

MEASUREMENT IN RADIO

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FOREWORD

Where the only visible auditors are unresponsive microphones and sound-absorbing walls, speakers, actors, singers, and musicians cannot long feel that their efforts are worth while unless they receive some assurance of the appreciation of the listening audience. Similarly, listeners in the sanctuary of their homes find no satisfaction in hissing or clapping an imperturbable radio set when the program displeases or entertains. It is the purpose of this book to discuss and evaluate these assurances which radio performers desire and to suggest means of rendering the approval and disapproval of the listener audible to the broadcaster.

Dr. W. W. Charters, director of the Bureau of Educational Research, has long insisted upon the importance of determining the effectiveness of any educational endeavor and of developing sound methods for measuring this effectiveness. It was therefore his suggestion that the present status of measurement methods in radio be appraised and that recommendations be made with regard to their use. I am indebted to him for much assistance and advice in carrying out this suggestion.

The interest of the Payne Fund in the influence of radio, motion pictures, and reading upon children and youth has induced it to support investigations in the field of radio education by the Bureau of Educational Research. This report of one of the studies shows how broadcasting investigators have attempted to discover what programs appeal to listeners, what ones they actually hear, when they find time to listen, how much listening they do, and, most important of all, how radio affects their daily activities. From such information the character of the influence of radio can be judged and intelligent steps may be taken to mold it.

So many persons have aided in the collecting of material for this book that bibliographical citation must serve to express the debt due them. In particular, I am grateful to Miss Josephine MacLatchy for editing the manuscript, to Miss Alice Richards for assistance in preparing the material, and to Mr. Frank Stanton for suggestions in revising the content.

To avoid overwhelming the reader with much pertinent but secondary information, extensive use has been made of footnotes and appendix notes. The footnotes are indicated in ordinary fashion with small superior figures, while notes found in the Appendix are specially pointed out in the text and numbered consecutively through the book. Assignment of a note to the Appendix rather than to the foot of the page has been followed when the note is long, when it offers further illustrations of a point already illustrated in the main body of the text, and when it contains material somewhat indirectly related to the point made in the text.

Bibliographical citations are shown by numbers inclosed in parentheses. Numbers 1 to 199 refer to books, pamphlets, and reports; numbers 201 to 399 refer to magazine articles and papers printed in proceedings of meetings; numbers 401 to 599 refer to periodical sources without authors; numbers 601 to 699 refer to personal interviews and correspondence; while numbers 701 to 799 refer to miscellaneous reports.

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CONTENTS

	PAGE
FOREWORD.....	v
I. GENERAL METHODS IN MEASUREMENT.....	3
II. SPECIAL PRINCIPLES OF MEASUREMENT.....	15
III. ANALYSIS OF MAIL RESPONSE.....	49
IV. QUESTIONNAIRES, REPORT FORMS, AND TESTS.....	89
V. METHODS OF PERSONAL CONTACT.....	115
VI. THE TELEPHONE IN MEASUREMENT.....	135
VII. ANALYZING SALES RESPONSE.....	151
VIII. SPECIAL METHODS OF MEASUREMENT.....	165
IX. RESULTS OF SURVEYS.....	185
X. PSYCHOLOGICAL FACTORS IN LISTENING.....	207
XI. SYNOPSIS OF METHODS.....	227
APPENDIX: SUPPLEMENTARY NOTES.....	235
BIBLIOGRAPHY.....	293
INDEX.....	313

MEASUREMENT IN RADIO

Author's Summary of Chapter I

BBROADCASTING goals of educators and advertisers determine the purpose for which surveys are made. Surveys are made to count and describe listeners, measure the effect of the program in terms of attitude changes and memory, find out what listeners do after hearing programs, and determine listeners' preferences. The common methods are: analysis of mail responses; direct inquiry through mail questionnaire and personal, house to house, and telephone interviews; observations and statistics of buying, attendance, practices followed; and the like. Terms which need definition are "coverage," "potential audience," "station audience," "primary area."

CHAPTER I

GENERAL METHODS IN MEASUREMENT

The problems in radio measurement center around three important questions. These questions are: What are the purposes of any specific radio broadcast and of radio broadcasting in general? How can methods be developed to determine validly whether broadcasting fulfills these purposes? Is it possible to standardize the measurement techniques which have been found to be useful?

The goals or objectives of broadcasting determine the types of measurements which are to be carried out. These goals must be defined by the broadcaster. Reliable and valid measurements are needed to find out whether the goals have been reached. Development of methods and determination of their adequacy is a problem of survey agencies and technicians. Standardization of purposes and methods enables broadcasters to compare the results of different surveys or measurements and conveniently interpret the results of any single survey. The setting up of standardized forms is a task involving co-operation on the part of the survey agencies. The enforcement of standardization is the problem of an association of broadcasters or agencies interested in appraising broadcasting.

OBJECTIVES OF BROADCASTING

Any survey method must take as its starting point the objectives to be attained by broadcasting. Broadcasters ask, "Is my program effective?" And the specialist in surveys says, "What do you want it to do? What does the term 'effective' mean to you? Do you want the program to educate? Do you want it to please? Do you want it to motivate?" At first it may seem that the answer for the commercial sponsor is quite clear. The program must sell goods. The announcements and entertainment must motivate the listener to buy the advertised products, and its results must be measured in terms of dollars and cents. This is claimed to be the objective of American radio. However, 73 per cent of the stores interviewed

in one survey of retailers considered radio essentially a good-will builder; 27 per cent looked upon radio as a means to increase store sales on specific items (45). These opinions were held in a field where radio has been shown to be most productive in direct selling of advertised features. Current practice emphasizes the converse of this opinion, so for a working hypothesis we can consider the objectives of commercial broadcasting to be selling goods directly, promoting good-will which will be reflected in selling goods, or protecting the sponsoring organization against public dissatisfaction: Public-utility organizations may well have thought of this aspect of broadcasting service.

The educator is as much troubled in defining goals to be attained by broadcasting as he is in defining the purpose of education itself.¹ One of the best definitions of educational broadcasting and statements of its objectives has been offered by Charters: "An educational program is one whose purpose is to raise standards of taste, to increase range of valuable information, or to stimulate audiences to undertake worth-while activities" (49). Discussion of specific objectives of educational institutions in using radio is found in the valuable survey of land-grant colleges and state universities (106).

PURPOSES FOR WHICH SURVEYS ARE MADE

The primary purpose in many radio surveys is to secure information about the listeners to a particular program or station. This includes information with regard to the number, economic status, geographic distribution, sex, age, intelligence, social status, and occupation of the listeners. Many surveys also attempt to obtain records of the activities of the listener, whether he is a regular or occasional listener, has purchased products, has attended meetings, has put into effect practices heard over the radio, has read books, and so forth. This whole problem may be phrased as a question: What do people do after hearing a program? Still other surveys attempt to gauge the preference of the listener for the station or program, to find out his attitude toward advertising and other items of content, to obtain his criticisms and suggestions for

¹The Advisory Council for the National Broadcasting Company has made a pertinent comment in regard to the measurement of the effectiveness of educational programs. It says that broadcasters now recognize that the true value of programs such as the course on "Magic of Speech" is measured, not necessarily by the number of listeners alone, but also by the intensity of enthusiasm and active participation which they stimulate (81).

improvement, and to determine whether he is conscious of the name of the program to which he is listening. Such surveys are usually made at one time and give a cross section of the audience character and its response. Other surveys are made at different times to determine the effect of changes in programs, station power, and stations carrying programs.²

From the results of all these surveys, the broadcaster knows whether he is reaching the people he wishes to reach, and whether the type of program he has selected is having the desired effect. When such surveys are compared with results obtained for other programs and other stations, they are highly indicative. Westinghouse has made surveys for two of its stations, KDKA and WBZ. Since the method used in both surveys was similar, it was possible to compare the listening habits of two audience groups located in different parts of the country (469).

Surveys for the purposes just described may be made by mail questionnaire, by personal interview, and by telephone interview. Mail response may also be analyzed to answer some of the questions.

Many surveys are motivated by desire for knowledge of the radio audience apart from any specific program or station. Such surveys seek to determine in a more general sense many of the facts already mentioned for the specific station or program. The facts wanted for the general audience include number of persons with radio sets, and under this the geographic distribution, race, nationality, income, sex, age, and other groupings; number of sets tuned in per day; the amount of listening per day; the hours at which people can best listen and do listen; seasonal changes in listening; the programs people are hearing and remember hearing; the preferences for programs; attitudes on advertising; action of the audience after the programs; conditions under which persons listen, that is, distractions and work; the places where people listen, that is, in homes, automobiles, offices, schools; and whether they listen in groups.

The continuous Crossley survey for the Association of National Advertisers obtains some of this information. It is a good example of a pooled or generalized survey where, in addition to obtaining information for its participants on their specific programs, much information is accumulated on the general habits of the audience.

²The Shell Company conducted surveys before and after changing its program to a rival network and reducing the time from one hour to thirty minutes (329). The Crossley survey because it is continuous secures such information, and the broadcaster may plot the changing effect of his programs on a time chart.

The Starch survey gathered information which could be used by the stations of the National Broadcasting Company (101). An Elder survey determined the products which were to be found in radio and non-radio homes (29). Riegel, in his survey of the Buffalo audience, obtained much information on the hours at which radio listeners had their sets turned on (96). The surveys here mentioned have been conducted by mail questionnaires, personal interviews, and telephone interviews. The Columbia Broadcasting System has made several so-called "institutional" surveys; that is, surveys which benefit radio generally rather than individual stations.

Sales analyses have been carried out in numerous instances. Surveys have been made of radio and non-radio territories to determine where demand existed for radio-advertised products. Sales have been noted before and after radio advertising. Observers have discovered the reasons given by customers when purchasing merchandise in stores. The sales response to special radio-featured articles has been compared to that for articles advertised in the ordinary way or not advertised at all. Various surveys have undertaken to determine the distribution of books from libraries and the attendance at meetings, concerts, museums, and clinics where it is possible that radio book reviews and radio talks dealing with the activities of organizations may have exerted an influence.

Still other surveys or tests have centered around the physical medium of radio and around the listener in a psychological sense. The purpose of such surveys has been to determine signal strength in various localities, ratio of signal to noise level, quality of reception necessary for the listener's enjoyment, characteristics of poor reception most detrimental to listening such as interference, atmospheric, and fading.

In practically all of these cases we were concerned with surveys which had as their chief interest the individual listener, his habits and interests. But surveys have also been undertaken to determine group opinion and to obtain expressions of policy from organizations.³ At one time the Federal Radio Commission contemplated securing group opinions on radio-station service from a survey to be executed by the Commerce Department section on radio. More recently the National Committee on Education by Radio has secured

³N. W. Ayer and Son conducted a questionnaire survey in which an effort was made to reach those who could supply information representing group rather than personal sentiment. Newspaper editors and publishers, chambers of commerce, city officials, store owners, and others were questioned (414).

opinions from officials of practically all the important state universities with regard to the radio policies of their institutions (106).

METHODS INVOLVED IN MAKING SURVEYS

Some years ago a federal advisory committee on education by radio sent questionnaires to the various stations, commercial and otherwise, asking them to list the educational programs they offered, giving an indication of listeners' responses. Two questions were asked in regard to each educational program. The first, "Was there decided approval?" showed that 116 stations found a decided approval for the educational programs listed; 4 did not; and 8 were uncertain. The second question asked, "How was this opinion ascertained?" There were 130 stations which answered the question. Naturally, more than one method of testing audience approval might be used with reference to a particular program. There were accordingly 102 mentions of mail response, 35 of telephone calls, 7 of telegrams, 18 of comments by the public, and 6 of press comment.

Other indexes employed by the stations were contests, number of questions asked, radio installations in schools, and requests for material. The type of request and number of programs using the request as an audience indicator were: first-aid books, 1; information, 7; copies of talks, 1; beauty hints, 2; United States pamphlets, 1; recipes, 3; charts, 1; booklets, 9. In some instances questionnaires were sent out, referendums were made in club circles, and other similar methods were employed. Attendance at meetings was judged in one case, visits to the studio in four, increased membership in activities in one case, club members obtained in two, students enrolled in one case, and examination papers received in two (711). These various methods mentioned give a fairly clear idea of the ordinary ways in which a station judges its audience interest.⁴

As evidenced from the surveys mentioned, most stations utilize the reports which come to them without much work on their part. These include the mail response which is elicited by sustaining and commercial programs. Mail response may be unsolicited, consisting of letters of commendation and requests for information,

⁴College and university broadcasting stations checked up on their programs by questionnaires, personal interviews, circulars mailed, requests for market reports, book lists, bulletins, surveys of fan mail, return questionnaire cards, correspondence reports from county agricultural agents, questions asked of groups addressed by extension workers, and in many other ways (713).

or it may be actively demanded by the station by broadcasting appeals to write in, by stopping programs, by offering various baits, and by holding contests.

Along with the responses by correspondence most stations receive a great many telephone calls in connection with program changes and other matters of a similar nature. A further much-used source of information is found in the overheard and personal comment which members of the broadcasting industry gather with reference to their programs. Many reports, which are of help in revising programs, are received from the agents of broadcasting organizations.

