, either directly, or by local re-broadcasting.

The coronation ceremonies, for example, no matter at what hour they may reach India, Australia, or Canada, would have a tremendous interest to British listeners. But from the commercial broadcasting standpoint, even disregarding the matter of expense involved, international

broadcasting has application only when events of extraordinary news interest are available.

There is, however, a considerable indirect value to such spectacular growth in the diversity and extensiveness of broadcasting. It means constant stimulation of listener interest and constantly growing radio audiences. Anything which enhances these factors serves indirectly to increase the effectiveness of commercial broadcasting. Hence the commercial broadcaster will probably be called upon to pay large premiums for periods immediately preceding great events, if he is not covered by existing contracts.

Wire Facilities for Program Distribution.

The extension of chain broadcasting is hampered somewhat by the high cost of wire facilities. Only one familiar with the technical problems involved and the extent of the equipment and facilities required for the transmission of programs by wire can appreciate why a broadcasting circuit is more costly than an ordinary long-distance telephone connection. Indeed, the great demand for long-distance wires for ordinary commercial purposes makes it difficult at times to secure large numbers of circuits for broadcasting purposes. This problem would be more frequently apparent were not broadcasting fortunate in requiring most of its circuits during the hours when commercial telephony is not bearing its peak load. Commercial requirements, of course, have the first call on facilities because that is the fundamental purpose of the telephone system.

With the constantly increasing and improving telephone plant, however, as well as the discoveries being applied to increase the uses to which a single circuit can be put, wire facilities may become sufficiently numerous and inexpensive to permit the organization of a number of program syndicate services competing actively in overlapping territories. In the meanwhile, if any organization does not find facilities available when it demands them,

it must recognize that it requires millions of dollars and years of time to develop additional wire facilities and that such expenditures are not justified until prospective revenue is a definite certainty.

Limited Wire Facilities a Safeguard to Overdevelopment.

As a matter of fact, the limiting effect of wire costs is a blessing in disguise. It prevents the rapid development of program syndicates which are not sufficiently well planned and well financed to render real service to radio. The chaotic condition of the ether in the 1926-1927 season, would not have occurred if it had required at least half a million dollars to erect a broadcasting station. Since \$10,000 or even less was then sufficient to make a broadcasting station of a fashion, there were five times as many stations in operation as the listener audience could support with attention. In like manner, were low-cost wire facilities available, a score or more ill-considered program ventures might be undertaken with every likelihood of ultimate failure. But their competition in the meanwhile would lower sustaining program costs to a level which would be ruinous to their proper development.

Overexpansion and overenthusiasm is a danger which always threatens broadcasting. The author has suggested the possibility of competing program syndicate services in Chap. XX, but it is only a suggestion, not a prediction, of what may occur in ten or twenty years.

The clearing of the ether is likely to bring three, or at the most, four competing chains; the organization of a greater number would be premature. Later, as audiences develop to much greater numbers and the commercial value of the medium is established in definite terms of dollars and cents, it will be time to think about the establishment of additional wire program syndicates. Their development must await low wire costs and high station valuations. The former depend upon technical advances in the telephone art, an evolution spread over a period of

many years; the latter upon great progress in the commercial utilization of broadcasting.

Developments Permitting More Stations in the Broadcast Band.

We may also look for developments in broadcast transmitting apparatus which may help to relieve ether con-

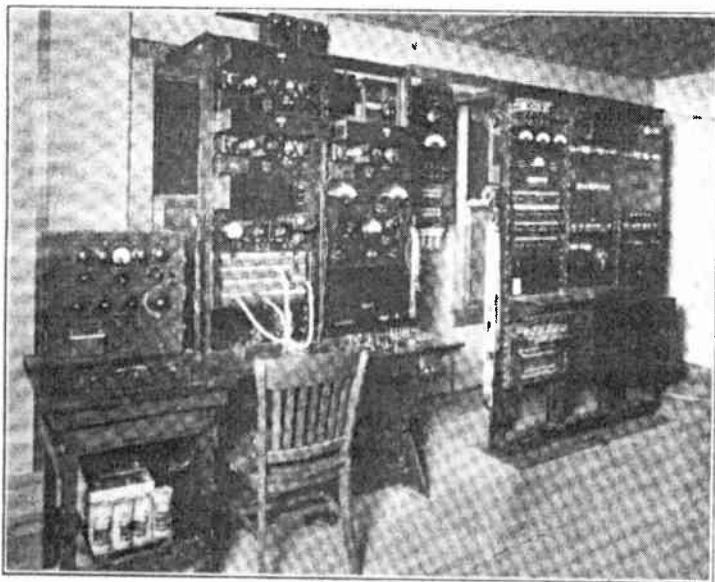


FIG. 43.—Single side band receiving equipment at Riverhead, Long Island, used for transatlantic telephony. (Courtesy of Radio Broadcast.)

gestion. These too are not likely to be revolutions but gradual improvements looking toward the accommodation of more stations without interference. Among these is perfection of single side-band transmission, which cuts practically in half the wave-length space required by a station. This system of transmission has the serious disadvantage of requiring receivers of considerable complexity and costliness, which places them out of reach of

broadcast listeners. Doubling the number of stations which can be accommodated today would not come near to solving present-day congestion, and the improvement it would bring now would not justify the complete reequipment of broadcasting stations and broadcast receivers. But five or ten years from now, if audiences increase tremendously, there may be need of additional program services which single side-band transmission and reception may make possible.

The development of systems by which a number of stations radiating the same program may be placed on a single wave-length channel also offers some promise. But the technical obstacles which remain to be overcome are still of sufficient magnitude to require considerable research. Already WBZ in Springfield and WBZA in Boston have been operated on an experimental basis with such a system, but the results so far attained have not been entirely satisfactory. A receiver located half-way between two such stations suffers considerable distortion due to slight phase differences. Fading and directional effects cause more complications. This development cannot be looked to as a panacea for the immediate solution of present-day congestion problems.

Receiver Improvement.

In the field of reception, simplicity and reliability of the receiver to a degree which requires no technical knowledge for continued satisfactory operation is the most important trend of development. Already marked progress has been made in the direction of quality reception which has finally brought radio reception to a level of real musical value. The range of accurate tonal reproduction has increased so that fidelity of reproduction of a high order is attained. The greatest need along these lines now is greater stability of the receiver and loudspeaker at loud volumes and the conquest of the ringing and throaty effects noticeable since the lower tones are better reproduced.

Apparently, the radio receiver has already reached the stage where refinement and not radical improvement is the order of the day. Simplicity of control is already an accepted requirement of the saleable receiver, a decided contrast to the equipment in general use only two years ago.

But more intriguing than any of these developments in transmission and reception is the coming of telephotography. Coming into general use, as it very likely will, coincident with great improvements in receiving conditions, it promises to bring on a radio boom of unbelievable proportions. Viewing the laboratory developments in this field, it is impossible to predict whether this will occur next year or five years from now, but it may be regarded as a certainty within a relatively short period.

The Telephoto Transmitter and Receiver.

It requires little more than mechanical improvement to render a number of devices developed in various laboratories of sufficient reliability to make them suitable for limited commercial exploitation. At the present stage of development, they permit of the transmission of a complete photograph of four by five size in two or three minutes.

The transmission of pictures is essentially like that of transmitting voice and music. The photograph to be transmitted is mounted on a cylinder which revolves at a predetermined rate, somewhat like the cylindrical record of a dictaphone. A single beam of light is reflected from the photograph to a photo-electrical cell, and it covers progressively the entire surface of the photograph as the cylinder revolves. The intensity of the reflected light varies according to the tone of the picture. The photo-electric cell functions as a light-intensity microphone, causing a varying electric current to flow, corresponding to the variations in the light wave impressed upon it. An electrical copy of the photograph is thus obtained; this is amplified, then used to modulate a carrier wave, and finally radiated.

An ordinary receiving system picks up the modulated carrier and amplifies it. The detector separates the light-wave current modulation, then an audio-amplifier increases it to sufficient magnitude so that it operates a shutter which regulates the intensity of a beam of light. Thus we produce, at the receiving point, a light varying at the same intensity as the one at the transmitter. This beam of light is directed to the surface of a light-sensitive paper mounted on a revolving cylinder, which turns in the same manner and at the same rate as the one at the transmitting station. A photographic reproduction of the transmitted picture is thereby secured. Special photographic papers will probably be found to make the development of "radio prints" a simple matter.

The light-wave modulation of the carrier can be transmitted on the same wave length with voice broadcasting, so that pictures can be made a part of the conventional broadcasting program. In that case, a special radio receiver is not required. The very high audio-frequency used for the transmission of the light wave can be separated by a filtering device and fed to the picture reproducer. The entertainment value of a continuity program or a travel talk can be tremendously increased by means of radio photographs illustrating the subject matter of the program, as do the pictures in a book.

Owing to the skill required in the reception of radio photographs, the first enthusiasts will be limited to the ranks of skilled set constructors. But improvement will come rapidly and the apparatus will be within reach of all within two or three years after its first commercial appearance. The beginnings of telephoto transmission will have the same significance that the first broadcasting by KDKA had in 1920. Attracting but little attention at first, the enthusiasm will gradually grow and finally take hold, as did broadcasting, until it reaches out to every country in the world.

Uses for Telephotography.

The addition of telephotography to the receiving set will greatly enhance the pleasures of reception. Educational talks can be made tremendously more interesting and effective by the addition of outlines, charts, diagrams, and illustrations, and much material now excluded from broadcasting will become suited to the microphone. The service value of broadcasting will be lifted, and its educational importance will become a factor of social significance.

The first thought of most people in learning of telephotography is that, by this means, they will be able to see photographs of people in the studio, and to see the artists as they broadcast. This is, however, an unimportant phase of its possibilities. The cast of voice actors need not be the same persons who serve as the subject of the accompanying radio photographs. While it will be interesting to see the smiling faces of famous broadcasting artists, most of the pictures transmitted will probably be specially taken for radio transmission in motion picture studios. They will be still pictures in costume giving realistic support to the program. Instead of a picture of microphone, announcers, studio signal lights, and artists, accompanying Harry Horlick's Gypsies, for example, will be pictures of peasants dancing to native folk songs and views of the Urals. Radio dramatic productions will be made more effective by illustrations depicting the various climactic points of the drama.

Probably the first use to which ambitious commercial broadcasters will put the new device is to transmit miniature billboards to their broadcast listeners. This will encounter the same reaction that the first radio advertising talks did, because uninvited billboards are no more welcome in the home than uninvited salesmen.

Telephotography or radio picture, however, will give a new and valuable opportunity for unobtrusive commercial tie-in which will greatly enhance the effectiveness of commercial broadcasting. Experience will probably prove

that anything more than an inconspicuous trade-mark or credit line will arouse resentment. At the beginning and end of the program, however, coinciding with the introduction of artists and feature, photographs of the broadcasting artists and the product which sponsors them will not be out of place. The fade-out of the program will permit of another picture of the product, just as in motion picture presentation, the screen producer gets his flash of advertising at the beginning and end of the film.

Possibilities of Television.

The step from telephotography to television will follow shortly upon the general acceptance of telephotography. Dr. E. F. W. Alexanderson, the eminent General Electric engineer, responsible for many important discoveries in radio transmission and reception, has already greatly clarified this problem. Television compares with telephotography as does the motion picture with the still photograph. The only real difference between the two is speed. Television is a matter of perfecting telephotography to the point that it transmits sixteen pictures a second.

The appearance of television should make radio a business of at least three billion dollars annual volume. By that time, experience with telephotography will have cleared up some of the pitfalls arising from misuse by commercial broadcasters and the art will be established on a high plane.

It would not be surprising, with the coming of television or radio movies, that the screen producers will follow the same tactics as did the phonograph industry when broadcasting developed. At first, they will disregard, then belittle the new rival as a passing fad. It will be imperfect at first, of course. But it will have a fascination which will react unfavorably on motion picture receipts. The little 4 by 5 picture appearing on a ground-glass screen in the home, or whatever the first devices will offer, will have a greater appeal than the motion picture theatre. But it

will be only the interest of novelty and not that of superiority.

Radio as Rival to Movies and Phonograph.

Anyone placing in operation a radio of the vintage of 1922, resurrected from the attic among forgotten things, cannot but marvel that he was willing to listen to and actually enjoy the imperfect scratchings which the device produces. As radio receivers were improved and reception became established as a permanent rival to the phonograph, the phonograph concerns allied themselves with the radio business. They used the broadcasting medium to popularize their artists and sold receiving sets in conjunction with their phonograph instruments. After inaugurating this policy, the Victor Talking Machine Company, following two years of virtual paralysis due to radio, had the largest sales in its history. In the end, the phonograph industry will look upon radio as the greatest boon which ever came its way, because, at last, a way is provided to demonstrate its product to the general public at minimum cost.

Radio movies will afford an equal opportunity to the motion picture industry to sell its stars to the general public. Special brief radio scenarios, using the "sets" of big feature films and presenting their stars, may be featured in television. The desire to see big feature films may be stimulated by bringing film stars to the home through radio and by demonstrating the magnificent settings used in current features. Once the power of television is recognized and utilized, the motion picture industry will find it a great ally. Thus the motion picture industry may go through the same cycle of depression and recovery as did the phonograph.

But television can never displace the motion picture in public estimation any more than broadcasting can displace the drama or the phonograph can supersede the concert orchestra. Radio is a small edition of the real thing, transferred to the home.

Human Nature Demands Mass Entertainment.

Technical development may bring us radio music so realistic that it cannot be distinguished from the original, and radio motion pictures approaching perfection. But even such development will not enable radio to displace the established forms of amusement; unless the very foundations of human nature change. If man were by nature a hermit who preferred to separate himself from the rest of his fellows, he would avail himself freely of the opportunity to enjoy all the physical comforts and conveniences of city life far out in the wilderness. He might have unit electric light plants, automatic water systems, radio music and, sooner or later, radio movies, without living in crowded communities. Modern electric machinery could make a hermit's life a paradise of comfort and isolation.

But the normal individual looks forward to no such paradise. He wants to shine among his fellow men, work with them and play with them. Man is definitely gregarious.

His attitude toward entertainment is likewise founded on his gregarious instincts. Machine-made amusements in the home cannot replace public amusements. Attempts to sell home motion picture outfits for entertainment purposes have failed. One has only to witness a motion picture in a projection room alone to realize how definitely the presence of a mass audience affects the ability to enjoy the film. The same influence can be felt by attending the rehearsal of a farce comedy. It takes a marvel of acting to draw a laugh in an almost empty theatre. Mechanical and synthetic entertainment can, therefore, be only supplementary.

The future of broadcasting and television is none the less alluring. They will brighten home life and make a happier and better world. But they will never supplant the university, the motion picture theatre, the stage, the opera, or the newspaper.

Radio's commercial possibilities are in no way sacrificed in this conception. The sponsor addresses his audience

at a favorable time when it is relaxed and receptive in the comfort of the home. He may offer entertainment and education at an infinitely small cost for each pleased listener. He reaches the entire family frequently and consistently.

While commercial broadcasting is in its present formative stage, the sponsor's opportunities to establish large followings by judicious selection of stations and program are especially attractive. He is faced with little competition of a high order, and the present station charges, based upon cost of operation, offer facilities at bargain-counter prices. Given a product of general distribution, a well-known name, a good program idea, and the audience of a well-established station, the goodwill opportunity of broadcasting is not to be equalled by any other form of sales propaganda. With greater stabilization of the medium and true program competition, larger audiences will be available and definite results will encourage the now hesitant logical user. The longer he waits, however, the more definitely he will find himself outstripped by veteran users of broadcasting, and the more it will cost him to establish his position in the estimation of the radio audience.

APPENDIX

STATISTICAL SURVEY OF THE RADIO¹ RECEIVERS IN USE

Estimated figures pertaining to the radio industry from 1922 to date, compiled by *Radio Retailing* from sources as authentic and accurate as it is possible to obtain.²

NUMBER OF SETS IN USE³

(As of January 1)

1922.....	60,000
1923.....	1,500,000
1924.....	3,000,000
1925.....	4,000,000
1926.....	5,000,000
1927.....	6,500,000
1928 (estimated).....	7,700,000

¹ Including both factory built and home made, after accounting for obsolescence.

RADIO AUDIENCE, NUMBER OF PEOPLE LISTENING TO SETS IN USE

As of January 1

1922.....	75,000
1923.....	3,000,000
1924.....	10,000,000
1925.....	15,000,000
1926.....	20,000,000
1927.....	26,000,000
1928 (estimated).....	30,000,000

NUMBER SETS ON FARMS

At End of Year

1922.....	10,000
1923.....	145,000
1924.....	360,000
1925.....	550,000
1926.....	1,350,000

¹ Reprinted by courtesy of *Radio Retailing*.

² *Radio Retailing* acknowledges the aid of the following companies in preparing these statistics—Hazeltine Corporation, Radio Corporation of America, Martin-Copeland Company, Raytheon Manufacturing Company, Federal-Brandes, Inc., Gould Storage Battery Company, National Carbon Company, Charles Freshman, Inc., Tower Manufacturing Corporation, Radio Master, Inc., and others.

TOTAL RADIO SALES
At Retail, in Numbers and Dollars, during the Year

	1922	1923	1924	1925	1926	Total to date	Estimated 1927
Radio sets, number.....	100,000	250,000	1,500,000	2,000,000	1,750,000	5,600,000	1,700,000
Factory built.....	\$5,000,000	\$15,000,000	\$100,000,000	\$165,000,000	\$200,000,000	\$485,000,000	\$215,000,000
Speakers, number.....	25,000	500,000	1,500,000	2,000,000	2,000,000	6,025,000	1,500,000
Separate units.....	\$750,000	\$12,000,000	\$30,000,000	\$32,000,000	\$30,000,000	\$104,750,000	\$30,000,000
"B" battery eliminators, number.....			10,000	100,000	500,000	610,000	600,000
Separate units.....			\$400,000	\$4,000,000	\$18,000,000	\$22,400,000	\$21,000,000
Dry batteries, "A," "B," and "C".....	\$4,500,000	\$6,000,000	\$55,000,000	\$66,000,000	\$80,000,000	\$211,500,000	\$85,000,000
Storage batteries and "A" power units, number.....		650,000	2,000,000	1,700,000	2,100,000	6,450,000	1,900,000
Separate units.....		\$7,000,000	\$25,000,000	\$26,000,000	\$37,000,000	\$95,000,000	\$30,000,000
Receiving tubes, number.....	1,000,000	4,500,000	12,000,000	20,000,000	30,000,000	67,500,000	35,000,000
	\$6,000,000	\$17,000,000	\$36,000,000	\$48,000,000	\$58,000,000	\$165,000,000	\$65,000,000
Other accessories, including headsets, separate cabinets, aerial equipment, etc.....	\$3,750,000	\$4,000,000	\$11,600,000	\$24,000,000	\$33,000,000	\$76,350,000	\$44,000,000
Parts.....	\$40,000,000	\$75,000,000	\$100,000,000	\$65,000,000	\$50,000,000	\$330,000,000	\$45,000,000
Totals.....							
Sets.....	\$5,000,000	\$15,000,000	\$100,000,000	\$165,000,000	\$200,000,000	\$485,000,000	\$215,000,000
Parts.....	\$40,000,000	\$75,000,000	\$100,000,000	\$65,000,000	\$50,000,000	\$330,000,000	\$45,000,000
Accessories.....	\$15,000,000	\$46,000,000	\$158,000,000	\$200,000,000	\$256,000,000	\$675,000,000	\$275,000,000
	\$						
Grand total.....	\$60,000,000	\$136,000,000	\$354,000,000	\$430,000,000	\$506,000,000	\$1,400,000,000	\$535,000,000