Questionnaires and report forms have always played an important rôle in obtaining information of the kind needed in radio. Questionnaires have been sent to the public at large asking for information about the preferred station and the programs heard and liked. Questionnaires have also been sent to dealers, to local members of broadcasting organizations, to teachers, and to many professional groups. As a form of the questionnaire, the report form has assumed an important rôle where regular information on listeners' responses is desired. Report forms have been used extensively in connection with school broadcasting to determine what programs have been most successful in the classroom and to obtain suggestions for the improvement of others. They could be equally well used by commercial organizations with a widespread staff to establish a regular form of reporting on programs.

Of at least equal importance with the questionnaire, and often more satisfactory in use, is the interview. Interviews are made by personal calls or by means of the telephone. Telephone interviews are most generally employed in radio surveying. The telephone has one advantage for a special kind of survey, for it enables the interviewer to obtain information from the listener at the time the program is on the air.

It is also possible to observe a number of activities of the radio audience which are motivated by radio broadcasts. People go to meetings, concerts, museums, and clinics because of some talk they have heard on the subject. At libraries they ask for books which have been recommended to them in radio reviews. Listeners come to stores and buy products advertised over the radio. It is possible to obtain statistics on a large number of activities which may be initiated by radio publicity or propaganda. The methods involved in securing this information are varied. Where library records and

stores' sales are available, it is possible to compare the amount of radio publicity with these records. The same is true of attendance.

There is much knowledge to be gained by laboratory or field experimentation. Tests can be given to determine how much is remembered from a radio broadcast and to determine the parts of the continuity which are most effective (*see* Note 1).⁵ Further types of tests which try to ascertain the attitudes of the listeners may also be employed. After a series of broadcasts is heard, the tests may be given again and the change in attitude, if any, graphed.

DEFINITION OF TERMS

Before the methods involved in measuring radio effectiveness can be intelligently treated, the terms used must be agreed upon. What do "station coverage," "primary area," "secondary area," "potential audience," "available audience," "popularity," and other such terms mean? Much of the misunderstanding which surveys have aroused would be dissipated if the use of these terms were more adequately defined and restricted. Naturally, any number of terms, or measures, could be defined, and so it is necessary to determine what terms are useful and are needed. These are: first, a measure of the signal strength of the station with reference to the territory around it, which is only intelligible if combined with a measure of the noise level; second, a measure of the number of persons with radio sets in given areas; third, a measure of the number of people with radio sets tuning regularly to a given station or program; fourth, a measure of the attention value of the program.

Such information will tell the broadcaster where he may expect to be heard with standard degrees of clarity, how many people with radio sets are in the different areas of clear reception, how many persons within and without that area tune regularly to the station, and whether the station enjoys any special advantages because of its individuality. On the whole, there is some agreement by various persons concerned with broadcasting on the proper use of terms. The definitions given here will follow, in the main, these usages.

"Coverage" is the area⁶ in which a station lays down a signal

⁵The notes numbered consecutively will be found in Appendix I.

⁶Sometimes coverage is confused with the number of receiving sets and even with the number of listeners to the station. This is an extension of the term which should not be made, since we need a term to cover the primary measure of the signal strength of a station in a geographical sense.

strength of specified value in relation to the local noise level (525). The determination of coverage is an engineering job. The evaluation of coverage is a psychological task since it involves a study of listeners to find out what ratio of signal strength to noise level is acceptable. Therefore, coverage maps and figures should be given in terms of physical units and ratios. Such maps are then intelligible to everyone who knows the meaning of the standard engineering terms and may be interpreted for the benefit of those who do not.

The "potential audience," directly related to coverage, may be defined as the number of radio homes within the clear reception range,⁷ the coverage, of the station (255). This number of radio homes is obtainable from census figures or surveys (30). Many stations, for example, Westinghouse, WXYZ, include potential audience in their idea of coverage.

Normally, all of the radio sets in any area are not in use. In fact, results of many surveys give the percentage of this potential audience which will be tuned in at different times during the day. This percentage has been termed the "available audience" (255). The available audience is the number of radio sets tuned in to all radio stations at specified times.⁸

The "station audience" is that part of the available audience which tunes in to a particular station at a particular time. This is computed by taking the average audience for a number of different programs. It is not to be confused with the number of radio sets tuned in to the station some time during the day. This is known as the "daily station audience."¹ Nor is the available audience to be confused with the number of sets tuned in to some station some time during the day. This is the "daily available audience." In the first case the percentages for the different stations add to 100, and in the second they exceed this figure since the same radio set may be tuned in to two stations during the day. The station audience is an average for a particular minute during a specified time. The daily audience is the sum for a specified time, a day.

The "program audience" consists of the number of sets tuned in to a particular program. The station audience is a composite average picture of all of the successive program audiences.

⁷By clear reception range is meant the area determined by the coverage measurements, using standard ratios between signal strength and noise.

⁸Audience is defined in terms of radio sets because surveys usually use the set as a unit of measurement. Appropriate corrections can be made for the number of listeners to each set and the "available audience" may be spoken of as the "available number of listeners."

All of these terms are based upon absolute measures of the signal strength or the number of listeners. Many surveys have been conducted merely to show that one station has more listeners than the others or that there are certain relationships between the number of listeners in one area and another. In all such cases, the terms should be qualified by the word "relative." Thus we speak of the "relative available audience," the "relative program audience," the "relative coverage," taking one of the measures as the base.⁹

Some survey reports do not give highly pertinent facts about the method. Since "interview" has usually meant a personal face-to-face talk, then the telephone interview should not be called merely an interview, but should always be called by the full title of "telephone interview." This sometimes has important bearing on the interpretation of the results of a survey, and no doubt should be left in the reader's mind as to the kind of survey made.

Likewise, the use of "regular" leads to confusion. Does "regular" mean "daily"? Daily listeners are those who listen every day. Regular listeners are those who listen at repeated intervals, and the length of the interval should be indicated.

In many surveys of the station audience where the information is broken down geographically, parts of the area are labeled "primary," and the rest "secondary." In addition, there are parts denoted as "intense," "excellent," "good," "fair," "poor." Such terms as ordinarily used have little meaning, even relatively, because no one knows what percentage of "intense" the term "excellent" should mean. As a general rule, such terms should be avoided in accurate surveys since they are misleading. It is much better that station audience for the area concerned be mapped as *A*, *B*, *C*, or *D*, giving detailed instructions as to the significance of the letters rather than as intense, good, and so on.¹⁰

Confusion reigns still further in the use of terms in reporting surveys. Since many of these terms refer to specific methods of acquiring the data, they will not be defined here. It is clear, how-

⁹The Columbia Broadcasting System made a map study whereby the response in the county in which the station was situated was taken as the standard or base (34). Such a survey shows the relative station audience in different counties adjoining the central one.

¹⁰The letters should have the same significance for different surveys. WCLO describes its station audience area as "primary" when 30 to 100 per cent of the daily listeners tune regularly to WCLO (109). The Columbia Broadcasting System calls its relative station audience area "primary" when from 25 to 100 persons per unit of population send in requests for maps as compared with 100 requests per unit of population in the station county (34).

ever, that radio owners should mean radio owners, and if, in making a telephone survey, radio owners "at home" are interviewed, then reports should be given for radio owners at home. In the same way radio listener may mean any person who listens to a radio at any time, or a person who is listening to the radio at the time of the interview. In the latter case "radio listener" should be clearly defined, consistently used, and not confused with "radio owner."

VALUE OF SURVEYS AND RESEARCH STUDIES

For the advertiser, the value of research investigations and surveys is clearer than for the educator because the former's purpose in broadcasting is usually simpler and better defined. Research not only helps the person interested in radio to chart the effect of various changes in artists, stations, and programs as they happen, but to foresee the probable effect of the changes (263). The use of research is twofold: it diagnoses the present and predicts the future.

When particular classes or occupations are to be reached by radio, then it is imperative that some method of checking up on the achievement of this be employed. Macy's, of New York, had been giving a broadcast at 11:00 A.M. As a result of a house-to-house canvass of homes in Manhattan, Macy's changed the time of the broadcast to 8:30 A.M. This house-to-house canvass found out for the store what women were doing at various times during the morning and when they were at home (45). Evidently, the value of any program, talent, time, or station can only be determined in terms of the audience response.¹¹

The need for surveys is shown by just such statements as this one from WJSV: "We guarantee to reach every nook and corner within a 100-mile radius of Washington at all times, day or night, with clear reception and vigorous signal strength. . . . WJSV gives guaranteed coverage" (511). Any engineer knows the difficulty of guaranteeing coverage, although the sponsors and organizations putting on programs may not know it. Therefore, such statements should be avoided, and acceptable coverage maps substituted.

Education has unfortunately fallen in arrears in the matter of measurement of results by means of surveys. There are two reasons

¹¹The National Broadcasting Company increased the rate on time before 9:00 A.M. up to the rate for other daytime periods. The justification for this change was found in the response to programs broadcast prior to 9:00 A.M. as confirmed by numerous surveys (440).

for this. The first is that the objectives of educational programs are somewhat varied and not as susceptible to measurement as those of the advertiser. The second reason for the absence of information on the results of educational programs has been the expense involved in making a survey or check-up. In the Land-Grant Survey, directors of educational stations were asked to state the basis for their daytime coverage estimates. Seventeen based their estimates on reports from listeners; one based it on opinion; while one relied on field-strength measurements. This shows how the situation is in the matter of coverage. With respect to the size of the audience and other factors, only four investigations had been made (106).

Foreign countries are scarcely better off in the matter of measurement (*see* Note 2). Here, in systems not dependent upon advertising, one would expect to find some measurements undertaken with respect to educational programs. In 1931, educators in other countries were asked the question, "Has any method been devised to discover how many listeners follow these educational programs?" Educators in Austria, Belgium, England, France, Hungary, Irish Free State, and Japan reported no methods. In Germany it was said that approximate estimates could be given only for the schools, and in Holland the number of printed lessons requested by listeners served as a check (724). As will be seen later, this report is incomplete in not giving methods for several of the countries mentioned. Nevertheless, it does illustrate the poverty in our measurement of an agency which presumably influences millions and consumes much money, time, and energy in the preparation of the programs.

In discussing the value of and need for measurement, it must be realized that the most suitable measures are not necessarily the most scientific. There are two facts which control the measurements needed in any particular case. In the first place, a rough measurement may reveal all that is desired, and, in the second place, the cost of the information may be an important consideration. Any appraisal of survey methods must be made in terms of the usefulness of the information and the cost of securing it. Otherwise, the value of a survey has no meaning. This is particularly true in connection with the mail response and questionnaire methods. They may be criticized as not objective enough to be scientific. If, however, they render some useful service at low cost, then they have distinct value in spite of obvious inaccuracies (*see* Note 3).

Author's Summary of Chapter II

CERTAIN general principles of measurement are applicable to radio with peculiar force because they are so often violated. The principles of sampling and reliability apply to the gathering of the data. Validity concerns both procedure and interpretation of the results. Presentation of the data is often distorted because of misleading interpretations or manipulation of the figures. These matters must be considered in making any radio survey, and therefore a discussion of the specific types of difficulties and errors in present-day surveys is of value.

CHAPTER II

SPECIAL PRINCIPLES OF MEASUREMENT

CHARACTERISTICS OF A GOOD SURVEY

A survey cannot be satisfactory unless a definite purpose is outlined in planning and carrying it through. This is the first requirement of a good survey which should follow suitable practices in regard to the objective; general methods; sampling; the collection of data; and the treatment of the data (56, 101).

The person in charge of such a radio survey will carefully define the questions he wishes to decide by means of the survey. He will weigh the different methods of mail questionnaire, personal interview, and laboratory experiment to determine which will best obtain answers to his questions. He will make sure, in selecting the persons from whom he is to obtain the answers, that he secures a fair representation of the whole group if he only questions a part of it. He will test the details of his methods of collecting the data, such as the phrasing of questions asked, to make sure that they call for the information which he wants to secure from the person interviewed and yet do not influence or lead the judgment of the person. Finally, he will carefully go over the raw data in preparing them for the final tables, and check the procedures to be sure that no statistical treatments have produced illogical and erroneous conclusions from the data.

These suggestions are most easily followed in conducting formal surveys, but not all studies are of this type. In studies of the informal type it is no less essential to test critically the procedure and results. A great deal of valuable information may be obtained by recording the experiences of people engaged in broadcasting. All examples of radio educational achievements and advertising successes may be gathered together with all the necessary details as to the type of program, method of follow-up, and way in which the success was determined. But these case histories—and the specialized magazines are full of them now—will not be complete until the failures and doubtful results are also studied. This has

been the one grave fault of practically all reports and writings on broadcasting. The brilliant successes have been emphasized, and the less distinguished results glossed over.

UNIFORM SURVEYS

Considering any survey alone, it is sufficient that it follow the principles just given in its own fashion. Considering surveys in the aggregate, it is apparent that their importance and significance can be greatly heightened by employing comparable methods. Standardization and definition are two essential principles in the fruitful application of measurement to radio. In this way results for different surveys in different regions can be compared, and the results for single surveys can be properly interpreted.