BUSINESS, AS OF JANUARY 1, 1927¹

RANK OF STATES AS RADIO MARKETS

Rank	State	Per cent business done each state ²	Number sets in use each state
1	New York	10.00	655,850
2	Pennsylvania	7.74	503,100
3	Illinois	7.20	468,000
4	California	6.24	422,100
5	Ohio	5.50	363,280
6	Texas	4.27	277,650
7	Michigan	4.18	271,700
8	Massachusetts	3.68	239,300
9	Missouri	3.10	201,500
10	New Jersey	2.98	192,700
11	Iowa	2.80	182,000
12	Indiana	2.72	176,300
13	Wisconsin	2.60	169,000
14	Minnesota	2.29	148,880
15	Washington	1.85	120,280
16	Kansas	1.65	101,000
17	Oklahoma	1.55	100,750
18	Nebraska	1.55	100,800
19	Tennessee	1.50	97,500
20	Georgia	1.41	91,750
21	North Carolina	1.41	91,550
22	Virginia	1.40	91,000
23	Louisiana	1.28	83,200
24	Colorado	1.27	82,550
25	Maryland	1.26	81,900
26	Connecticut	1.23	79,980
27	Kentucky	1.20	78,100
28	Florida	1.20	77,900
29	Oregon	1.10	71,800
30	Alabama	1.05	68,250
31	West Virginia	0.93	60,450
32	Arkansas	0.80	52,000
33	Mississippi	0.78	49,400
34	South Carolina	0.74	48,100
35	Maine	0.68	44,200
36	Rhode Island	0.67	43,550
37	District of Columbia	0.66	42,900
38	Utah	0.63	40,980
39	South Dakota	0.60	39,150
40	North Dakota	0.60	38,850
41	Montana	0.48	31,200
42	Idaho	0.42	27,300
43	New Hampshire	0.41	27,650
44	Arizona	0.38	24,700
45	Vermont	0.33	21,550
46	New Mexico	0.23	21,350
47	Wyoming	0.23	14,980
48	Delaware	0.21	13,650
49	Nevada	0.06	5,200

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² Factors used—passenger auto registrations, broadcasting stations, income tax returns, population.

RADIO EXPORTS

At End of Year

1922.....	\$2,800,000
1923.....	3,450,000
1924.....	6,000,000
1925.....	9,900,000
1926.....	8,500,000

INDUSTRY CENSUS

To Date

Manufacturers.....	2,550
Wholesalers and distributors.....	985
Retailers ¹	29,000
a. Primary.....	5,800
b. Electrical.....	7,850
c. Music.....	3,950
d. Automotive.....	4,550
e. Hardware.....	1,900
f. Sporting good.....	800
g. Department.....	1,250
h. Furniture.....	800
i. Electric light companies.....	600
j. Miscellaneous.....	1,500

¹ Carrying full stock of sets and accessories.

SATURATION COMPARISON

To Date

Homes in U. S.....	26,800,000
Phonographs.....	11,000,000
Passenger autos.....	18,000,000
Telephones.....	17,000,000
Homes wired for electricity.....	15,900,000
Farms.....	6,370,000
Homes without radio sets.....	20,300,000
Radio saturation.....	24 per cent

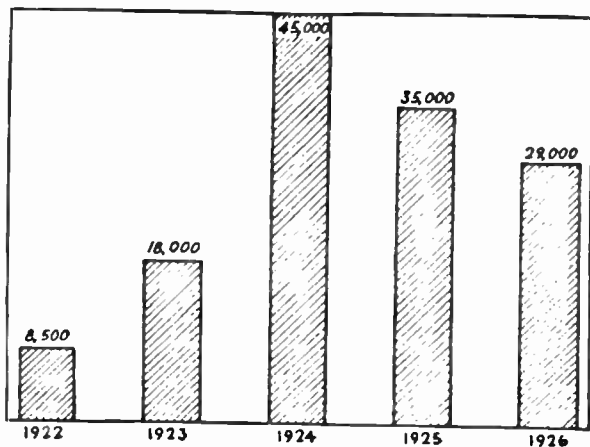


CHART A.—Chart above indicates number of dealers decreasing, with the peak number, 45,000, reached in 1924.

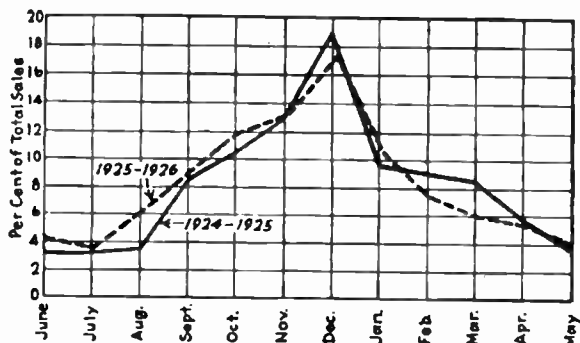


CHART B.—Survey made among a number of retailers shows sales curve slowly straightening out, as indicated by dashed line above.

SURVEY OF THE RADIO AUDIENCE

ESTIMATED NUMBER OF RADIO RECEIVING SETS WITHIN A HUNDRED-MILE
RADIUS OF THE PRINCIPAL BROADCASTING CENTERS FOR WHICH
STATISTICS ARE AVAILABLE

Territory	Receiving sets, Jan. 1, 1926
New York.....	625,000
Boston.....	385,000
Philadelphia.....	245,000
Washington.....	151,000
Buffalo.....	113,000
Pittsburgh.....	206,000
Cleveland.....	191,000
Detroit.....	246,000
Cincinnati.....	209,000
Chicago.....	337,000
St. Louis.....	135,000
Kansas City.....	79,000
Minneapolis.....	73,000
Davenport.....	93,000
Total.....	3,038,000
Total for United States.....	5,200,000
Per cent of United States within above areas.....	60 0

RELEVANT FACTS REGARDING THE TERRITORIES SERVED BY RECEIVING SETS
IN THE AREAS TABULATED ABOVE

	Per cent of the total for the United States
Radio receiving sets.....	60.0
Population.....	52.2
Urban population.....	71.5
Rural population.....	31.8
Males over 21.....	53.9
Females over 21.....	55.2
Children over 14.....	49.0
Children under 14.....	49.1
Families.....	52.8
Owned homes.....	55.1
Rented homes.....	50.0
Personal income returns filed.....	65.0
Net income reported.....	67.7
Incomes over \$5,000.....	65.7
Incomes over \$10,000.....	68.7
Corporations reporting net income.....	58.3
Net income reported.....	70.9
Tax paid.....	71.7
Internal revenue receipts.....	67.7
Building and loan associations.....	81.9
Total members of Building and Loan associations.....	70.6
Total assets.....	74.6
Manufacturing establishments.....	64.5
Wage earners.....	70.4
Value of products.....	70.1
Farms.....	27.4
Value of farm property.....	32.1
Value of farm products.....	30.7
Passenger automobiles.....	51.7
Motor trucks.....	54.3
Miles of good road.....	45.6

PER CENT OF THE TOTAL AREA AND POPULATION OF THE VARIOUS STATES
INCLUDED WITHIN A HUNDRED MILES OF NEW YORK, BOSTON, PHILA-
DELPHIA, WASHINGTON, BUFFALO, PITTSBURGH, CLEVELAND,
DETROIT, CINCINNATI, CHICAGO, ST. LOUIS, KANSAS CITY,
MINNEAPOLIS, DAVENPORT

State	Per cent of area covered	Per cent of population covered
Connecticut.....	100.0	100.0
Delaware.....	100.0	100.0
District of Columbia.....	100.0	100.0
Illinois.....	76.9	90.0
Indiana.....	70.7	76.3
Iowa.....	28.1	33.8
Kansas.....	16.2	33.1
Kentucky.....	29.0	41.2
Maine.....	3.3	9.2
Maryland.....	100.0	100.0
Massachusetts.....	88.0	98.0
Michigan.....	34.8	80.5
Minnesota.....	31.7	62.0
Missouri.....	63.6	72.7
Nebraska.....	7.1	1.5
New Hampshire.....	100.0	100.0
New Jersey.....	100.0	100.0
New York.....	36.9	79.7
Ohio.....	87.9	97.4
Pennsylvania.....	83.3	97.4
Rhode Island.....	100.0	100.0
Vermont.....	29.9	17.8
Virginia.....	30.6	29.8
West Virginia.....	32.7	39.1
Wisconsin.....	30.8	49.9

LAND AREA AND POPULATION IN THE SERVICE RANGE OF 500-WATT STATIONS
IN THE CITIES NAMED

Population Estimated as of January 1925

Territory	Area covered, square miles	Population	Population classification	
			Urban	Rural
New York	14,200	11,548,000	10,262,000	1,086,000
Boston	16,800	5,739,000	5,169,000	570,000
Philadelphia	14,500	5,616,000	4,110,000	1,506,000
Washington	27,400	3,138,000	1,758,000	1,380,000
Buffalo	15,100	1,930,000	1,318,000	612,000
Pittsburgh	28,200	4,821,000	2,552,000	2,269,000
Cleveland	15,400	3,209,000	2,313,000	896,000
Detroit	22,400	4,015,000	2,767,000	1,248,000
Cincinnati	38,900	4,341,000	2,450,000	1,891,000
Chicago	28,300	6,365,000	5,085,000	1,280,000
St. Louis	35,300	2,601,000	1,408,000	1,193,000
Kansas City	36,000	1,823,000	563,000	1,260,000
Minneapolis	35,600	1,903,000	918,000	987,000
Davenport	33,000	1,759,000	717,000	1,042,000
Total	361,400	58,608,000	41,418,000	17,220,000
Total for United States ..	2,973,800	113,586,000	58,383,000	55,203,000
Per cent of United States covered by above areas	12.1	51.5	70.9	31.2

CLASSIFICATION OF POPULATION BY SEX AND AGE
 Estimated as of January, 1925

Territory	Males over 21	Females over 21	Children over 14	Children under 14
New York	3,461,000	3,450,000	1,293,000	3,143,000
Boston	1,750,000	1,831,000	637,000	1,521,000
Philadelphia	1,879,000	1,595,000	663,000	1,679,000
Washington	923,000	932,000	398,000	885,000
Buffalo	602,000	604,000	214,000	510,000
Pittsburgh	1,437,000	1,340,000	578,000	1,466,000
Cleveland	1,023,000	950,000	366,000	870,000
Detroit	1,297,000	1,136,000	458,000	1,124,000
Cincinnati	1,328,000	1,255,000	525,000	1,233,000
Chicago	1,986,000	1,859,000	757,000	1,763,000
St. Louis	804,000	765,000	317,000	715,000
Kansas City	554,000	525,000	232,000	512,000
Minneapolis	586,000	516,000	244,000	557,000
Davenport	543,000	510,000	215,000	491,000
Total	17,973,000	17,268,000	6,898,000	16,469,000
Total for United States	33,743,000	31,680,000	14,246,000	33,918,000
Per cent of United States covered by above areas	53.2	54.5	48.3	48.6

NUMBER OF DWELLINGS AND FAMILIES WITHIN A HUNDRED MILES OF THE
CITIES NAMED

Estimated as of January 1925

Territory	Dwellings	Families
New York.....	1,221,000	2,570,000
Boston.....	922,000	1,308,000
Philadelphia.....	1,144,000	1,251,000
Washington.....	623,000	704,000
Buffalo.....	413,000	468,000
Pittsburgh.....	968,000	1,093,000
Cleveland.....	642,000	777,000
Detroit.....	822,000	954,000
Cincinnati.....	973,000	1,065,000
Chicago.....	1,065,000	1,491,000
St. Louis.....	526,000	622,000
Kansas City.....	422,000	469,000
Minneapolis.....	381,000	430,000
Davenport.....	422,000	443,000
Total.....	10,542,000	13,635,000
Total for the United States.....	22,239,000	26,166,000
Per cent of United States covered by above areas.....	47.4	52.1

**NET INCOME REPORTED FOR TAX PURPOSES WITHIN A HUNDRED MILES OF
THE CITIES NAMED**
Based on 1922 Figures

Territory	Estimated number personal returns filed	Estimated net income reported
New York	1,168,000	\$ 4,230,000,000
Boston	518,000	1,605,000,000
Philadelphia	372,000	1,267,000,000
Washington	230,000	743,000,000
Buffalo	188,000	698,000,000
Pittsburgh	287,000	954,000,000
Cleveland	182,000	573,000,000
Detroit	243,000	724,000,000
Cincinnati	210,000	627,000,000
Chicago	482,000	1,477,000,000
St. Louis	178,000	553,000,000
Kansas City	88,000	249,000,000
Minneapolis	94,000	261,000,000
Davenport	121,000	358,000,000
Total	4,367,000	\$14,319,000,000
Total for United States	6,787,000	21,336,000,000
Per cent of United States covered by above areas	62.9	67.1

ESTIMATED NUMBER OF PERSONS HAVING INCOMES OVER \$5,000 AND OVER \$10,000 PER ANNUM WITHIN THE TERRITORIES NAMED

Territory	Estimated number incomes over \$5,000, as of 1921	Estimated number incomes over \$10,000, as of 1921
New York	96,400	35,000
Boston	34,000	12,700
Philadelphia	31,600	10,900
Washington	23,600	6,400
Buffalo	19,000	7,100
Pittsburgh	21,300	8,200
Cleveland	13,900	4,800
Detroit	14,600	4,800
Cincinnati	14,800	4,800
Chicago	37,000	11,900
St. Louis	14,100	4,800
Kansas City	6,200	2,000
Minneapolis	6,300	1,900
Davenport	8,500	2,600
Total	341,300	117,900
Total for United States	524,000	173,000
Per cent of total in above named cities ..	65.1	68.1

EXCERPTS FROM THE RADIO ACT OF 1927

That this act is intended to regulate all forms of interstate and foreign radio transmissions and communications within the United States, its Territories and possessions; to maintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not the ownership thereof, by individuals, firms, or corporations, for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license. That no person, firm, company, or corporation shall use or operate any apparatus for the transmission of energy or communications or signals by radio (a) from one place in any Territory or possession of the United States or in the District of Columbia to another place in the same Territory, possession, or District; or (b) from any State, Territory, or possession of the United States, or from the District of Columbia to any other State, Territory, or possession of the United States; or (c) from any place in any State, Territory, or possession of the United States, or in the District of Columbia, to any place in any foreign country or to any vessel; or (d) within any State when the effects of such use extend beyond the borders of said State, or when interference is caused by such use or operation with the transmission of such energy, communications, or signals from within said State to any place beyond its borders, or from any place beyond its borders to any place within said State, or with the transmission or reception of such energy, communications, or signals from and/or to places beyond the borders of said State; or (e) upon any vessel of the United States; or (f) upon any aircraft or other mobile stations within the United States, except under and in accordance with this act and with a license in that behalf granted under the provisions of this act.

Section 2.—For the purposes of this act, the United States is divided into five zones, as follows: The first zone shall embrace the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware, Maryland, the District of Columbia, Porto Rico, and the Virgin Islands; the second zone shall embrace the States of Pennsylvania, Virginia, West Virginia, Ohio, Michigan, and Kentucky; the third zone shall embrace the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, Arkansas, Louisiana, Texas, and Oklahoma; the fourth zone shall embrace the States of Indiana, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Kansas, and Missouri; and the fifth zone shall embrace the States of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, the Territory of Hawaii, and Alaska.

Section 3.—That a commission is hereby created and established to be known as the Federal Radio Commission, hereinafter referred to as the commission, which shall be composed of five commissioners appointed by the President, by and with the advice and consent of the Senate, and one of whom the President shall designate as chairman: Provided, That chairmen thereafter elected shall be chosen by the commission itself.

Each member of the commission shall be a citizen of the United States and an actual resident citizen of a State within the zone from which appointed at the time of said appointment. Not more than one commissioner shall be appointed from any zone. No member of the commission shall be financially interested in the manufacture or sale of radio apparatus or in the transmission or operation of radiotelegraphy, radiotelephony, or radio broadcasting. Not more than three commissioners shall be members of the same political party.

The first commissioners shall be appointed for the terms of two, three, four, five, and six years, respectively, from the date of the taking effect of this act, the term of each to be designated by the President, but their successors shall be appointed for terms of six years, except that any person chosen to fill a vacancy shall be appointed only for the unexpired term of the commissioner whom he shall succeed.

The first meeting of the commission shall be held in the city of Washington at such time and place as the chairman of the commission may fix. The commission shall convene thereafter at such times and places as a majority of the commission may determine, or upon call of the chairman thereof.

The commission may appoint a secretary and such clerks, special counsel, experts, examiners, and other employees as it may from time to time find necessary for the proper performance of its duties and as from time to time may be appropriated for by Congress.

The commission shall have an official seal and shall annually make a full report of its operations to the Congress.

The members of the commission shall receive a compensation of \$10,000 for the first year of their service, said year to date from the first meeting of said commission, and thereafter a compensation of \$30 per day for each day's attendance upon sessions of the commission or while engaged upon work of the commission and while traveling to and from such sessions, and also their necessary traveling expenses.

Section 4.—Except as otherwise provided in this act, the commission, from time to time, as public convenience, interest, or necessity requires, shall—

- (a) Classify radio stations;
- (b) Prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class;
- (c) Assign bands of frequencies or wave lengths to the various classes of stations, and assign frequencies or wave lengths for each individual station and determine the power which each station shall use and the time during which it may operate;
- (d) Determine the location of classes of stations or individual stations;
- (e) Regulate the kind of apparatus to be used with respect to its external effects and the purity and sharpness of the emissions from each station and from the apparatus therein;
- (f) Make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this act: Provided, however, That changes in the wave lengths,

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- (f) Make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this act: Provided, however, That changes in the wave lengths,

authorized power, in the character of emitted signals, or in the times of operation of any station, shall not be made without the consent of the station licensee unless, in the judgment of the commission, such changes will promote public convenience or interest or will serve public necessity or the provisions of this act will be more fully complied with;

(g) Have authority to establish areas or zones to be served by any station;

(A) Have authority to make special regulations applicable to radio stations engaged in chain broadcasting;

(i) Have authority to make general rules and regulations requiring stations to keep such records of programs, transmissions of energy, communications, or signals as it may deem desirable;

(j) Have authority to exclude from the requirements of any regulations in whole or in part any radio station upon railroad rolling stock, or to modify such regulations in its discretion;

(k) Have authority to hold hearings, summon witnesses, administer oaths, compel the production of books, documents, and papers and to make such investigations as may be necessary in the performance of its duties. The commission may make such expenditures (including expenditures for rent and personal services at the seat of government and elsewhere, for law books, periodicals, and books of reference, and for printing and binding) as may be necessary for the execution of the functions vested in the commission and, as from time to time may be appropriated for by Congress. All expenditures of the commission shall be allowed and paid upon the presentation of itemized vouchers therefor approved by the chairman.

Section 5.—From and after one year after the first meeting of the commission created by this act, all the powers and authority vested in the commission under the terms of this act, except as to the revocation of licenses, shall be vested in and exercised by the Secretary of Commerce; except that thereafter the commission shall have power and jurisdiction to act upon and determine any and all matters brought before it under the terms of this section.

It shall also be the duty of the Secretary of Commerce—

(A) For and during a period of one year from the first meeting of the commission created by this act, to immediately refer to the commission all applications for station licenses or for the renewal or modification of existing station licenses.

(B) From and after one year from the first meeting of the commission created by this act, to refer to the commission for its action any application for a station license or for the renewal or modification of any existing station license as to the granting of which dispute, controversy, or conflict arises or against the granting of which protest is filed within 10 days after the date of filing said application by any party in interest and any application as to which such reference is requested by the applicant at the time of filing said application.

(C) To prescribe the qualifications of station operators, to classify them according to the duties to be performed, to fix the forms of such licenses, and to issue them to such persons as he finds qualified.

(D) To suspend the license of any operator for a period not exceeding two years upon proof sufficient to satisfy him that the licensee (a) has violated any provision of any act or treaty binding on the United States which the Secretary of Commerce or the commission is authorized by this act to administer or by any regulation made by the commission or the Secretary of Commerce under any such act or treaty; or (b) has failed to carry out the lawful orders of the master of the vessel on which he is employed; or (c) has willfully damaged or permitted radio apparatus to be damaged; or (d) has transmitted superfluous radio communications or signals or radio communications containing profane or obscene words or language; or (e) has willfully or maliciously interfered with any other radio communications or signals.