When standardization is not rigidly maintained, comparison tables and averages computed from these tables may be misleading. Some time ago a newspaper organization conducted surveys in five cities. The results were reported to the central office by the local newspapers. Unfortunately, one of the newspapers, although adhering to the standard form for conducting the survey, found it expedient to calculate the percentages using a different base. When the results for the five cities were averaged, it was impossible to say what the average represented since the component percentages did not refer to the same measurement (715).¹

Aside from standardization in general procedures, there is need for some agreement on such finer details as the classification of occupational groups. Income groups should also be of the same order for different surveys. In comparing results for several surveys the differences in such groupings become annoying. Since the United States census makes a determination of the occupations in the United States, it would be easy to compare the occupations of the people surveyed and check the adequacy of the sampling.

SAMPLING

Most surveys and measurements of any kind depend upon sampling. By sampling is meant the selection of a portion which is believed to

¹Four newspapers computed their results in terms of the number of persons who answered the telephone and had radios. The fifth computed its results in terms of the number of persons with radios who answered the telephone plus a correction for the number of persons who were presumed to have radios and did not answer the telephone call which was put through by the investigator.

be representative of the total group or whole population. Suppose we make a radio survey with the purpose of finding out how many people are listening to a certain program on a certain evening. A customary procedure is to call up a number of people on the telephone at the time the program is on the air and ask them to what program they are listening. Let us carry out our survey in a city with a population of three hundred thousand. The most accurate way of finding out how many persons are listening to the program will be to ask each one. This will involve three hundred thousand telephone calls, providing each person has a telephone and a radio set. In such a survey the method used will not be a sampling but an enumeration. In other words, each person will be counted according to his particular answer to the question. This is the method of the United States census. The expense and labor involved make an enumerative survey impossible in most cases. So, in our city of three hundred thousand, we call upon 4 per cent of the families on the assumption that what 1,000 out of 3,000 families are doing, 25,000 out of 75,000 may be expected to do. This is a good assumption if each family interviewed represents the other 24 not interviewed in respect to race, income, social position, intellectual interest, and other important traits.

Since sampling is so generally used, it is unfortunate that the working of sampling procedures and the sources of error are not better understood. One of the guiding principles in sampling has been this: the larger the sample the better. Within a certain sense this is true, and some studies with poor sampling methods have been retrieved because of the largeness of the sample.

EXCLUSION OF CERTAIN GROUPS FROM THE SAMPLE

While the size of a sample is of significance and often impressive because of the common belief that accuracy follows in the wake of a large sample, it by no means guarantees the genuineness of the result. If any procedure used in the method of sampling tends to exclude certain groups, then the sample can never be representative of the whole. Such groups have been excluded to a greater or less extent in almost all radio surveys. This is particularly true where the telephone is used as a survey method.²

²If you make a survey by telephone, you can only hope to sample those people who have telephones. No matter how large the sample is, you can never say that it is representative of those people who do not own telephones. Many surveys made by telephone interviews do not make this fact sufficiently clear.

The statement is often made, when the telephone interview is used, that a telephone sampling is all that is desired, and that the only group which is of interest to the advertiser consists of telephone owners. This is legitimate, but those who make such surveys should beware of interpreting their data for the population as a whole. A survey of radio listening by a newspaper association offers a typical example of an unwarranted extension of the interpretation of the sample (2). Here the data obtained from telephone owners with 82.4 radios per hundred were given as being representative of the country as a whole, although according to a recent Columbia survey only 56 per cent of the entire number of families owned radios (30).

It is not so obvious that the mail questionnaire has a definite sampling bias. Nevertheless, it has been determined by experiment that the higher economic classes are more prone to return the questionnaires than the lower classes (101). Sometimes in making personal-interview surveys persons are classified according to economic status. These surveys reveal that the persons of different economic status are not found at home in equal proportions.

RULES FOR PROPER SAMPLING

In order to secure a proper sample, some such procedure as that given here must be followed. First, the factors on which the sample might be controlled must be set down. In a radio survey of audience preference for stations, these factors may be considered important: geographical distribution within a certain limit, economic distribution, race or nationality distribution, age distribution, sex distribution, and occupational distribution. Second, it should be determined whether these factors actually affect the results. It may have been shown on previous surveys that the station preference of men follows that of women; that people of different races and nationalities prefer the same station. If it can be shown that station preference does not change with such factors, then it is not necessary to control the sampling with regard to them.³ Third, after it has been decided on what factors the sample must actually be controlled, the distribution figures should be obtained for the total number of people in the region representing each factor. In other words, it is well to know how many children, how many adults, how many in the

³Hettinger has broken down his data on the Philadelphia audience so that one can compare the station preferences for age, sex, and other groups (56).

different occupational groups, economic classes, and nationalities are present in the entire population of the area studied. If we know this, then we can check on the adequacy of the sampling method (*see* Note 4). Fourth, some method must be devised which will bring about a nearly equal response from all of the different groups in proportion to their numerical strength.

It will be readily seen from this discussion that a thorough-going sampling in a real sense is almost impossible, and in most cases it is not compatible with purposes for which the survey is made. In most cases the advertiser and the educator are interested primarily in certain groups, and they can choose the method which will give them the greatest response from these special groups. As stated before, this is one reason given in justifying telephone sampling. Presumably, telephone sampling reaches those persons who have the greatest purchasing power. It is the judgment of these people that the advertiser is most anxious to have since he sees this judgment, if favorable, reflected in sales.

COMBINING SAMPLING PROCEDURES

Since the telephone survey, the mail-questionnaire survey, and the personal-interview survey are all different in their sampling effects, it has been customary to combine the methods or compare the results. Elder has checked the results of a Boston mail-questionnaire survey with personal interviews (709). In Omaha, Creighton University conducted a survey by making half the interviews by telephone and half by personal call at the house (107). Elder finds, for Boston at least, that the personal-interview results agreed with the mail-questionnaire returns. In the Omaha survey it was assumed that sampling according to two methods would give better results. Tests conducted by Crossley showed close correlation between the information obtained in telephone and in face-to-face interviews.

GEOGRAPHICAL SAMPLING

Units.—Great difficulties in sampling occur when the geographical units from which the samples are taken are not equal. This is of especial importance in using the county as a geographical unit and assuming that the audience stops abruptly at the boundary. We know enough about radio transmission and habits of the radio audience to be sure that neither follows those arbitrary governmental divisions called county or state lines. KDKA has recognized this and used

50398

the trading area as its geographical unit (62). This has the advantage that certain statistics, which are available for counties, such as income-tax returns and automobile registration, can also be secured for trading areas. It is a more compact unit, and one which is directly related to the habits of people in buying (*see* Note 5).

At present, the consistent use of the county-line system yields some rather peculiar results in audience surveys. If there is any massing of the county population either near to or far away from the station, this distorts the outcome. In the Columbia survey where the percentage of mail requests from different counties was used for coverage data, we find that many counties which are narrow and lead away from the station are listed as good coverage. Parts of these counties are farther away than entire other counties which are not listed as good coverage. The maps for Stations WLBZ, Bangor, Maine; KOH, Reno, Nevada; and KHJ, Los Angeles show this. In the last case the shape of the famous San Bernardino County causes the good coverage of KHJ to sweep east for hundreds of miles (34). This method of measuring coverage can do for some stations what gerrymandering did for political parties (*see* Note 6).

Relation to signal strength.—Felix has commented on the fact that if stations follow their signal strength carefully in making popularity surveys, they are bound to win. After relating the signal-strength measurements in the boroughs of New York to the relative popularity of the different stations in these regions, he concluded that if WJZ concentrated questioning in Richmond, WEAJ in Queens, and WABC in the Bronx, each could prove itself the most popular (406).

In this same connection, the method used by Columbia in surveying listening areas is noteworthy. Regions lying around the stations on the Columbia Network were called "listening areas." In determining the comparative response of the audience to the three networks in listening areas, Columbia chose those regions where its stations had shown up well in a previous mail-response survey (37).⁴ This means that the figures finally published by Columbia showing a lead over the other two networks are of doubtful interpretation when adjustments for the method of sampling are made. In justice to Columbia, it should be stated that the term "listening area" is always defined to mean listening area for the network

⁴One of the best illustrations of this type of sampling error is in WLW's sending questionnaires to some twelve thousand persons who had written to the station to obtain a booklet. The returned questionnaires showed that WLW was the preferred station in almost half of the United States (119).

station, and not confused with listening area for the city geographically considered. The reader is the one who confuses (*see* Note 7).

Rural areas.—Of importance in sampling is the question of including rural sections in surveys. Naturally, farmers are hard to reach with interviews; therefore, most surveys have not included them. Starch endeavored to represent the farmer in his study (101), and his is probably the one general survey which has given the farmer an opportunity to be heard on the subject of radio (*see* Note 8).

In sampling, it is clear that we should first specify the territory which is to be covered by the survey. Then we should compare our results with the known character of the region, and state the amount of divergence between the sample and the total population of the region. If it is hard to make a rural survey, and if rural listeners to the station are not desired, then it is permissible to survey only city audiences. But this fact should be clearly stated, and the degree to which the character of the sampling of the city differs from that of the whole population of the area should be indicated.

SOURCES OF NAMES

Sampling by mail, telephone, and personal interview usually depends upon a directory of names. The adequacy of these directories and ease in procuring them will inevitably determine how effectively sampling is carried out in most practical studies. For telephone interviews and other kinds of surveys the telephone directory is much used. Thus Columbia in sending out post-card questionnaires used telephone directories. City directories are also used. Other lists, such as lists of automobile owners or newspaper readers, are occasionally sources for addresses. Sometimes even the names of the people who write into the station of their own free will are used in sending out questionnaires regarding station preference!

RELIABILITY⁵

By reliability is meant the consistency with which a survey measures what it measures. A reliable observer is one who can see the same thing twice or obtain the same results twice when he makes

⁵Mills in *Statistical Method* stresses the fact that reliability tests of economic and social data should be made by study of successive samples and study of subordinate elements in a given sample broken up into significant subgroups. He questions whether the data obtained in such researches are normally enough distributed to apply the probable-error formula for reliability (77).

observations. A reliable survey is one whose results can be duplicated by using the same method. In fact, this is our method of testing reliability. We try to duplicate the results. If we can do this, we conclude that the survey is reliable. Now, a survey can be inadequate as far as value of the results is concerned and still be highly reliable. Reliability must not be confused with another term called "validity." The validity of a survey is an expression of how well it measures what the surveyor wants to know; if he desires to know the most popular program on the air, the validity of a survey is determined by the degree to which it gives him this information. A survey may have little validity and yet be highly reliable.

METHODS OF TESTING RELIABILITY OF A SINGLE SURVEY

Enough has been said in the previous section to dispose of the question of securing an adequate cross section in the sample. With the supposition that methods of making the sample representative are of ordinary validity, there is then the question as to the number in the sample⁶ which is a matter directly related to the reliability of the survey. There are fortunately a few procedures which will tell to what extent chance variations are ruled out when a given number of persons is interviewed. But none of these procedures will correct for any constant error which is inherent in the method; they will only correct for chance errors which oppose each other.

Random halves.—This term describes one method of testing reliability. When the entire sample is secured the results obtained from one half are compared with those obtained from the other half. The results should agree within certain limits. If they do not, then the sample is not large enough to overcome chance variations in the selection of the persons interviewed, and it is possible that equal or greater disagreement may exist between the results of the whole survey and the true state of affairs. This test for reliability can be made more strenuous by dividing the sample into more than two parts and comparing the results for the different sections. Thus WCLO divided its sample into five parts for one of the cities surveyed; and since considerable variation in the results was found, concluded that it would be practically impossible to obtain an accurate picture of conditions in any one territory by covering

⁶In commenting on the relationship between reliability and number in the sample, Toops states that if the sampling is unbiased the number of cases must be quadrupled in order to double the reliability. In this sense, two thousand five hundred cases are only ten times as valuable as twenty-five (104).

much less than ten per cent of the radio-set owners (109), (*see* Note 9). In an Arnold report the adequacy of the sample was determined by reference to the monthly variation in the results (10).

Parts of the sample are calculated separately where it is desirable to control certain factors, such as the error which the interviewers may introduce. Elder tabulated the answers obtained by each interviewer separately in order to find out whether their results agreed. They did, within satisfactory limits, showing that the personal characteristics of interviewers were not a deciding factor in the nature of the results obtained (709). The Crossley survey followed a similar procedure (74).

Successive sampling.—A further method of determining the proper number in the sample is that of successive sampling. The person making the survey does not at the outset decide how many interviews or questionnaire returns he should have to make his study reliable and make his sample sufficient. He permits the nature of the returns themselves to take care of this. He takes successive equal samples, of fair size, until the results of the samples added together do not change significantly when the results for each new sample are added. The person who is going to use the survey must decide when the new sample does not change the cumulated results sufficiently to matter.

This method of successive sampling can be most sensitive. It enables the surveyor to obtain just the accuracy which he desires in his survey. If he wants to know the standing of the stations within certain limits, he need but take successive samples until the results vary within those limits. If he wants to compare stations and finds them ranking close together, then he can continue until it is established that one is ranked higher than the other, no matter how fine the difference may be.⁷

It is therefore not reasonable to standardize the number in the sample. Rather, we should sample until the results are consistent. Reliability is more important than mere weight of figures. A survey made with a five-per cent sampling in one city may be on a par with a one-per cent sampling survey in another city. The standardization which is so urgently needed is of prime importance

⁷The successive sampling method has even been used in checking mail returns. A poll was taken for the most popular songs to be used on a program entitled "Today and Yesterday." From the first day that returns started to come in the leading favorites were established, and the proportion of ballots for each kept practically constant throughout the three weeks (483).

in the degree of consistency of the results rather than the mere number taken in the sample in making the survey (*see* Note 10).

Combinations of the successive and split-half methods of checking reliability have been used. The Columbia Broadcasting System in its Price-Waterhouse survey customarily compares the returns received during the first five days with those received during the first and second five days (37, 39).⁸ The comparison of one half with the total is not such a rigid test as the comparison of one half with the other. Thus, by using different measures of reliability, it is possible to make the results seem more or less reliable.

DUPLICATION OF SURVEY RESULTS

Besides using the methods of random halves and successive samples, the reliability of surveys may be determined by other means. The whole survey may be repeated at some later date, or the results of the survey may be checked by using another method.

Repetition with same method.—Hettinger has had the opportunity of conducting similar studies in the same territory. He found extremely close parallels in the results of two surveys, although they were conducted about a year apart (56). Columbia has now made several comparative studies over the same territory (37, 39, 34, 35).

Sometimes the same method is used in making the survey, but the surveying agencies are different. Hettinger duplicated the Columbia survey for Station WCAU, using the mail audience response. In comparison with the results obtained in October of the preceding year, Hettinger's results in March extended the primary coverage to include two more counties; eight remained the same (53). This type of confirmation shows the reliability of the method and the constancy of the audience (*see* Note 11).

The same methods of conducting surveys have been followed in different cities. In so far as the habits of people located in different parts of the United States are the same, this furnishes a check on the results. The Major Markets Newspapers conducted surveys in five cities through member newspapers (715). The striking similarity in results showed that as far as fundamental habits in listening are concerned it would be valuable and possible to determine them for the country as a whole. Likewise, for surveys made at Philadelphia and Buffalo, considering geographical and population

⁸Columbia found in its 1932 survey that the percentage of votes cast for Columbia at the date of the intermediate tabulation varied only .63 per cent from the percentage votes cast for Columbia in the final tabulation.

differences, there was a marked similarity in the general results obtained. With exception for summer listeners at Philadelphia in the morning, the relative values of the morning, afternoon, and evening hours were found to be approximately the same in each of three studies (321). Such comparisons are of great importance in applying results generally and checking the reliability of surveys, and seem to indicate that fairly stable results may be secured from relatively small samples of the population.

Different methods of making survey.—At Milwaukee several surveys made by different methods have been used as cross checks (120). The results for the Price-Waterhouse mail-questionnaire survey in Boston were checked with actual personal interviews and the ranking of the stations was the same. Columbia says that the total percentage of votes for each station checked within 2.4 per cent (37). In a study on effectiveness of radio advertising, Elder checked a mail investigation by means of a house-to-house canvass (243). It is also reported that the radio surveys made by Price, Waterhouse and Company agreed with the surveys made by Crossley (telephone interviews) in an overwhelming majority of cases (257). The methods of these two surveys are so divergent that any agreement must be significant (*see* Note 12).

Unfortunately, not all results are so convergent as those described in the previous paragraph. One survey of families showed 90 sets per hundred, telephone and door-to-door canvass gave about 70 sets per hundred, while the Crossley survey counted 60 sets per hundred for the same territory (252). When such basic facts as the number of sets per one hundred families are not agreed upon in survey results, then it bodes ill for the possibilities of agreement in the more involved measurements of audience reaction (*see* Note 13).

A method of correcting for selfish motivation in surveys, in other words, a form of survey calibration, has been sometimes resorted to. Admittedly unscientific, this method cancels the "yearning to be first" which dominates the sales-promotion departments of the different stations. It is only applicable where several stations in the same city have made a survey, each ranking itself first and then the others in order. "If Station X ranks itself first and Station Z second, and if Station Y ranks itself first and Station Z second, and if Station Z ranks itself first, it may be reasonable to assume that Station Z is the most popular of the three" (257). What a commentary on the present reliability and validity of surveys.

REPORTS BY IMPARTIAL SURVEY AGENCIES

The reputation of the research agency is of extreme importance and is in itself a measure of reliability. Since it is physically impossible to perceive all the possible interpretations of present-day surveys without prolonged study, we must depend upon the authority of the organization which stands behind the figures. It is here that a practice has developed which reacts alike on the good credit of the research organization and the reputation of the broadcasting station or advertising agency. The research organization is commissioned to make the survey according to its own advice or the suggestions of the interested organization. This done, and the results tabulated, the responsibility of the research organization usually ends. Often, however, the authority of the research or auditing agency is used to surround all interpretations and further calculations, computations, transmutations, and weightings of the figures. In the third Price-Waterhouse survey, as published by the Columbia Broadcasting System, Price, Waterhouse and Company made manifest a wish to have their responsibility clearly defined (39).

What we need in all reports of surveys is an exact and clear statement of who did this and who did that. Naturally, readers being what they are, it is possible to mislead them into thinking that the whole survey from beginning to end was the responsibility of the research authority. When the title reads, "Made under the direction of Professors——— . . . ——of the Marketing Division of———University," then the reader naturally assumes that "made" includes the tabulation of the figures and even the interpretation of the results (*see* Note 14). It seems to me that it would be better if the research agency were made responsible for the survey from beginning to end, and for the publication of the results. The organization profiting from the results might then distribute copies of the survey.⁹

Of course, stations are not always happy over the reputation for bias which surveys have acquired. One station solved the problem by a "test the survey" plan. The advertiser who doubted the station's statement with regard to popularity percentage was invited to hire a survey company to make as many as five thousand

⁹In the 1932 Elder report on the effectiveness of selling goods, Columbia took a step toward unbiased representation of the facts. The actual report as made by Elder was published separately and as an inclusion in the Columbia report (32). In issuing the Stanton report, Columbia observed the recommended practice completely and even dispensed with an "interpretation."

interviews. If on such a survey the station did not show the percentage of popularity claimed, the station paid the bill for the costs of the survey (463). Such instances point to the need of an impartial agency which will make the survey in the first place and be responsible for the conclusions.

In concluding a discussion on reliability, the following points are worth stressing. We should compare each survey with itself or with another survey in the same area. If we find that the conclusions drawn from both parts of the same survey or from two separate surveys are identical, then we may conclude that the method is reliable. As an additional security for reliable figures, we need the authority of some unbiased research agency behind them.

VALIDITY

The fact that a survey can be most reliable and yet not be valid has already been emphasized. Although consistency or reliability is important, it does not guarantee that the survey is of any use to the broadcaster, the advertiser, or the educator. All of these persons presumably have some definite objective or goal in mind when they broadcast. They wish to measure the extent to which they have reached this objective. Therefore, the survey must measure this. The validity of a survey is determined by the degree to which the survey measures the accomplishment of this objective.

As a simple illustration of the validity of measurement, the following case may be taken. A radio station wishes to find out whether people like classical music. A questionnaire is made out and a representative of the station interviews several hundred people and asks them whether they like classical music. The station finds that 78 per cent of the listeners say they do. When it divides the sample into three parts for a reliability test, it finds the three following percentages: 72 per cent in the first section, 79 per cent in the second section, and 83 per cent in the third section. The station decides that this is reliable since all the percentages are fairly close together. So the station says, "We have an audience which likes classical music."

The station director asks the orchestra to play this music, but the orchestra leader is unconvinced. He has the following questions to bring up: "What is classical music, as compared with semiclassical and popular music?" "Does the public know the difference?"

“Doesn’t a person usually say ‘yes’ when he is asked a direct question of this sort?” “Since it is generally believed that liking classical music is ‘highbrow,’ how many of the listeners said ‘yes’ because they wished to make a good impression on the interviewer?” Perhaps there might be more questions, but they would all be to the same point. The orchestra leader does not question the fact that the interviewer found out that approximately 78 listeners out of one hundred said they liked classical music. He believes the survey is reliable. What he does doubt is that the survey really answered the question which the broadcasting station had in mind, namely, “Do listeners like classical music, and if so, how many?” He thinks that the survey was not valid to answer that question, and he is probably right, as experience with such survey results proves.

METHODS OF DETERMINING VALIDITY

In any type of measurement, a valid way of finding the answer to the question must be discovered before it is worth while to bother about measurement. One would suppose that this would be self-evident. The bare fact is: but what is not so self-evident is just how valid surveys are. We can all recognize that there is a certain amount of validity to the survey on classical music just described. The important question is how much. In order to determine this we must set up an exhaustive test situation. In this test we find out whether people buy recordings of classical music. We find out whether they play classical music. We find out whether they are familiar with the works of classical composers. We find out whether they go to concerts where classical music is played. All of these actions involve a certain amount of effort on the part of the person being studied. Taken together they are about the only means we can ever have of finding out whether persons like classical music. If they play it, listen to it, and try to learn more about it of their own free will, then we assume that they like it. In fact, that is what “liking something” means. If we can measure these things which people who like classical music do, then we have the “criterion.” We have something we can compare with the answers obtained on such a questionnaire survey as was just described. We check the validity of a method of measurement by seeing whether the people who say “yes” to the questionnaire behave “yes” on the criterion.

If we can measure something exactly, but with a great deal of difficulty, then we usually try to find some procedure which is nearly

as exact but much simpler. We test the adequacy of the second procedure by comparing it with the first. The first procedure is the criterion, and the second is the test we want to check against the criterion to determine its validity. We reason as to the correctness of the first procedure by rules of logic. We know that it is a good procedure. But like all good procedures derived by logic, it takes into account so many factors and exceptions that it is a cumbersome test and of little use in practice. We therefore select some easy or simple procedure which we think will perhaps be suitable, but for which we have no proof. Then we find out whether the persons who respond on the simple test respond the same way on the more complete test. Technically, we determine the degree of this relationship in terms of correlation. The degree of correlation found is the measure of the validity of the simple test. There are then two kinds of validity. There is the kind of validity which comes from logic. We know that if a person does certain things that he likes classical music. Then there is the validity which comes from correlation, because we find out that certain single responses of the person are a cue to the rest of his responses.

In the Crossley survey listeners are asked to name the programs they have heard on the preceding day. Is this a valid test of what listeners have really heard? One of the most important factors influencing the validity of this interpretation of the Crossley survey is the effect of memory. Certain programs are not remembered as well as others. Arnold studied the working of this memory factor by comparing the results for a Crossley type of survey with those for a simultaneous telephone survey. In the latter type of survey, the listener is asked the name of the program to which he is listening at the time the program in question is on the air.¹⁰ The results showed that some programs which were listened to by many listeners were reported the next day by only a few, whereas a considerable proportion of the listeners to other programs were able to remember hearing them when questioned the next day. In general, dramatic programs were better remembered than musical programs. How-

¹⁰Different listeners were questioned in making the two surveys, but the period of time covered was the same, namely, seven to eight o'clock and nine to ten o'clock for a period of one month. A factor which prevents both the Crossley survey and simultaneous telephone survey from determining the actual programs heard is that all persons do not know the names of the programs to which they are listening. This is due to lack of advance publicity, improper announcing of program names, and absence of attention. In the Arnold simultaneous survey, 10 per cent did not know (recognize) the name of the program.

ever, the rank correlation between the percentage of listeners hearing 25 (half-hour) programs and the percentage reporting having heard them was about 78 (see Note 15). This is a measure of the adequacy of the Crossley survey as compared with the simultaneous telephone survey. For half-hour programs, the Crossley survey therefore seems to indicate actual listening within reasonable limits, although the percentage of listeners reporting a given program is only about one-third of the percentage found listening to the program.

INVALID MEASUREMENTS

The broadcasters of a great many radio programs try to find out the number of listeners by giving away samples of more or less value. In some cases the free materials are of considerable worth, and it is here that this practice as a method of measurement reaches its lowest ebb of validity. In instances where theater tickets and cases of bottled beverages are offered to the radio audience, it is customary to draw names at random from the telephone directory or some other source and read them over the radio. This is the astounding record on one such program:

At first, on our program, we planned on reading ten names each evening, names selected without preference from the city directory, and awarding to each person hearing his name read a case of Vess beverages. To our surprise, several evenings nine out of ten persons would hear their names read and phone before noon the next day. Every night, with few exceptions, at least seven or eight would hear their names (108).