(E) To inspect all transmitting apparatus to ascertain whether in construction and operation it conforms to the requirements of this act, the rules and regulations of the licensing authority, and the license under which it is constructed or operated.

(F) To report to the commission from time to time any violations of this act, the rules, regulations, or orders of the commission, or of the terms or conditions of any license.

(G) To designate call letters of all stations.

(H) To cause to be published such call letters and such other announcements and data as in his judgment may be required for the efficient operation of radio stations subject to the jurisdiction of the United States and for the proper enforcement of this act.

The Secretary may refer to the commission at any time any matter the determination of which is vested in him by the terms of this act.

Any person, firm, company, or corporation, any State or political division thereof aggrieved or whose interests are adversely affected by any decision, determination, or regulation of the Secretary of Commerce may appeal therefrom to the commission by filing with the Secretary of Commerce notice of such appeal within thirty days after such decision or determination or promulgation of such regulation. All papers, documents, and other records pertaining to such application on file with the Secretary shall thereupon be transferred by him to the commission. The commission shall hear such appeal *de novo* under such rules and regulations as it may determine.

Decisions by the commission as to matters so appealed and as to all other matters over which it has jurisdiction shall be final, subject to the right of appeal herein given.

No station license shall be granted by the commission or the Secretary of Commerce until the applicant therefor shall have signed a waiver of any claim to the use of any particular frequency or wave length or of the etherus against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

Section 6.—Radio stations belonging to and operated by the United States shall not be subject to the provisions of sections 1, 4, and 5 of this act. All such Government stations shall use such frequencies or wave lengths as shall be assigned to each or to each class by the President. All such

stations, except stations on board naval and other Government vessels while at sea or beyond the limits of the continental United States, when transmitting any radio communication or signal other than a communication or signal relating to Government business shall conform to such rules and regulations designed to prevent interference with other radio stations and the rights of others as the licensing authority may prescribe. Upon proclamation by the President that there exists war or a threat of war or a state of public peril or disaster or other national emergency, or in order to preserve the neutrality of the United States, the President may suspend or amend, for such time as he may see fit, the rules and regulations applicable to any or all stations within the jurisdiction of the United States as prescribed by the licensing authority, and may cause the closing of any station for radio communication and the removal therefrom of its apparatus and equipment, or he may authorize the use or control of any such station and/or its apparatus and equipment by any department of the Government under such regulations as he may prescribe, upon just compensation to the owners. Radio stations on board vessels of the United States Shipping Board or the United States Shipping Board Emergency Fleet Corporation or the Inland and Coastwise Waterways Service shall be subject to the provisions of this act.

Section 7.—The President shall ascertain the just compensation for such use or control and certify the amount ascertained to Congress for appropriation and payment to the person entitled thereto. If the amount so certified is unsatisfactory to the person entitled thereto, such person shall be paid only 75 per centum of the amount and shall be entitled to sue the United States to recover such further sum as added to such payment of 75 per centum which will make such amount as will be just compensation for the use and control. Such suit shall be brought in the manner provided by paragraph 20 of section 24, or by section 145 of the Judicial Code, as amended.

Section 8.—All stations owned and operated by the United States, except mobile stations of the Army of the United States, and all other stations on land and sea, shall have special call letters designated by the Secretary of Commerce.

Section 1 of this act shall not apply to any person, firm, company, or corporation sending radio communications or signals on a foreign ship while the same is within the jurisdiction of the United States, but such communications or signals shall be transmitted only in accordance with such regulations designed to prevent interference as may be promulgated under the authority of this act.

Section 9.—The licensing authority, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this act, shall grant to any applicant therefor a station license provided for by this act.

In considering applications for licenses and renewals of licenses, when and in so far as there is a demand for the same, the licensing authority shall make such a distribution of licenses, bands of frequency or wave lengths, periods of time for operation, and of power among the different

States and communities as to give fair, efficient, and equitable radio service to each of the same.

No license granted for the operation of a broadcasting station shall be for a longer term than three years and no license so granted for any other class of station shall be for a longer term than five years, and any license granted may be revoked as hereinafter provided. Upon the expiration of any license, upon application therefor, a renewal of such license may be granted from time to time for a term not to exceed three years in the case of broadcasting licenses and not to exceed five years in the case of other licenses.

No renewal of an existing station license shall be granted more than thirty days prior to the expiration of the original license.

Section 10.—The licensing authority may grant station licenses only upon written application therefor addressed to it. All applications shall be filed with the Secretary of Commerce. All such applications shall set forth such facts as the licensing authority by regulation may prescribe as to the citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station; the ownership and location of the proposed station and of the stations, if any, with which it is proposed to communicate; the frequencies or wave lengths and the power desired to be used; the hours of the day or other periods of time during which it is proposed to operate the station; the purposes for which the station is to be used; and such other information as it may require. The licensing authority at any time after the filing of such original application and during the term of any such license may require from an applicant or licensee further written statements of fact to enable it to determine whether such original application should be granted or denied or such license revoked. Such application and/or such statement of fact shall be signed by the applicant and/or licensee under oath or affirmation.

The licensing authority in granting any license for a station intended or used for commercial communication between the United States or any Territory or possession, continental or insular, subject to the jurisdiction of the United States, and any foreign country, may impose any terms, conditions, or restrictions authorized to be imposed with respect to submarine-cable licenses by section 2 of an act entitled "An act relating to the landing and the operation of submarine cables in the United States," approved May 24, 1921.

Section 11.—If upon examination of any application for a station license or for the renewal or modification of a station license the licensing authority shall determine that public interest, convenience, or necessity would be served by the granting thereof, it shall authorize the issuance, renewal, or modification thereof in accordance with said finding. In the event the licensing authority upon examination of any such application does not reach such decision with respect thereto, it shall notify the applicant thereof, shall fix and give notice of a time and place for hearing thereon, and shall afford such applicant an opportunity to be heard under such rules and regulations as it may prescribe.

Such station licenses as the licensing authority may grant shall be in such general form as it may prescribe, but each license shall contain, in

addition to other provisions, a statement of the following conditions to which such license shall be subject:

(A) The station license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies or wave length designated in the license beyond the term thereof nor in any other manner than authorized therein.

(B) Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of this act.

(C) Every license issued under this act shall be subject in terms to the right of use or control conferred by section 6 hereof.

In cases of emergency arising during the period of one year from and after the first meeting of the commission created hereby, or on applications filed during said time for temporary changes in terms of licenses when the commission is not in session and prompt action is deemed necessary, the Secretary of Commerce shall have authority to exercise the powers and duties of the commission, except as to revocation of licenses, but all such exercise of powers shall be promptly reported to the members of the commission, and any action by the Secretary authorized under this paragraph shall continue in force and have effect only until such time as the commission shall act thereon.

Section 12.—The station license required hereby shall not be granted to, or after the granting thereof such license shall not be transferred in any manner, either voluntarily or involuntarily, to (a) any alien or the representative of any alien; (b) to any foreign government, or the representative thereof; (c) to any company, corporation, or association organized under the laws of any foreign government; (d) to any company, corporation, or association of which any officer or director is an alien, or of which more than one-fifth of the capital stock may be voted by aliens or their representatives or by a foreign government or representative thereof, or by any company, corporation, or association organized under the laws of a foreign country.

The station license required hereby, the frequencies or wave length or lengths authorized to be used by the licensee, and the rights there in granted shall not be transferred, assigned, or in any manner, either voluntarily or involuntarily, disposed of to any person, firm, company, or corporation without the consent in writing of the licensing authority.

Section 13.—The licensing authority is hereby directed to refuse a station license and/or the permit hereinafter required for the construction of a station to any person, firm, company, or corporation, or any subsidiary thereof, which has been finally adjudged guilty by a Federal court of unlawfully monopolizing or attempting unlawfully to monopolize, after this act takes effect, radio communication, directly or indirectly, through the control of the manufacture or sale of radio apparatus, through exclusive traffic arrangements, or by any other means or to have been using unfair methods of competition. The granting of a license shall not estop the United States or any person aggrieved from proceeding against such person, firm, company, or corporation for violating the law against unfair methods of competition or for a violation of the law against unlawful restraints and monopolies and/or combinations, contracts, or agreements in restraint

of trade, or from instituting proceedings for the dissolution of such firm, company, or corporation.

Section 14.—Any station license shall be revocable by the commission for false statements either in the application or in the statement of fact which may be required by section 10 hereof, or because of conditions revealed by such statements of fact as may be required from time to time which would warrant the licensing authority in refusing to grant a license on an original application, or for failure to operate substantially as set forth in the license, for violation of or failure to observe any of the restrictions and conditions of this act, or of any regulation of the licensing authority authorized by this act or by a treaty ratified by the United States, or whenever the Interstate Commerce Commission, or any other Federal body in the exercise of authority conferred upon it by law, shall find and shall certify to the commission that any licensee bound so to do, has failed to provide reasonable facilities for the transmission of radio communications, or that any licensee has made any unjust and unreasonable charge, or has been guilty of any discrimination, either as to charge or as to service or has made or prescribed any unjust and unreasonable classification, regulation, or practice with respect to the transmission of radio communications or service: Provided, That no such order of revocation shall take effect until thirty days' notice in writing thereof, stating the cause for the proposed revocation, has been given to the parties known by the commission to be interested in such license. Any person in interest aggrieved by said order may make written application to the commission at any time within said thirty days for a hearing upon such order, and upon the filing of such written application said order of revocation shall stand suspended until the conclusion of the hearing herein directed. Notice in writing of said hearing shall be given by the commission to all the parties known to it to be interested in such license twenty days prior to the time of said hearing. Said hearing shall be conducted under such rules and in such manner as the commission may prescribe. Upon the conclusion hereof the commission may affirm, modify, or revoke said orders of revocation.