No better illustration and proof of the passing of news from one person to another could be obtained. In the first place, telephone homes in the city in question had only about 80 radios per one hundred homes. Since the names were taken from the city directory, the ownership figures would have to be much lower. The census gave about fifty for cities. When we further consider how exceptional a program must be to hold a majority of the available listening audience, to say nothing of causing irregular listeners to tune in, then there is not the remotest possibility that even seven or eight could actually have heard their names read. The information must have been passed on by those who did hear the names read to those who were not listening. Therefore, the words "would hear their names" from the last line are inexact, or the person making use of these figures as a measure of the listening audience was not conscious of the lack of validity of his survey. It is not

valid, because it does not truly measure the number of persons who actually heard their names read over the radio (*see* Note 16).

Advertisers, broadcasters, and educators are alike in wanting their programs to rank high in public estimation. One writer considers that the advertisers have won the race. He points out as a significant fact that nearly all of the programs ranking high in public estimation, as shown by many local and national surveys, are programs sponsored by national advertisers (219). This is in spite of the fact that 70 per cent of the time used by stations such as WEAF, WABC, and WJZ is devoted to non-commercial programs. Probably commercial programs do employ talent of considerable interest, and certain advertising programs have built up large followings. There is again, however, a question of survey validity. Do the surveys mentioned actually determine "rank in public estimation"? Practically all surveys of program popularity depend upon program names. The listener is asked to name all the programs he remembers, mark the ones he likes, give the ones he enjoys most, tell what one he is listening to. In all cases the name is important, and it is entirely possible that those programs which have the most advertised names will show up best on such surveys. In other words, the survey may measure name publicity. This is most evident when commercial programs ask outstanding persons, whose publicity is already completely built up, to come to the microphone. Sustaining programs not stressing names will scarcely be identified by listeners.

SENSITIVITY OF MEASUREMENTS

Usually, we think of validity as referring to the kind of measurement. In other words, we think of non-valid measurements as those which do not measure the kind of response which we wish to learn about. But validity can also be a matter of the degree to which the measurement is able to differentiate. As an example of this use, I take the special surveys mentioned in the Columbia Price-Waterhouse audit for 1931. Here the change in popularity of Station WABC was charted by means of successive surveys. Columbia found that its post-card method was able to measure slight changes from month to month, which consecutive reports identified as a gradual unmistakable trend (37). We can call this property of a method "sensitivity." The validity of the results is in part determined by the fact that the measure is sensitive enough to differentiate between changes in condition which are slight.

TYPICAL DIFFICULTIES IN MEASUREMENT

One of the typical difficulties in measurement centers around classification of terms to be used in the survey and the separation of the data according to such classifications. In order to make the meaning of this clear, the matter of occupational divisions and economic classes can be considered. In some surveys, where a breakdown of the data is desired, this is done by separating the sample into economic divisions. When we stop to think of the meaning of this term, we are at a loss as to how it may be interpreted in usable form for survey purposes. The economic level of a person is determined by his income, his capital reserves, his expenditures, and the like. Various methods are used to obtain measures of these different factors. Starch concludes in this respect that, by and large, occupation and rental value are satisfactory measures of the social and economic status of a family (101).¹¹

Often income figures are directly obtained from the persons interviewed. If the same index of economic level could be used for different surveys, it would increase greatly their comparative value. The same is true for occupations. Here we have an almost innumerable list of types of employment. For survey purposes it is essential to use a few general divisions, perhaps eight or ten. Houser used the following occupational classifications: student, housewife, executive, professional man, merchant, public-service employee, clerical, salesman, traveling executive, skilled artisan and craftsman, skilled laborer, unskilled laborer (617).

Classification also becomes important when program preferences are considered. There are so many kinds of music and talks that the data obtained may be quite useless if phrased in a general way. One surveyor used a kind of recognition test in his surveys. Rather than leave the program classification to the person interviewed, a list of ten major program types with a description of each was inserted in the questionnaire as the basis for securing information on program preferences. Experience had shown that data collected when the listener made his own classification were extremely difficult, if not impossible, to tabulate in a satisfactory manner. Classifications overlapped, terminology was vague, and general confusion usually resulted. A sufficiently comprehensive classification of programs served as an aid in assisting the person interviewed to give

¹¹Crossley uses value of property as judged by tax assessor compared with occupation as an index of economic level.

the information he had in his mind without influencing his answer. The individual items were listed in an order completely at variance with popularity ratings obtained from previous studies. This minimized the danger of influencing the answer by the position of the items (56), (see Note 17).

QUESTIONS

Much difficulty in measurement revolves around the use and misuse of questions. For this reason it may be well briefly to consider three general methods of questioning, as well as details in the matter of phrasing questions and asking them.

Methods of questioning.—In the first, or “free association,” method, the interviewer, after an appropriate question or two to open the subject, listens to whatever the radio listener has to say. The likes and dislikes of the listener come out clearly in such a conversation. The listener reports first that which has impressed him most strongly, whether it be too much advertising or lack of good music.

The second method, a questionnaire method, is marked by more rigid control of the course of the interview. The person interviewed is asked to express opinions and give answers on certain definite points. Usually, the questions are so phrased that they are not easily misunderstood and only simple answers are required.

In the third method, the interviewer not only controls the course of the questioning but also suggests a variety of possible answers. For each question the radio listener is invited to pick out the answer which seems to fit his own case best.

Each of these three methods has particular advantages, and in a practical sense one must be derived from the other. The advantages for the free-association method are that the interviewer does not prejudice the answers by his own viewpoint, and that some indication of the attitude of the person toward broadcasting is obtained as well as knowledge of the relative emphasis which the listener puts on different topics. Besides this, valuable information may be obtained on points of which the interviewer has not thought. With these many advantages, such a method would be in wide use if it did not have equal disadvantages. Usually, the person commissioning a survey only wants to find out a few specific facts with reference to the problem he has in hand. He therefore wishes the interviewer to make each interview as short as possible, obtaining only the pertinent information from the person interviewed, and he

desires to make sure that each person interviewed is given an equal opportunity to give information. Uniformity in replies is of inestimable value in reducing the answers to a coherent scheme. Therefore, the second method is most often used. But even here the answers may be widely divergent, and if the questions are at all general they may be extremely difficult to evaluate. For these general questions the investigator may use the third method and restrict the possible answers to certain predetermined forms. These answers can then be treated statistically with more ease (*see* Note 18).

In one way these three methods represent stages in the evolution of questioning; and in the proper preparation for use of the latter methods it is necessary to follow through the first methods. The person planning a survey of radio program-listening habits and preferences would have to first talk with listeners about programs to find out what types of questions would be most likely to secure answers, and what types of questions would be most important for his specific purpose. Then he would set up these questions in interview or questionnaire form and try them out on a new group of listeners. He would note carefully all the different kinds of answers given. After this he would sort over the answers, classify them, simplify them in expression and wording, and choose five or six of the most frequent answers to each question. For the final, or third, form of the questionnaire or interview, the questions would be set down, each accompanied by five or six suggested answers selected from the actual answers made to the questions by listeners. Those listeners answering the questionnaire in its final form would find it relatively simple to select an answer close to their own reply to the question. After such exhaustive preliminary work it would be easy to secure replies from a large number of listeners and tabulate and treat the information quickly.

Occasionally, it is desirable that the listener classify programs according to his preferences. The number of classifications suggested to the listener should be small; not more than three or four; that is, good programs, fair programs, poor programs. This procedure is better for ordinary purposes than that of asking the listener to rank the programs in the order of preference (*see* Note 19).

Leading questions.—If we examine the questions used in making surveys, we will find two outstanding defects. Some of these questions are so-called leading questions. Others are so diffuse and difficult that no suitable answer can possibly be expected.

By a "leading question" is commonly meant a question which suggests a certain answer.¹² As a mild example of this type of question, I quote from the Starch survey. Here radio listeners were asked, "Do you like sponsored programs such as Eveready, Damrosch, General Motors, Collier's, Maxwell, Ipana?" The purpose of this question was to "obtain a direct expression of opinion relating to advertised programs on the air" (101). Such a question does give some indication of the attitude of people toward sponsored programs, and it is conceivable that it could be used for comparative purposes. But the answer of 81 per cent, "yes," which Starch obtained is not an overwhelming vote for advertising. Why? Because the most natural reaction of a person is to say "yes," unless by doing so he runs counter to his prejudices. Furthermore, only the best programs were named as examples of advertising programs. Survey critics have scored such questions as, "Did you hear the such-and-such program last night?" (48). Since this type of question is commonly used, the criticism merits consideration (*see* Note 20).

Listeners generally are willing to say that they like programs. In looking over the report forms for the psychology talks of the National Advisory Council on Radio in Education, it was surprising to note how many listeners responded by marking all talks and all aspects of the talks with the highest rating. In some cases the person marking two speakers with the same high rating would remark on the other side of the sheet that the first speaker was much better than the second (287). This seems to indicate that the most efficient questions are comparative questions, when intangibles such as "likes" and "dislikes" are measured.

Another example of difficulties in phrasing questions is furnished by the way in which questions are asked about listening at times of the day and days of the week. Some questions read, "Do you listen more on particular evenings of the week than on others?" Other questions read, "Which day of the week do you listen most?"¹³ Just this simple illustration should make clear the fact that many of our questions rest upon assumptions which are not necessarily

¹²In one sense the questions with suggested answers already discussed might be considered leading questions. But there is an important difference. The true leading question suggests one answer more than any others. The good multiple-choice question suggests its five or six answers equally.

¹³Starch, however, increased the accuracy of his survey by asking first one and then the other. He found that 67 per cent said "no" to the first question. This means that the results for the second question are materially different for Starch's survey as compared with those for other surveys (101).

based on fact. The second question is really based upon a "yes" answer to the first, but many surveys take no note of this fact.

Difficult questions.—It is instructive to note what questions remain unanswered in any questionnaire or interview survey. Lack of answer is usually the mark of a difficult question, and means that it has not been properly phrased or clearly stated, or that it runs counter to some prejudice. Unless such questions and results are wanted for diagnosis of the question itself, or of the persons questioned, it is best to omit them. As examples of questions which seem rather difficult for an average audience survey, I mention two. One questionnaire requested housewives to state their objections to programs; 74 per cent failed to answer this part of the questionnaire (282). This request is general in nature, and probably the housewife has not the various programs she does not like nor the parts of the ones she does like clearly enough in mind to answer it. The question might have been more fruitful if certain specific objections to programs had been listed and the housewife encouraged to write along these lines or asked to state what one thing she disliked most. In another survey listeners were asked, "What do you like best in a radio program?" (96). Here again it seems doubtful whether the average person can be counted upon to give intelligent answers.

Questions involving attitudes are usually difficult to answer, and the answers hard to evaluate. One survey included such questions on the interviewer's schedule sheet as "Do they (the listeners) think that they would rather have the government do all the broadcasting with no advertising if it increased taxes and did away with competition in programs?" The question was phrased in this fashion because the interviewer was expected to obtain the information in any suitable way and then fill out the schedule form (625). This question included too many ideas. In another survey a question dealing with attitudes asked, "If you had to give up the radio or the movies, which would you miss more?" (617).

Preference versus act.—In general, research agencies criticize the use of so-called program-preference questions. This criticism has been voiced in connection with the Starch survey, with the belief that many people will say "classical music" in response to the question, "Do you prefer classical music or jazz?" because this answer sounds better, and they think the interviewer will be pleased (328).

Halo effect.—In using rating scales there is a distorting factor called the "halo" effect. If we rate a person high on one trait,

such as good workmanship, we are likely to rate him high on other traits, such as honesty. If we like him personally, then we rate all of his traits high. The one trait we are familiar with sheds a halo over all the others. The judgments we make on different traits are therefore not independent. Many questions have been asked in radio surveys where presumably this same halo effect has influenced the results. For example, WEEI asked in its survey, "Which of the local stations is your favorite?" "Which do you think has the best local programs?" "Which station do you think serves the public best?" (111). All of these questions are similar, and it is doubtful whether the radio listener does and can make the fine discrimination that the questions demand (*see* Note 21).

INFLUENCE OF MEMORY

Most surveys and tests of the listening audience depend upon the memory of the listener. This is especially true when questions deal with programs heard the day before as in the Crossley survey; that is, "What programs did you listen to yesterday?" Those programs which have received a great deal of publicity will be remembered most easily, and if the listener has tuned into such a program a great many times, he may think that he listened to the program on occasions when he actually missed hearing it. Other programs which he has heard will not be remembered by name. Methods, such as the Crossley method, test the memory or publicity value of programs. They probably do not determine accurately what programs people have actually listened to (*see* Note 22).

The Crossley Research Agency has tried to control the effect of memory and determine its influence. To respondents who vaguely recalled hearing a program of a certain type, suggestions were made by investigators to assist in the identification of the program. The results showed that such a procedure would increase the ordinary ratings for morning programs by approximately one-half and the ratings of the evening programs to a slightly lesser extent.¹⁴ As another test, housewives were questioned concerning the programs heard "this morning," and the results were compared with those for programs heard "yesterday morning." Quoting from the report: "One thing however appears proved—that the ratings for this morning are not higher than those for yesterday morning" (74).

¹⁴All program ratings would not be increased to the same degree because those which ranked higher would probably be remembered more completely, while those with low ratings would probably be less well remembered.

TIMELINESS

There remains one point to consider under the heading of difficulties of measurement. This is the criticism leveled against surveys that they are out of date and inaccurate by the time the data are assembled because conditions change so quickly. The solution to this problem lies in the fact that some audience habits and preferences change rapidly; others do not. At one time the trend of the audience toward dramatic programs was precipitous; changes in hours of listening, however, were slight. An organization preparing to undertake a survey should make a preliminary study to find out whether the factor to be measured is in a state of change or not. The results of this study should determine how the more extensive measurement is to be made, and whether it is possible at all.

In this section some of the further problems in measurement have been briefly indicated. The questions used should always be evaluated carefully to see whether they actually secure the information desired. The ability of the audience to answer the questions should be estimated. Can the listener remember those programs which he has heard? Finally, the results should be considered with reference to the time at which the survey was made. Some audience habits are relatively stable; others are not. The measurement of the first has enduring value; that of the second, momentary use.

FAIR PRESENTATION OF THE DATA

The necessity for "fair presentation of the data" is best illustrated by giving a number of instances of misleading presentation. In publishing surveys, the following practices should be observed: date the survey accurately; do not extend the sample; avoid false assumptions; employ correct averaging and grouping procedures; use proper bases in calculating percentages; title the data with adequate headings; give the name of the agency financing the survey and the reason for making it.

DATING SURVEYS

All surveys should be dated and dated accurately. It should at once be apparent to the reader exactly when the survey was made. Furthermore, the date of publication of the survey should also be included. It is unfortunate that some important published surveys such as the Price-Waterhouse have neglected these points

(see Note 23). The results for undated surveys are hard to compare with those for other surveys with proper time indication.

EXTENDING THE SAMPLE

A great many errors are committed in extending the results obtained from one sample to a whole population for which the sample is not representative. In one method of determining station audience (255), surveys made within the station city were examined to find out how the audience behaved. Figures from these surveys gave the approximate percentage of the total possible listeners for different hours and different stations. If Station WWW had 25 per cent of the listeners at 8:00 P.M., and 80 per cent of the radio sets were on at that time, then WWW had 20 per cent of the total possible listeners. Error enters when it was assumed that each station had a 100-mile coverage area, and that WWW would have 20 per cent of the total possible listeners within this 100-mile area.¹⁵ Here is an example of taking the results for one locality and applying them to the whole region. Another and related type of error is introduced when it is assumed that results found for persons surveyed cannot hold for people who were not reached in the survey.

FALSE ASSUMPTIONS

In presenting the data, no underlying false assumptions should be involved. In *Facts and Figures*, two stations, WLW and WCAE, are shown in outline with the assumption of a 100-mile radius coverage area for each station (83). According to Felix, WLW is given an area of 29,079 square miles, while WCAE, with one-fiftieth the power, and a regional assignment as well as unfavorable terrain, is given an area of 38,027 square miles (403). That each station of a given power covers a 100-mile area is simply a false assumption, and all further calculations based on this assumption will be false.

AVERAGING AND GROUPING DATA

On occasions, figures are statistically treated, and the conclusions and percentages are modified as a result of the treatment. Often this occurs when quantities are averaged which cannot be averaged or must be averaged by other methods of computation than straight arithmetical means (see Note 24).

¹⁵All stations do not have a 100-mile coverage; rural and city habits are different; coverage of stations in surveyed city overlaps that of outside stations.

The differences between the percentage of listeners tuned regularly to Columbia stations and to stations of other networks were not large according to the Price-Waterhouse survey (37). But Columbia adopted the biological "all or none law" for its statistical use and issued the arresting statement that "Columbia wins over Red Network by a population differential of 13,792,664."¹⁶ This last statement might more reasonably have read, "13,792,664 more people live in the cities where Columbia leads than live in the cities where the Red Network leads."

Since many people listen regularly to two and even three networks, then they should be counted for each network. Columbia gives the percentage of listeners for each network for each city in a large table. It is therefore possible to multiply the population of each city by the percentage of regular listeners to each network. The results of this calculation show that in 1931, in the ten largest cities of the United States, there were 1,172,387 persons who did, or might have been expected to if they had had radio sets and were of age, listen to Columbia programs regularly and did not listen to Red Network programs regularly. This is less than 10 per cent of the figure previously given (*see* Note 25).

The reason for any special breakdown of the data should be noted. The Yankee Network calculated the data by two-hour intervals, except in the case of 7:00 to 8:00 P.M. where tabulation was made for the single hour (98). Critics might assume that this was done purposely to confine the competitive effect of Amos 'n' Andy to a relatively small period. It is well known that by grouping data in various ways apparently different results may be shown and different conclusions drawn from these results.

PROPER BASES IN CALCULATING PERCENTAGES

Emphasis has already been laid upon the fact that the proper bases should be used in calculating percentages. The results of a newspaper telephone survey are rendered almost unintelligible by counting all the persons interviewed as "radio owners" in computing the percentages for number of "radio owners" with sets turned on at a certain time. Although specifically giving the percentage

¹⁶These population differentials were obtained by summing the populations in cities where Columbia received more votes and comparing the total with the summed populations for those cities where other networks received more mentions. For these comparisons, only cities were taken where both the National Broadcasting Company and Columbia had local outlets.

of the total persons interviewed not owning sets as 28, this report actually lists trade names of radios for all persons interviewed; it has also misplaced decimal points in reporting some of its figures (43).

The treatment of those persons who are not at home when the survey is made has caused difficulty in interpreting some reports. This is of especial significance in telephone surveys where it is of interest to know what percentage of people in a city are listening to the radio at a certain time. The fact that the persons do not answer the telephone is an indication that they probably are not listening. The American Newspaper Publishers Association survey assumed this and also that these absent householders have radio sets in the same proportion as those who answer the telephone (2). This procedure is probably correct in part. However, there are two considerations of some importance. Do people with radios tend to stay at home more than those who do not own them? Do people listening to the radio refuse to answer the telephone?

ADEQUATE HEADINGS

Sometimes brevity in phrasing headings is responsible for misinterpretations on the part of the reader. One of the Price-Waterhouse headings reads, "Columbia's per cent of all listeners" (37). The real meaning of the figures given underneath this heading might be made clear by some such statement as the following: The percentage of all listeners listening regularly to Columbia, irrespective of listening habits to other stations. As Columbia states it, the naïve reader might think that Columbia had 80 per cent of the listeners, whereas the other stations had only 20 per cent. On the contrary, as Columbia makes clear elsewhere, the number of listeners to Columbia may be 80 per cent, and the number for some other station or network 79 per cent.¹⁷

Oftentimes the actual question asked may well serve as a heading for a table or set of figures. An Arnold report neglects to give the wording of the questions asked in an interview, and therefore it is impossible properly to interpret the headings "recognized sponsor" and "program heard" (10).

In this section specific instances have been cited where surveys

¹⁷In the 1932 Price-Waterhouse survey, results of a special study of Chicago are given in diagrammatic form. Without going into detail this diagram indicates that the popularity lines of ascendant WGN and descendant WMAQ crossed at the moment Columbia took over the former station (39). Close reading of the figures makes it seem probable that this popularity change was accomplished some time before the transfer of stations took place.

could be vastly improved by more adequate presentation of the data. In summary, the person who publishes a survey should:

1. Give clearly both the date of gathering the data and the date of publishing the survey.
2. Examine the method of sampling to see whether unjustified errors or extensions have been made.
3. Beware of incorporating any false and untested assumptions in the treatment of the data.
4. Avoid much statistical changing of the figures and thereby the possibility of ending up with results entirely alien to the actual data.
5. Test the conclusions thoroughly to make sure that they are justified by the actual results.
6. Check figures carefully to see that no illogical relations exist such as using the wrong numbers for bases in dividing and obtaining percentages.
7. Check the figures to make sure that "proofreaders" have not overlooked misplaced decimal points, and incorrect figures.
8. Select adequate titles to describe figures and tables.

SPECIAL METHODS OF CALCULATION

Many ingenious methods of calculating the audience for stations and programs as well as methods dealing with such intangibles as relative interest in stations have been developed.

POTENTIAL AND ACTUAL AUDIENCE

Frothingham.—One method of determining potential audience and actual audience, which has merit, aside from a sampling defect, has already been referred to (*see* page 39). The main steps in this method worked out by Frothingham involve the determination of (1) the potential audience based on the total number of radio homes within the clear reception range of the stations studied, (2) the total available evening audience, (3) the total available daytime audience, (4) the specific station audience, and (5) the audience variation by hours. To correct the sampling defect, the area of clear reception could be determined by signal-strength tests, and the ratio of receiving sets to families determined by sampling of typical sections in the area. Since all persons in this potential audience (families with receiving sets within the clear reception area) are not able to listen at any one time, deductions must be made for certain factors in determining the "available" daytime and evening audience. For daytime programs between 7:00 A.M. and 6:00 P.M., two deductions

may be made: first, deduct for the proportion of married women known to be employed outside the home (United States census shows 13 per cent); second, deduct for the proportion of women who listen to daytime programs "none or rarely." Some studies of daytime listening habits have shown that from 26 per cent to 37 per cent listen rarely or not at all. A 50-per cent deduction from the potential audience would give the available daytime audience.

In determining the total available evening audience, recourse may be had to surveys such as the Bay Cities Telephone Survey showing 64.3 per cent (12) listening to radio programs, and the Crossley survey showing 60 per cent using sets between 7:00 and 11:00 P.M. Frothingham considers a 35-per cent deduction from the potential audience as the total available audience for the evening.¹⁸

This "available audience" may then be divided among the various stations according to the number of stations and their relative popularity. Frothingham estimates that in cities where one station has gained outstanding leadership specific station audience can be estimated at 75 per cent of the total available audience. Two stations sharing equally have each 40 per cent of the total available audience, and three equally popular stations have 30 per cent each. This gives the specific station audience. The audience variation by hours is determined by special surveys. Frothingham (255) uses an average of seven surveys in computing this (*see* Note 26).

KDKA.—KDKA evolved a combination mail and interview method of determining the daily listening audience. The method depended upon trading areas determined by the International Magazine Company as the geographical units. The United States census gave the number of families with radios, and this was obtained for each trading area because of the different ratios of radio families to non-radio families. The actual trading areas to be studied and included in the primary zone were determined by the mail response:

. . . all mail received by Station KDKA was sorted and each piece credited to the trading area in which it originated. . . it became evident that a definite area of approximately 125 miles radius from Pittsburgh was being shown constantly as the heaviest source of station mail. The charts [mail] for individual programs at different hours of the day served to confirm the definite area. Consequently, the Primary Zone of Influence of Station KDKA includes thirty-three trading areas.¹⁹

¹⁸Most surveys give a lower daytime audience and a larger evening audience.

¹⁹This determination of the primary area shows how difficult it is to evaluate coverage in terms of mail response since "heaviest" is only a comparative term.

Next, KDKA turned to the Crossley figures. The 73 per cent of sets operating daily and the 3.1 listeners per set were used here to reduce the radio families for each trading area to daily listeners. Thus, if there were 25,580 families with radios in the Wheeling trading area, then there would be 57,850 listeners as a daily average. This means that at some time during each day KDKA believed 57,850 listeners would tune in to radio stations in the Wheeling trading area. Following this, listeners were interviewed in the area, and the relative popularity of the various stations was determined by program mentions and answers to the question, "What stations do you listen to?" KDKA was thereby shown to have approximately 54 per cent of the audience in this area. The 57,850 listeners were multiplied by 54 per cent, and the KDKA daily-average audience in the Wheeling trading area in the month of May was computed at 31,220.

In order to determine the audience for other months, the variations in the mail response were used. If the percentage of the total KDKA mail coming from the Wheeling trading area went up, the audience was believed to have gone up. Therefore, changes in the percentage of the mail response were transferred directly to the audience figures, and the Wheeling trading area was given an audience of 70,500 for January (62), (*see* Note 27).

Columbia.—The method of calculation used by Columbia in its listening-area study has already been discussed. The essential principle of this method was that mail returns from outlying counties were compared with mail returns for the county in which the station was located.

WCLO.—WCLO discarded the idea of relative measurements and employed a standard based on the number of listeners per total population in a given area. The whole method was as follows: The audience for any one community was determined by taking the number of families in the community. Then the United States census percentage of radio sets for the county was increased with reference to the Wisconsin figures given in *Radio Retailing* for April, 1932. WCLO took from Crossley the figures of 73 per cent of radio sets operated daily and 3.1 persons per set.²⁰ After computing 3.1 times 73 per cent of the total radio sets, WCLO multiplied this figure by the percentage of the audience listening regularly to WCLO

²⁰All the figures given might better have been obtained directly from the WCLO survey instead of employing results derived from national surveys.

as determined by the survey. Thus, if 76 per cent of the listeners in a given community listened regularly to WCLO, the daily audience was found by taking $.76 \times .73 \times 3.1$ radio sets in the community.²¹

After finding the percentage of regular listeners in any community, WCLO added another standard to the great number already existing for primary coverage and defined it as an area in which 30 per cent or more of the daily-listener audience tuned in regularly to WCLO. The secondary area was bounded by the figures 10 per cent and 30 per cent. Here again is an illustration of the need for a central organization to set specifications for primary coverage.