Section 15.—All laws of the United States relating to unlawful restraints and monopolies and to combinations, contracts, or agreements in restraint of trade are hereby declared to be applicable to the manufacture and sale of and to trade in radio apparatus and devices entering into or affecting interstate or foreign commerce and to interstate or foreign radio communications. Whenever in any suit, action, or proceeding, civil or criminal, brought under the provisions of any of said laws or in any proceedings brought to enforce or to review findings and orders of the Federal Trade Commission or other governmental agency in respect of any matters as to which said commission or other governmental agency is by law authorized to act, any licensee shall be found guilty of the violation of the provisions of such laws or any of them, the court, in addition to the penalties imposed by said laws, may adjudge, order, and/or decree that the license of such licensee shall, as of the date the decree or judgment becomes finally effective or as of such other date as the said decree shall fix, be revoked and that all rights under such license shall thereupon cease: Provided, however, That

such licensee shall have the same right of appeal or review as is provided by law in respect of other decrees and judgments of said court.

Section 16.—Any applicant for a construction permit, for a station license, or for the renewal or modification of an existing station license whose application is refused by the licensing authority shall have the right to appeal from said decision to the Court of Appeals of the District of Columbia; and any licensee whose license is revoked by the commission shall have the right to appeal from such decision of revocation to said Court of Appeals of the District of Columbia or to the district court of the United States in which the apparatus licensed is operated, by filing with said court, within twenty days after the decision complained of is effective, notice in writing of said appeal and of the reasons therefor.

The licensing authority from whose decision an appeal is taken shall be notified of said appeal by service upon it, prior to the filing thereof, of a certified copy of said appeal and of the reasons therefor. Within twenty days after the filing of said appeal the licensing authority shall file with the court the originals or certified copies of all papers and evidence presented to it upon the original application for a permit or license or in the hearing upon said order of revocation, and also a like copy of its decision thereon and a full statement in writing of the facts and the grounds for its decision as found and given by it. Within twenty days after the filing of said statement by the licensing authority either party may give notice to the court of his desire to adduce additional evidence. Said notice shall be in the form of a verified petition stating the nature and character of said additional evidence, and the court may thereupon order such evidence to be taken in such manner and upon such terms and conditions as it may deem proper.

At the earliest convenient time the court shall hear, review, and determine the appeal upon said record and evidence, and may alter or revise the decision appealed from and enter such judgment as to it may seem just. The revision by the court shall be confined to the points set forth in the reasons of appeal.

Section 17.—After the passage of this act no person, firm, company, or corporation now or hereafter directly or indirectly through any subsidiary, associated, or affiliated person, firm, company, corporation, or agent, or otherwise, in the business of transmitting and/or receiving for hire energy, communications, or signals by radio in accordance with the terms of the license issued under this act, shall by purchase, lease, construction, or otherwise, directly or indirectly, acquire, own, control, or operate any cable or wire telegraph or telephone line or system between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any foreign country, or shall acquire, own, or control any part of the stock or other capital share of any interest in the physical property and/or other assets of any such cable, wire, telegraph, or telephone line or system, if in either case the purpose is and/or the effect thereof may be to substantially lessen competition or to restrain commerce between any place in any State, Territory, or possession of the United States or in the District of Columbia and any place in any foreign country,

or unlawfully to create monopoly in any line of commerce; nor shall any person, firm, company, or corporation now or hereafter engaged directly or indirectly through any subsidiary, associated, or affiliated person, company, corporation, or agent, or otherwise, in the business of transmitting and/or receiving for hire messages by any cable, wire, telegraph, or telephone line or system (a) between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any other State, Territory, or possession of the United States; or (b) between any place in any State, Territory, or possession of the United States, or the District of Columbia, and any place in any foreign country, by purchase, lease, construction, or otherwise, directly or indirectly acquire, own, control, or operate any station or the apparatus therein, or any system for transmitting and/or receiving radio communications or signals between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any foreign country, or shall acquire, own, or control any part of the stock or other capital share or any interest in the physical property and/or other assets of any such radio station, apparatus, or system, if in either case the purpose is and/or the effect thereof may be to substantially lessen competition or to restrain commerce between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any foreign country, or unlawfully to create monopoly in any line of commerce.

Section 18.—If any licensee shall permit any person who is a legally qualified candidate for any public office to use a broadcasting station, he shall afford equal opportunities to all other such candidates for that office in the use of such broadcasting station, and the licensing authority shall make rules and regulations to carry this provision into effect: Provided, That such licensee shall have no power of censorship over the material broadcast under the provisions of this paragraph. No obligation is hereby imposed upon any licensee to allow the use of its station by any such candidate.

Section 19.—All matter broadcast by any radio station for which service, money, or any other valuable consideration is directly or indirectly paid, or promised to or charged or accepted by, the station so broadcasting, from any person, firm, company, or corporation, shall, at the time the same is so broadcast, be announced as paid for or furnished, as the case may be, by such person, firm, company, or corporation.

Section 20.—The actual operation of all transmitting apparatus in any radio station for which a station license is required by this act shall be carried on only by a person holding an operator's license issued hereunder. No person shall operate any such apparatus in such station except under and in accordance with an operator's license issued to him by the Secretary of Commerce.

Section 21.—No license shall be issued under the authority of this act for the operation of any station the construction of which is begun or is continued after this act takes effect, unless a permit for its construction has been granted by the licensing authority upon written application therefor. The licensing authority may grant such permit if public convenience, interest, or necessity will be served by the construction of the station. This application

shall set forth such facts as the licensing authority by regulation may prescribe as to the citizenship, character, and the financial, technical, and other ability of the applicant to construct and operate the station, the ownership and location of the proposed station and of the station or stations with which it is proposed to communicate, the frequencies and wave length or wave lengths desired to be used, the hours of the day or other periods of time during which it is proposed to operate the station, the purpose for which the station is to be used, the type of transmitting apparatus to be used, the power to be used, the date upon which the station is expected to be completed and in operation, and such other information as the licensing authority may require. Such application shall be signed by the applicant under oath or affirmation.

Such permit for construction shall show specifically the earliest and latest dates between which the actual operation of such station is expected to begin, and shall provide that said permit will be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the licensing authority may allow, unless prevented by causes not under the control of the grantee. The rights under any such permit shall not be assigned or otherwise transferred to any person, firm, company, or corporation without the approval of the licensing authority. A permit for construction shall not be required for Government stations, amateur stations, or stations upon mobile vessels, railroad rolling stock, or aircraft. Upon the completion of any station for the construction or continued construction for which a permit has been granted, and upon it being made to appear to the licensing authority that all the terms, conditions, and obligations set forth in the application and permit have been fully met, and that no cause or circumstance arising or first coming to the knowledge of the licensing authority since the granting of the permit would, in the judgment of the licensing authority, make the operation of such station against the public interest, the licensing authority shall issue a license to the lawful holder of said permit for the operation of said station. Said license shall conform generally to the terms of said permit.

Section 22.—The licensing authority is authorized to designate from time to time radio stations the communications or signals of which, in its opinion, are liable to interfere with the transmission or reception of distress signals of ships. Such stations are required to keep a licensed radio operator listening in on the wave lengths designated for signals of distress and radio communications relating thereto during the entire period the transmitter of such station is in operation.

Section 25.—At all places where Government and private or commercial radio stations on land operate in such close proximity that interference with the work of Government stations cannot be avoided when they are operating simultaneously such private or commercial stations as do interfere with the transmission or reception of radio communications or signals by the Government stations concerned shall not use their transmitters during the first fifteen minutes of each hour, local standard time.

The Government stations for which the above-mentioned division of time is established shall transmit radio communications or signals only

during the first fifteen minutes of each hour, local standard time, except in case of signals or radio communications relating to vessels in distress and vessel requests for information as to course, location, or compass direction.

Section 27.—No person receiving or assisting in receiving any radio communication shall divulge or publish the contents, substance, purport, effect, or meaning thereof except through authorized channels of transmission or reception to any person other than the addressee, his agent, or attorney, or to a telephone, telegraph, cable, or radio station employed or authorized to forward such radio communication to its destination, or to proper accounting or distributing officers of the various communicating centers over which the radio communication may be passed, or to the master of a ship under whom he is serving, or in response to a subpoena issued by a court of competent jurisdiction, or on demand of other lawful authority; and no person not being authorized by the sender shall intercept any message and divulge or publish the contents, substance, purport, effect, or meaning of such intercepted message to any person; and no person not being entitled thereto shall receive or assist in receiving any radio communication and use the same or any information therein contained for his own benefit or for the benefit of another not entitled thereto; and no person having received such intercepted radio communication or having become acquainted with the contents, substance, purport, effect, or meaning of the same or any part thereof, knowing that such information was so obtained, shall divulge or publish the contents, substance, purport, effect, or meaning of the same or any part thereof, or use the same or any information therein contained for his own benefit or for the benefit of another not entitled thereto: Provided, That this section shall not apply to the receiving, divulging, publishing, or utilizing the contents of any radio communication broadcasted or transmitted by amateurs or others for the use of the general public or relating to ships in distress.

Section 28.—No person, firm, company, or corporation within the jurisdiction of the United States shall knowingly utter or transmit, or cause to be uttered or transmitted, any false or fraudulent signal of distress, or communication relating thereto, nor shall any broadcasting station rebroadcast the program or any part thereof of another broadcasting station without the express authority of the originating station.

Section 29.—Nothing in this act shall be understood or construed to give the licensing authority the power of censorship over the radio communications or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the licensing authority which shall interfere with the right of free speech by means of radio communications. No person within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication.

Section 31.—The expression "radio communication" or "radio communications" wherever used in this act means any intelligence, message, signal, power, pictures, or communication of any nature transferred by electrical energy from one point to another without the aid of any wire connecting

the points from and at which the electrical energy is sent or received and any system by means of which such transfer of energy is effected.

Section 32.—Any person, firm, company, or corporation failing or refusing to observe or violating any rule, regulation, restriction, or condition made or imposed by the licensing authority under the authority of this act or of any international radio convention or treaty ratified or adhered to by the United States in addition to any other penalties provided by law, upon conviction thereof by a court of competent jurisdiction shall be punished by a fine of not more than \$500 for each and every offense.