WCLO made an interesting contribution to measurement in its calculation of minimum and maximum number of daily listeners. Taking the number of regular listeners as the minimum, WCLO added the number of irregular listeners to determine what the audience might be on special occasions. It envisaged the actual audience as fluctuating between the regular stand-by listeners and the regulars plus the irregulars (109).²²

RELATIVE AUDIENCE INTEREST

A minimum-maximum audience for the Ohio State University station, WOSU, has also been set up in connection with its farm night programs. During farmers' week, farmers visiting the University filled out enrollment cards and answered questions about radio listening. On the basis of the number of farmers attending this meeting who had listened to farmers' night programs over WOSU, Sill was able to compute the number of listeners within a given area, if the interest in radio of the farmers at home was equal to that of those who attended the meeting. Recognizing, however, that the farmers at the meeting were not representative of those who did not attend, Sill computed the number of listeners on the basis of a sliding ratio of interest. He determined how many listeners there would be if the farmers at home were one-fifth as much interested in securing information as those who came (99).

Columbia has struggled with the problem of relative interests

²¹The 76 and 73 may in part measure the same audience habit and make the computed audience lower than necessary. If WCLO had not used the confusing word "regular" in asking, "When do you listen to WCLO—regular, irregular, or never?" and had substituted "daily, every other day, twice a week," and so on, there would have been no need for the Crossley figures.

²²Unfortunately, the question, "When do you listen to WCLO—regular, irregular, or never?" may suffer from the "yes" habit of the audience and overestimate the actual amount of listening.

and preferences. In the regular questionnaires sent out by Price, Waterhouse and Company, these questions are asked: "What station do you listen to most? . . . What other station or stations do you listen to regularly?" Evidently, so Columbia reasoned, the stations listed in answer to the first question must enjoy more audience patronage than those given in answer to the second question. But it was hard to know how much more people listened to the "most" station than to any of the others to which they listened regularly. So Columbia made a survey of listeners in New York to determine this. Columbia asked the listener to say how much he listened to some other station as compared with the station put down in answer to question one. A scale of one-fourth as much, one-half as much, and so on, was included, and the listener merely had to check the ratio which showed his opinion on the matter. The actual statement on the return card read, "I listen to some other station approximately—— $\frac{1}{2}$ as much,—— $\frac{1}{4}$ as much, —— $\frac{3}{4}$ as much,——almost as much as I listen to——."

The ratios showed that the "most listened to station" was listened to twice as much as any other. This was true for all four large stations in the New York metropolitan area, that is, WEAf, WABC, WJZ, and WOR. The ratios were, respectively, 2.1, 2.2, 2.1, 1.9 for the favored station as compared with the next favored station (*see* Note 28).

Columbia used these ratios to weight the results. The percentage of the total votes on question one, "most listened to station," for any station was multiplied by the listening ratio for that station. Then the percentage of votes received on question two, "other stations listened to regularly," was added to the product thus obtained (39). This gives a means of comparing ratings for stations which are essentially a product of the time spent with the station and the number of listeners to the station.

PROGRAM AUDIENCE IN TERMS OF STATION AUDIENCE

In a Minneapolis survey, the audience for each program was given in terms of the average audience for the station. Thus in one day for one station "Little Orphan Annie" rated 149, more than average, and "Chandu" 95 less than average, (78). This method is suitable where it is desirable to indicate the most popular programs for a particular station and where it is assumed that station listening is more prevalent than program tuning. Otherwise, it

is preferable to use absolute figures for the program audience rather than relative figures based on the average station audience.

FINAL PRESENTATION OF DATA

Although the primary data from surveys may give the number of listeners or the signal strength in different areas, these are not necessarily the figures which are of final interest to the advertiser. Since he is dealing with expenses of advertising, he is interested in cost per unit listener. Naturally, the advertiser or sponsor can calculate this from the raw data and the station rates. As a matter of policy in reporting surveys, the raw data and station rates should always be given separately. However, if the station is desirous of showing that the actual cost of reaching listeners is comparatively small, it is permissible to issue, along with the original results in number of listeners, a statement of the cost of reaching each listener.²³

Results may be presented in the original form so that the reader may make the calculations and judge the conclusions for himself or the data may be treated and only the final figures shown. In general, a published survey may be considered authoritative in direct proportion to the degree to which the original data are given and the reader is permitted to test the calculations. When methods of presenting the survey data are standardized, each station may be expected to furnish a complete statement putting the data in different forms, such as number of listeners per specified unit area, cost of broadcasting per listener, popularity rating, and so on.

COMPARATIVE VALUE OF METHODS

The general conclusions of expert opinion on the relative value of survey methods cannot be readily expressed. In general, the use of mail response is condemned. Questionnaires are considered to be selective in return and not suitable if many questions are to be asked. Personal interviews are judged to be most accurate, when properly conducted, and most satisfactory. For general use, the telephone survey is most popular since it lends itself to a variety of types of questioning, of which the most important is the survey of the program at the time it is on the air.

²³WGAR made a telephone survey at Cleveland. Although in number of listeners WGAR could not compete with WTAM, the cost per thousand receiving sets turned on was lower than for WTAM and WHK as determined by a telephone survey from six to ten in the evening (728).

Author's Summary of Chapter III

THE mail response is the most available and universally used indicator of audience reaction. Its validity depends upon the degree to which letter writers represent those listeners who do not write letters, in respect to economic status, location, and tastes. The majority of letters are secured through free offers, contests, or special appeals. Mail response has been used to locate the audience, judge popularity of programs and stations, and find out about audience habits and activities.

CHAPTER III

ANALYSIS OF MAIL RESPONSE

ANALYSIS OF LETTERS

Since mail seems to offer a readily available means of gauging the interest of the audience in different programs and in the station itself, most broadcasters tabulate it and refer to the number of letters or to analyses of the mail content in deciding certain questions of program policy. But if mail response is to be used as a method of judging the public as a whole, its adequacy as a sample must be determined.¹ Are the people who write typical of the ones who do not? Certainly, the first evidence would lead one to believe that they are not, since by the very act of writing they set themselves apart from the ones who do not write to broadcasting stations.

THOSE WHO WRITE

In general, we have information from three sources concerning the people who write letters. First, there are the opinions and statements of broadcasters who have looked over the mail. These persons, from their observations, have a general idea as to the nature of the letter-writing audience. Second, there have been certain analyses of the mail made in which the writers have been classified according to probable occupation and on the basis of style and English. In addition, and as a third source, some surveys of the audience have included the question, "Have you ever written a letter to a radio station?" The answers to this question, when related to economic status, occupation, and age, enable us to know whether the writers are a fair sample of the radio audience.

Opinions of broadcasters.—Most judgments on the general quality of the fan mail² are to the effect that it is heavily weighted by response

¹Note KDKA's statement to the effect that the "25,000 people who wrote to Station KDKA furnish an accurate picture of what their friends and neighbors did about their radio programs" (62).

²Neff, of WOR (629), Salisbury, of the United States Department of Agriculture (638), and Clark, of WLW (606), state that the mail comes mostly from the lower economic classes. WLW received many letters from the rural population; 67 per cent of the letters of WAIU came from rural listeners (630).

from the lower economic classes and semirural areas. Persons in the higher-income brackets write only on special occasions, although the mail received on certain programs may contain many letters from this group (*see* Note 29). Broadcasters of these programs are apt to enter a minority report, stating that audience mail represents "a cross section of the whole social structure of America."³

Appraisals of letters by philosophers and psychologists are illuminating. Samples of fan mail were taken to Will Durant. He read these and came to the conclusion that most of the letters were sent in by invalids, lonely people, the very aged, the very youthful, hero worshipers, and mischievous children. He saw few from the average man or woman (317). A similar conclusion was reached by Burt, who delivered talks on psychology for the British Broadcasting Corporation. He observed that most of his correspondence tended largely to come from a particular section of the audience. There was an excessive proportion of people who were obviously neurotic, writing about their own mental troubles or those of their children or their friends (*see* Note 30). In contrast to these views, Nathaniel Shilkret believes that present-day letters show more understanding for the artist's work than those of a decade ago. He believes that the person who writes to conductors today has become an individual critic and that he has learned to judge style and composition (528).

Reliance on the mail response takes amusing forms, as when KFYR, speaking of returns from South Dakota and Montana, says, "We feel that these returns are definite proof of a responsive white audience" (539). No station likes to be accused of catering only to Indians.

Analysis of the mail.—One of the few numerical analyses of mail has been made by the Columbia Broadcasting System, which classified ten thousand letters received in connection with the programs of the American School of the Air. Pickard, in discussing this analysis, stated that the letters represented school children in public, private, city, and rural radio-equipped schools; superintendents, principals, and school-teachers in kindergarten, elementary and high schools, and colleges; art students and art leagues, librarians,

³Klein, who at one time broadcast Department of Commerce talks, tended to this view and reported receiving letters from industrial magnates, illiterate street sweepers, storekeepers, convicts, and cowboys (339). To prove the point, however, the percentages for the different classes should be compared with the known total population of the United States.

study committees, and women's clubs. One-third of the fan mail came from adults entirely outside educational circles. These adult listeners fell into several clearly defined classes. These classes were: housewives; business executives, principally for insurance companies, manufacturing concerns, and banks; professional men, chiefly dentists and doctors; old people, inmates of institutions, homes; shut-ins, the blind, cripples, inmates of hospitals and institutions; and foreign-born (313, 209).

Further analysis of post cards and letters could be made with regard to several indexes of the audience aside from name and occupation. The types of paper could be roughly grouped. Some letters are written on fine notepaper, others on inexpensive letter paper, and still others on scraps of any paper available. Sometimes letterheads are used. Grammar, spelling, punctuation, and sentence structure of the letters could be glanced over. This might give a coarse differentiation of the writers on different intellectual, intelligence, or educational levels.⁴ Postmarks could be studied to determine whether the letters and cards came from rural or metropolitan sections; the use of pencil or ink, or whether letters or post cards could be noted. There are some five or six of these rough classifications to which each letter could be readily subjected. If it were found that the mail response was related to any desirable objective in broadcasting, then it might be possible to sort the mail response according to the rough classifications, and determine what changes in the mail response accompanied changes in the program material. This would enable the broadcaster to know whether his program was losing listeners of high caliber or picking up more rural listeners and dropping those in the cities (*see* Note 31).

The United States Department of Agriculture receives a great many requests for bulletins. Salisbury, in looking through random samples of the mail received in the general mailing room, found that on the average ten out of every hundred letters were obviously due to radio broadcasting (97). This is, in a sense, a measure of the relative importance of radio in causing people to become interested in agricultural matters.

Surveys of the audience.—Hammond offers some interesting statistics on the relation of letter writing to economic status. In a

⁴"Judging by the handwriting, methods of expression, quality of stationery, and the opinions and suggestions made, it was obvious that 80 per cent of the mail received by the American School of the Air came from persons of a high order of intelligence."—Bagley (209).

study of five hundred New York families she found that only 19 per cent had ever written a fan letter. For the different income classes, she found that 9 per cent of Class A, 19 per cent of Class B, 23 per cent of Class C, and 36 per cent of Class D had written letters. Class D was composed of the lowest income families (264).⁵ Neither Houser (617) nor Marshall (717) has confirmed this direct relation of writing habits to economic status. Houser's survey showed that 23 per cent of all persons interviewed had written letters (617). Similar figures for other surveys are: Starch national survey, 13 per cent (101); Chicago study of housewives, 8 per cent requests for particular numbers or features (552); survey of members of the Boston Advertising Club, 24 per cent (75); Colorado survey, comments written by 15 per cent and samples requested by 20 per cent. The percentages were higher for listeners outside Denver than in this city (717).

Facts about the economic status of persons requesting samples have been reported on by Marek. He gives the results of a comparison between the economic standing of the Mennen writing radio audience and the Mennen writing magazine audience. The research was based on requests for samples received from New York City. Five hundred persons were selected from those who responded to the radio program and five hundred from those who responded to the magazine advertisement. The homes of each five hundred were distributed in all five boroughs of New York in proper proportion. Interviewers found out the rental values of the apartments or houses. This comparison showed that there was no significant difference in buying power as measured by the home rental values of the persons who clipped coupons from magazines to receive the Mennen sample and those who wrote in after listening to radio offers of the same sample. Compared with the average rental value of New York City apartments, the radio audience was paying more than the average in rent (294).

WRITING HABITS

It is also important that we know a number of miscellaneous facts about the writers aside from their economic status and geographical distribution. We must know whether the writer is a

⁵Kirkpatrick's figures for occupational groups are: Group I, 14 per cent; Group II, 19 per cent; Group III, 36 per cent; Groups IV and V, 22 per cent; Groups VI and VII, 60 per cent (64). Houser's figures for the group having low economic status are 22 per cent; average, 24 per cent; high, 21 per cent.

habitual listener or not. We must know whether he writes rarely or frequently. We must find out how many non-writers he represents. We must know when he prefers to write. What little is known about these matters will be discussed later.