Section 33.—Any person, firm, company, or corporation who shall violate any provision of this act, or shall knowingly make any false oath or affirmation in any affidavit required or authorized by this act, or shall knowingly swear falsely to a material matter in any hearing authorized by this act, upon conviction thereof in any court of competent jurisdiction shall be punished by a fine of not more than \$5,000 or by imprisonment for a term of not more than five years or both for each and every such offense.

Section 34.—The trial of any offense under this act shall be in the district in which it is committed; or if the offense is committed upon the high seas, or out of the jurisdiction of any particular State or district, the trial shall be in the district where the offender may be found or into which he shall be first brought.

Section 35.—This act shall not apply to the Philippine Islands or to the Canal Zone. In international radio matters the Philippine Islands and the Canal Zone shall be represented by the Secretary of State.

Section 36.—The licensing authority is authorized to designate any officer or employee of any other department of the Government on duty in any Territory or possession of the United States other than the Philippine Islands and the Canal Zone, to render therein such services in connection with the administration of the radio laws of the United States as such authority may prescribe: Provided, That such designation shall be approved by the head of the department in which such person is employed.

Section 39.—The act entitled "An act to regulate radio communication," approved August 13, 1912, the joint resolution to authorize the operation of Government-owned radio stations for the general public, and for other purposes, approved June 5, 1920, as amended, and the joint resolution entitled "Joint resolution limiting the time for which licenses for radio transmission may be granted, and for other purposes," approved December 8, 1926, are hereby repealed.

Such repeal, however, shall not affect any act done or any right accrued or any suit or proceeding had or commenced in any civil cause prior to said repeal, but all liabilities under said laws shall continue and may be enforced in the same manner as if committed; and all penalties, forfeitures, or liabilities incurred prior to taking effect hereof, under any law embraced in, changed, modified, or repealed by this act, may be prosecuted and punished in the same manner and with the same effect as if this act had not been passed.

Nothing in this section shall be construed as authorizing any person now using or operating any apparatus for the transmission of radio energy

or radio communications or signals to continue such use except under and in accordance with this act and with a license granted in accordance with the authority hereinbefore conferred.

Section 40.—This act shall take effect and be in force upon its passage and approval, except that for and during a period of sixty days after such approval no holder of a license or an extension thereof issued by the Secretary of Commerce under said act of August 13, 1912, shall be subject to the penalties provided herein for operating a station without the license herein required.

Section 41.—This act may be referred to and cited as the radio act of 1927.

INDEX

A

- Acoustic conditions, effect on transmission quality, 114
- Advertising, compared with commercial broadcasting, 5, 8
danger of too many kinds, 265
failure of direct radio, 4
fallacy of curtailing appropriation for broadcasting, 259
function compared with broadcasting, 262
of program features, 270
radio programs in newspapers, 304
total cost compared with broadcasting, 264
- Affectation, voice, effect on audience, 160
- Afternoon programs, 235
- Age, classification of radio audience by, 361
- Agencies, advertising, forming broadcasting bureaus, 207
function in broadcasting, 266
- Agriculture, Department of, experience with broadcasting, 230
- Amplifier, input, function of, 281
- Amplifier operator, work of, 116
- Amusements, radio and, 22
- Announcements, opening and closing, 216
prepared text for, 186
use of slogans in, 215
- Announcer, voice quality of, 151
- Announcing, failure of artificial efforts at spontaneous, 106
importance in program, 106
mispronunciation in, 185
pitfalls to avoid, 105
use of script in, 185
- Apparatus, transmitting, future developments in, 343
- Applause cards, with packaged products, 256
- Applause mail, analysis of, 51
Charles W. Burton on, 250
effect of requests on audience, 104
how to be addressed, 227
percentage of audience writing, 124
proportion of writers to total audience, 251
special offers to stimulate, 252
value of, 5
value of spontaneous, 250
why listeners write, 124, 250
- Appropriation, broadcasting, amount of, 246, 247
- Area of states, reached from broadcasting centers, 359
- Artists, cost no criterion, 111
personal appearances of, 278
qualities for radio, 110
selecting for radio, 111
- Atlantic & Pacific Company, programs of, 101, 144
retail tie-in, 226
- Atmospheric conditions, 242
- Attitude, listener, 9
- Atwater Kent hour, 100, 113, 134, 168, 216
- Audience, attracted by special features, 89, 98
composition of, 11
determined by program attractiveness, 41
determining size of, 78, 92
distribution of, WJZ, 60
estimated, value to broadcaster, 95

- Audience, listening habits of, 51, 89
 percentage of total population, 71
 potential, 50
 program tastes of, 123
 purchased when buying time, 39
 size of, 37
 size at different hours, 88
 special, developing, 86
 total U. S. listening, 74
 value at different hours, 244
 winning, 36
- Autom demonstration, products
 suited to, 24
- B**
- Balkite programs (Fansteel Products
 Corp.), 133, 142
- Band, broadcasting, extension of,
 318
- Booking, possible development of
 system for broadcasting, 327
- Booklets, adapting to audience, 223
 offering in announcements, 218
- Books, exploitation by radio, 26
- Broadcast, the right to, 33
- Broadcasting, regular, cumulative
 value of, 89
- Brunswick hour, 90, 222, 338
- Building a station, 30
 disadvantages of, 48
 when desirable, 49
- Businesses, not suited to successful
 use of radio, 27
- C**
- California Petroleum Co., experience
 with radio, 218
- Chain announcing, method of, 289
- Chains, broadcasting, advantages of,
 43
 complexity of, 45
 effect on program variety, 323
 established by National Broad-
 casting Co., 42
 experimental value of smaller, 42
 future possibilities, 42
 possible basis for, 324
 programs made possible by, 47
- Chains, rival, possibilities of, 42
 services rendered by, 45
- Chamber music, radio presentation
 of, 144
- Children's programs, 236
- Choruses, problems of broadcasting,
 117
- Churches, broadcasting from, 114
- Circulations, newspaper, increased
 by broadcasting, 27
- Class appeal of stations, 12
- Classical music, popularization of
 by radio, 133
 successful radio presentation, 142
- Commercial programs, listener atti-
 tude to, 211
- Commission, Radio, qualifications
 of members, 366
 duties of, 366
- Commodities, listener as purchaser
 of, 16
- Competition, effect on audience size,
 90
- Congestion, station, 33
- Consolidation of broadcasting sta-
 tions, 320
- Construction licenses, application
 for, 371
- Consumer demand, stimulation of,
 21
- Contests, prize, by radio, 222
- Continuity of presentation, value of,
 100
- Continuity program, introducing
 characters in, 187
 nature of, 130
 position of director in studio,
 193
 preparing script for, 187
 requirements for successful, 181
 sample scripts, 188, 190
 use of music in, 182
- Control board, operation of, 282
- Copyright situation in broadcasting,
 36
- Cost, of broadcasting, 246
 broadcasting compared with ad-
 vertising, 264

- Coverage, appraising value of, 50
 National Broadcasting Company, 40
 possibilities of national, 339
 station, appraising, 92
- Critics, professional, value of opinion on program, 253
- Cumulative effect of broadcasting, 18
- Curiosity, as buying motive, 8
- D
- Dance music, attaining distinctiveness in, 136
 supplementary features with, 138
- Dance orchestras, cost of, 140
 successful for radio, 137
- Departments, operating, of station, 275
- Director, musical, duties of, 205
- Director, program, character of, 204
 duties of, 205
 position in studio, 193
 selection of, 208
 sponsor's contact with, 203
- Distance enthusiasts, value to commercial broadcasters, 52
 who they are, 52
- Distance listening, hours of, 53, 242
 importance of, 53
- Distribution of listeners among stations, 21, 94
- Diversity of audience, 14
- Drama, radio, introducing characters, 187
 limitations of, 180
 requirements of, 178
- Dwellings, number in broadcasting centers, 362
- E
- Edison, N. Y. Co., programs, 19, 270
- Education, hours for, 237
 special services for schools, 233
- Educational features, field for, 174
 successfully broadcast by, 177
 time for broadcasting, 176
- Effectiveness, broadcasting, testing, 245
- Enunciation, care in radio singing, 163
- Equipment, special, for broadcasting circuits, 47
- Ether, overcrowding of, 34, 312
 channels available, 33
- Eureka Vacuum Company, experience of, 219
- Evening, early, program for, 237
 entertainment period, 238
- Eveready Hour, 8, 90, 104, 131, 187
 sales influence of, 255
- Experience in operation, advantage of, 36
- F
- Fading, effect of, 63
- Farm audience, 12, 72
- Features, regularity of appearance, 166
 selecting commercial, 110
 selecting most popular, 123
- Field strength, measurement of, 56, 300
 new means of measuring, 335
- "Freedom of the Air," 33
- Fundamental, definition of, 119
- G
- Gain control, definition of, 284
- Galapagos program, excerpts from script of, 190
 voice acting in, 154
- Gold Dust, tie-in of, 219
- Goldsmith, Dr. Alfred N., on reception volume, 301
 on service range, 54
- Goodrich programs, 138, 219
 experience of, 219
- Goodwill, capitalization by sponsor, 6
- Gratitude, as buying motive, 8
- Great Britain, broadcasting in, 329

H

- Happiness Candy programs, 89, 162, 244
- Harmonies, definition of, 119
- History of broadcasting, 1
- Hour, audience at various, 94, 244
 - effect on size of audience, 88
 - selecting for feature, 241
- Humorists, special qualities for radio, 160

I

- Impresario, radio, duties of, 169
- Income tax, paid by residents in broadcasting centers, 363
- Incomes, residents in broadcasting centers, 364
- Inflection, vocal, in broadcasting, 159
- Innovations, bringing attention to, 20
- Input operator, duties of, 282
- Instruments, distinction between determined by harmonies, 120
 - unusual for radio, 146
 - varying musical qualities of, 118
- Interference, effect on quality of transmission, 88
- International broadcasting, 339
- Ipana toothpaste, retail tie-in, 226

J

- Juvenile, programs for children, 236

K

- KFI, 218
- Kinney Company, tie-in of, 220

L

- Law, excerpts from Radio Act of 1927, 365
- License to broadcast, application for, 370
 - to whom granted, 369
 - term of, 370
 - securing, 35

- Lighting companies, increased revenue due to radio, 19
- Limitations, financial, to successful broadcasting, 28
- Listener attention, programs requiring, 178
- Listeners, attitude toward commercial broadcasting, 4
 - attitude toward radio programs, 212
 - distribution in U. S., 74
 - early attitude, 3
 - estimated number in U. S., 74
 - numbers in foreign countries, 75
 - participation in program, 133
 - percentage located in broadcasting centers, 76
- Local appeal, stations of, 85
- Local stations, value to community served, 44
- Logical broadcaster, factors determining, 29
- Long distance, sales value of, 321
- Ludlow, Godfrey, violin technique of, 148

M

- McClelland, George F. at Willard-Firpo bout, 152
- McNamee, Graham, announcing technique of, 153
- Mail, analysis of, 51
 - indication of audience quality, 221
 - judging popularity by, 78
- Manufacturers, radio, as broadcasters, 14
- Markets, radio, by states, 354
- Measurement, field strength, 300
- Metropolitan Life Insurance Co., experience with radio, 232
- Microphone, carbon, limitations of, 195
- Microphone, function and operation of, 280
 - placing and adjustment of, 117
 - placing for continuity program, 194

- Mixing panels, purpose of, 335
 Modulation, explanation of, 293
 Monitoring, explanation of, 284
 Monopoly, broadcasting, charged to chains, 43
 danger of, 328
 excess stations aid to, 319
 government development of, 329
 only retained by goodwill, 43
 public opinion safeguard against, 331
 Morning programs, suitable material for, 231
 Motion pictures, description by radio, 25
 radio as rival to, 349
 Municipalities, popularization by radio, 22
 Music, securing new effects for radio, 139
 Musical groups, suited to broadcasting, 144
- N
- Name familiarity, radio as means of promoting, 7
 National Broadcasting Company, chains established by, 41
 organization of, 40
 position in broadcasting field, 310
 rates charged by, 82
 Nemo job, definition of, 288
 News, broadcasting reports, 241
 Newspapers, attitude on publishing programs, 270
 comparison of broadcasting with publishing, 34
 publicity value of broadcasting to, 26
 relation of broadcasting to, 260
 Noon period, programs for, 234
 Notice, ensuing program in announcements, 224
 Novelty, appeal to audience, 239
 value in program planning, 171
- O
- Offers, special to audience, 219
 Operating department, broadcasting station, 279
 Operation, advantage of technical experience in, 36
 cost of station, 30
 Operators, radio, duties of, 295
 Orchestras, care necessary in broadcasting, 114
 Organization of broadcasting feature, 206
 of broadcasting station, 273
 National Broadcasting Company, 40
 Overmodulation, definition of, 294
 Ownership, disadvantages of station, 37
- P
- Personality, as continuity factor, 100
 associated with station, 129
 featuring a definite, 173
 Personnel, organization of station, 273
 Phonograph, radio as rival to, 349
 Policy, program, value of consistent, 167
 Political use of broadcasting stations, Radio Act concerning, 374
 Popular music, right to broadcast, 35
 Popularity, relative, of four classes of entertainment, 127
 Population, reached from broadcasting centers, 359
 Power, audience increased by added, 57
 necessary to serve large areas, 30
 Presentation, directing the radio, 203
 forms of, 170
 future possibilities in, 198
 Prestige, value of, 7
 Prize contests, radio, 222
 Products, new, introducing, 20

- Program Department, contact with
 artists, 277
 duties of, 276
- Program direction, need of capable,
 108
- Programs, acceptability to listener,
 104
 costs of, 32
 distinctiveness in, 101
 features made possible by chain
 system, 47
 planning successful, 97
 relative popularity of four classes
 of, 127
 script, need for definite, 184
 standards, effect on station's
 following, 80
 sustaining, 47
- Public utilities, goodwill for, 19
- Publicity, broadcasting as means of,
 268
 information required from artists,
 303
 problems of, 302
 radio, abuses of, 268
 results to be expected, 303
 when merited, 260
- Publicity Department, function in
 station, 302
- Publishers, value of radio to, 26
- Purchase, technical basis no longer
 paramount appeal with public,
 18
- Q
- Qualities, seven, of successful com-
 mercial program, 98
- Quality of transmission, judging, 87
- Quartettes, popularity as radio
 feature, 164
- Queensborough Corporation, experi-
 ence of, 3
- Questionnaires, employee, value of
 opinions expressed by, 252
- R
- Radio Broadcast, on monopoly of
 broadcasting, 43
- Radio Broadcast, on relation of
 newspapers to radio, 260
 on station congestion, 33
 on taxation system to cover cost of
 broadcasting, 329
- Radio frequency, definition of, 292
- Radio industry, responsibility to
 broadcasting, 313, 322
- Range, value of long distance lis-
 teners, 52
- Rate card, typical broadcasting, 84
- Rates, commercial broadcasting sta-
 tion, 82
- Receivers, future improvement of, 344
 influence on transmission quality,
 286
 number in broadcasting centers,
 357
 number in use, 352
- Recording, commercial programs for
 repetition, 200
- Regularity of appearance, emphasis-
 ing, 244
- Rehearsal for broadcasting presenta-
 tion, 197
- Remote control broadcasting, 287
 explanation of, 288
- Reproduction, quality of, effect on
 audience size, 88
- Results, basic principles for securing
 profitable, 10
 how to secure, 9
- Retailer, sending listener to, 225
- Reverberation, effect in, remote
 control pick-up, 114
- Rothafel, S. L., technique in broad-
 casting, 209
- Royal Typewriter programs, 20, 112,
 215, 217
- S
- Sales department, data collected for
 client, 299
 function in station, 298
- Sales of radio, table showing, 353
- Sales, sending listener to retailer, 225
 testing results from broadcasting,
 254

- Script of program, need for, 184
- Seasonal variations in audience numbers, 242
- Secrecy of messages, radio law re, 376
- Service programs, voice quality in, 176
- Service range of broadcasting stations, 54
determining, 55, 66
effect of time on, 57
exaggerated claims re, 62
in rural areas, 64
table of, 70
- Service rendered by program, field for, 175
- Sex, classification of radio audience by, 361
- Show Boat, excerpts from script, 188
- Showmanship, possibilities of broadcasting producers in future, 206
present status of, 311
- Signal lights, studio, 269
- Signal strength, effect on audience, 57
measuring, 55
variations in, 56
- Skinner Organ Company, use of radio by, 24
- Slogans, advertising, used in announcements, 215
- Small stations, problems of, 32
- Soloists, instrumental, radio technique for, 147
- Souvenirs, offering in announcements, 218
- Speaking for radio, requirements of, 152
voice for, 157
- Special interests, appeal to, 34
- Sponsor, centering attention on, 215
directing goodwill to, 103, 211
fitting program to, 102
- Spontaneity in announcing, failure of artificial, 106
- Stage fright, radio, 155
- Staging, radio, problems of, 169
- Station, adapting program to, 103
appraising value of, 325
arrangement of, 308
congestion of, 314
individuality of, 81
local in appeal, 85
new, when desirable, 49
small, audience of, 91
- Statistics, analysis of applause mail, 51
significant, of broadcasting centers, 358
study of audience, 13
- Studio equipment, developments in, 335
- Studios, using two simultaneously, 196
- Summer, continuing broadcasting in, 243
- Sunday broadcasting, appeal of, 229
- Survey, receiving sets in U. S., 352
- Sustaining programs, 40, 47
- Symphony orchestra, appeal of, 141
- Symphony, special for radio, 143

T

- Tables, calculation of listening audience, 94
estimated service ranges, 70
factors determining the logical broadcaster, 29
field strength, 302
rates for commercial stations, 83
service range of broadcasting stations, 54
- Talent, voluntary, value of, 32
- Telephone lines in broadcasting, 47
- Telephotography, as future adjunct to commercial broadcasting, 200
description of, 345
future development and use, 345
uses for, 347
- Television, as future adjunct to commercial broadcasting, 200
possibilities of, 348
present development of, 348

Time, broadcasting signals, 241
 fitting feature to hour broadcast, 228
 programs for morning hours, 231
 schedule for broadcasting presentation, 197

Trade name, goodwill association with, 7

Transmission irregularities, 63

Transmission, judging quality of, 286

quality of, 86

Transmitter, broadcasting, limitations of, 116

location of, 291

Travel talks, appeal of, 25

Turnover, relation to broadcasting, 16

Tyrell Hygienic Institute, experience of, 220

U

United Cigar Stores, retail tie-in, 226

U. S. Playing Card Co., listener participation in program, 133

V

Victor programs, artists presented in, 113

aural demonstration of product, 24

Vocal groups suited to radio, 164

Voice, characteristics detrimental to broadcasting, 159

effect in radio drama, 154

judging quality for broadcasting, 158

quality in service programs, 176

quality suited to broadcasting, 121

singing, for microphone, 162

tone, effect in broadcasting, 150

Volume, dependence on degree of modulation, 294
 range of, in transmission, 116

W

WABC, use of newspaper advertising by, 304

Wave Lengths available, 33

WEAF, analysis of applause mail, 51
 forming of station, 3

organization of personnel, 40, 275

service range, 55

study of audience by, 13

Weather, broadcasting reports, 241

effect on size of audience, 242

WGHP, rate card of, 84

White, J. Andrew, as sports announcer, 154

Wilson, Woodrow, radio address by, 154

Wire broadcasting, facilities for, 341

Wire circuits, special, used in broadcasting, 45

Wire lines in broadcasting, 287

cost of, 30

legal restrictions on ownership by broadcasting stations, 373

WJZ, field strength of, 56

effect of moving transmitter, 57

WNYC, establishment of, 44

WOOD, Audience tabulation, 63

rates charged, 83

service range claims, 63

WOR, publicity value to L. Bamberger & Co., 16

Z

Zones, the five radio, 365