Habitual listeners.—Columbia made a coverage study by means of offering maps to listeners writing in. These letters were believed to have come from habitual listeners since the offer was unexpected and made at unannounced times (34).

Number of letters per person.—WBZ, in a booklet called *Facts*, says, "The absolute meaning of the 18,000 letters and cards received by WBZ-WBZA in October, 1931, is that 18,000 people heard WBZ-WBZA programs—were influenced by them and did something about them" (116). This statement infers that each letter came from a different person, and here is precisely a question which must be answered before the mail response can be used to back up a great many statements that are at present made. Unfortunately, we do not have much evidence concerning the number of people who write in twice during any given time. Probably the most that can ever be done is to relate the results of surveys which ask, "Have you written a letter to a broadcasting station?" with the total letters received by all stations for the particular district in which the survey was made. This will give the number of letters per writer.⁶

Few manufacturers have their mail department so organized that duplicate radio sample requests can be checked. In order to obtain information on this point, Marek experimented by sending requests to manufacturers. To one manufacturer, in the same mail, he sent four post cards in his own name asking for a sample. To another manufacturer he sent four post cards, also in his own name, one after every program. In both cases, he received a sample for each card (294). Cream of Wheat has, however, maintained a card index of letters written to Jolly Bill and Jane for a period of five years. This company found the same writers responding to its offers year after year (555).

The Mennen Company offered a free sample of its three products for men in a radio program over the Columbia Broadcasting System. From the first five broadcasts, sixty-five thousand requests were

⁶From one area, the ratio of mail to receiving sets was 111 per cent. Since we know from surveys that the percentage of listeners having written to radio stations is less than 25, the average writer in this 111-per cent area must have written more than four letters. This figure corresponds with the 4.1 letters per person determined in the Kirkpatrick survey by direct question (64).

received. An analysis was made to determine how many requests came from men, from women, and from children, and if there were many cheaters or repeaters among them. Had the same persons written in twice to get two samples? The 9,138 letters and cards received from New York City and vicinity were used for this purpose.⁷ The procedure in determining repeaters or persons writing twice was as follows: All requests were first sorted alphabetically. Then every letter or card that looked suspicious was taken out. Requests with the same handwriting, requests with the same last name but different initials, and letters with different names but the same address were removed from the list. A total of 246 repeaters and cheaters was found—2.7 per cent of the returns (294).⁸

Such studies as this one are extremely valuable in interpreting the mail response. It has long been thought that the number of repeaters for samples of such worth as the one offered by the Mennen Company would be much larger. The Mennen results, however, apply only to one program and do not permit us to know how many letters a single person writes during a month to the sponsors of different programs.

Number of persons per letter.—One question which has always interested broadcasters is this: "How many people listen to the program for everyone who writes in about it?" Felix credits one letter as equal to from twelve hundred to four thousand listeners for any particular program and quotes Burton, of WEEI, as saying that one letter is received for every five hundred listeners (50). The University of Chicago received twelve hundred letters for one course and estimates that there were probably ten thousand listeners (713). WRUF gives the figure of one letter to 156 listeners; Arenson, one letter to five hundred listeners on a commercial program and one letter to one thousand for an educational program (206). On the Socony program, the figure of one per cent was used in computing the actual audience. From the great variations in these judgments,

⁷New York City was chosen because it gave the largest number of requests from any one community. Data were available on financial status and rental values. It was further assumed that cheating in New York City would be fairly typical of the country. Sixty per cent of the requests were letters. From the total requests, 17.7 could not be identified as to sex; 61.8 per cent were identified as men; 20.4 per cent as women; and 0.1 per cent as children. Although this offer was made primarily to men, on one occasion it was offered to women as a gift for their husbands.

⁸Seventy men sent two letters; 17 men sent three letters; 6 women sent two letters; 91 men sent two cards; 9 men sent three cards; 5 men sent four cards; 20 women sent two; 4 women sent three; 20 persons sent one card and one letter.

it is seen how doubtful is the procedure of appraising the number of listeners from letters.⁹ Sampling and contests and give-aways have made it almost impossible to compute any ratios.

There is a possibility that some of the methods used in conducting contests can be made to yield information on the ratio of writers to non-writers (*see* Note 32). During the Richfield Oil Company Limerick contest, listeners were asked to visit the filling stations to obtain the Limerick blanks. Only about 10 per cent of the blanks requested were mailed in (214). Possibly, this same ratio might be assumed to hold for other types of contests with ten times more people interested than actively participating.

In reading over listener mail, one is impressed by the fact that many letters refer to more than the listener writing. Listeners seem to like to show that other people agree with them, or that they represent an important point of view. One listener will write, "I am speaking for our family of eleven." Other quotations from letters are: "I keep my friends informed"; "I know other people like it"; "Two other people"; "My wife." Many writers simply say "we." These statements were taken from a sampling of National Broadcasting Company mail, and serve to show that whereas many people write twice, one letter may represent the views of more than one person.

Seasonal change.—If we are to use the mail response in evaluating programs, we must know the effect of seasonal change in the letter-writing habits of the audience. When do listeners write the most letters? There are reasons why we might expect a falling off in the mail response during the summer months and a growth again in the fall. One of the most obvious of these reasons is the relation to the reception conditions. A graph of the KDKA mail seems to show this clearly. The mail from other states outside of those immediately adjoining Pennsylvania decreased in volume regularly from January to June, so that in the latter month the mail response was one-tenth of what it was in the former month. However, during this time the mail response from Pennsylvania, the state in which KDKA is located, remained about the same (62). This was for the year 1931. Urist found, in analyzing the mail response

⁹KDKA estimated that one out of every four families with receiving sets in the Primary Zone wrote a letter to KDKA in the first half of 1931 (62). WIBW estimated that one listener in five responded within a year (1); and Felix, although saying that the percentage of listeners writing in is not determined, thinks it might be one in four to one in ten for the whole year (50).

for a program on foods, that January gave the highest number of returns. He quotes the Association of National Advertisers naming February as the high peak in fan mail (340). The three high months for a Columbia study were January, February, and November (*see* Note 33). Figures of the Foreign Policy Association for mail response for nine months showed June lowest and February highest.¹⁰

During certain periods of national activity, the mail response changes. For example, during a period of eight weeks in 1932, the low point in mail response came on the days of the Democratic National Convention when the radio audience was at its peak (533).

WHY PEOPLE WRITE

Each year broadcasting stations vie with each other to show the largest mail bag. It is well, therefore, to inquire into the meaning of the steady increase in mail response which has been noted since broadcasting first began.¹¹ Is this increase due to the fact that more listeners are tuning in? Is it due to the fact that listeners are more appreciative of broadcasts? Or is it due to the fact that there is more incentive for writing? All indications toward the last explanation are so clear that little need be said.¹² It is certainly true that the present mail response is due largely to free offers and samples made during radio programs.

One advertising-agency executive says that radio must admit that people act as a whole mainly from self-interest:

The agency with which I am connected has just completed an analysis of something over a million letters received by clients. There were some letters of appreciation, of course, and even a few who said that they liked some program so much they bought the product advertised. But 93 per cent of all these letters were written for some selfish reason (229).

Pictures, recipes, poems, samples, and countless other free offerings were wanted.

An analysis of the mail received one Saturday morning, in the summer of 1931, by the National Broadcasting Company may be

¹⁰The other months ranked from low to high in the following order: May, February, October, January, November, December, April (1930-31).

¹¹WGN received four times as much mail in 1931 as in 1930, and almost 33 times as much as in 1924, the first year the station was in operation.

¹²Slight evidence to the contrary is offered by the mail-response curve to a certain program which has been on a network for three years with the same stations and the same sort of program material. In 1929 the program pulled an average of eight thousand letters per week; in 1930 the number was twelve thousand; and in 1931, twenty-seven thousand (466).

of interest. Letters referring to commercial programs and those referring to sustaining programs were analyzed. It was found that 52 per cent of the commercial- and 53 per cent of the sustaining-program letters made requests for offers of some sort. Outside of these requests, those wishing to visit the studios wrote 31 per cent of the commercial and 41 per cent of the sustaining mail; those wishing the program to be continued, 4 per cent of the commercial and 16 per cent of the sustaining; and those wishing to enter a contest, 8 per cent of the commercial. This was before the heyday of the contest advertisers. Information was desired by 3 per cent of the commercial and 14 per cent of the sustaining; letters of commendation were sent by 1 per cent commercial and 11 per cent sustaining, and letters of criticism by 1 per cent commercial and 2 per cent sustaining (*see* Note 34).¹³

Happily, the motive behind some of the letters received is somewhat higher than mere desire to obtain a sample. Many requests for information come in. Rowell, in discussing the value of agricultural programs, stated that questioning letters like these were received: "Where can I sell my rabbits?" "Here's what I feed my chickens every day. Why don't I get more eggs?" "What are the regulations for shipping apples to Czechoslovakia?" (326). Similarly, Station KSAC received a great many letters from persons requesting agricultural information.

For educational broadcasts, requests for copies of the talk constitute the chief mail response, although questions may come from libraries concerning titles of books and dates of publication. Roughly, one-half of the letters in response to a series of scientific broadcasts came in with no comments other than that the listener had enjoyed the talk and wanted a printed copy to read at his leisure (206).

WHO RECEIVES THE LETTERS

Broadcasters have attempted to estimate the number of letters received by the station as compared with those sent directly to the sponsors. Representatives of the two national networks have been quoted as saying that for every letter addressed to the broadcasting company, at least three are sent directly to the radio-program

¹³Although the number of letters analyzed was few, the results can be shown to be internally consistent. Separate figures were computed for WJZ and WEAF. The rank correlation between the two sets of figures was above 80, showing a close relationship. In connection with letters of criticism, it should be noted that one attitude survey showed writers of critical letters to be just as favorable to radio as writers of letters of praise (617).

sponsor (307). Another estimate for the National Broadcasting Company stated that National Broadcasting Company clients undoubtedly received fully as many more letters as were received by the chain (277). *Fortune* published figures showing that two million pieces of mail went to Columbia while ten million went to clients (503), (see Note 35).

In the Columbia mail tabulations, the percentage of mail received by the station and the percentage received by the sponsor are noted for some programs. When listeners were asked to write the client directly, the station received amounts of mail varying from 0.7 per cent to 25.6 per cent of the total. An average for thirteen programs was 6.4. Similar amounts of mail were received by the sponsor when listeners were requested to write to the station. Naturally, commercial programs receive more letters than the sustaining ones; 90 per cent of WLW mail was for advertisers (606).

SUGGESTED ANALYSIS¹⁴

Although the mail response, because of the way programs at present are administered, is an exceedingly doubtful method of measurement, it might be possible to find a way of making it accurate enough for the average purposes of the broadcaster and the sponsor. This could be done by limiting the free offers to certain definite types of materials. Since millions of letters are received by broadcasting stations in a year, it means that there is available for analysis, if such analysis could be conveniently undertaken, a vast mass of audience information. Perhaps this analysis might be accomplished by means of automatic or electrical tabulation. A rough classification could be made of the letters on the basis of the type of person who wrote and the purpose in writing. The date received and other pertinent details could be noted. Then the program to which the letter referred could also be classified, and the types of mail inducements used listed. If all this were done, the complete data for any mention of a program could be placed on a punched card, such as that used with the Hollerith machine. This would make it relatively easy to secure tabulated answers for the following questions. What is the relative pulling power of programs

¹⁴The Foreign Policy Association analyzes mail by sorting it qualitatively according to the importance of the listener-writer, the value he attributes to the feature, and the educational use made of it. The Association believes that the weight of this evidence, which is impossible of measurement, carries a conviction far beyond any mere numbers, and that the listeners' responses to the talks are remarkable in this respect (619).

at different hours of the day? Which inducements pull the most mail? What are the reasons motivating listeners to write in regard to this or that kind of program? What kind of people write for samples, copies of talks, novelties?

That it is perhaps feasible and worth while to attempt such detailed analysis has been shown by Urist. He analyzed continuities and determined the relationship of the mail response to the subject-matter contained (340). At present, analysis of the mail response as practiced by most stations does not yield more than figures for the total number of pieces of mail received and individual human-interest stories contained in a few letters.

Aside from reading the mail, there is, in a sense, an obligation on the part of the broadcaster to make some reply to the writer. One sponsor has worked out a careful classification of the subjects referred to in letters written by listeners, and he has compiled, on this basis, a series of process or form letters into which the name and address of the correspondent can be inserted readily. The advertiser sends letter *a*, *b*, *c*, or *d*, depending upon whether the listener praises the program, asks for a special selection, requests a copy of the signature song, or refers to the product advertised on the program (48).

STIMULATING MAIL RESPONSE

The constantly mounting figures for mail received by stations and advertisers are a tribute to the ingenuity of these organizations in devising methods of making the audience want to write. This section considers some of the ways in which broadcasters, advertisers, and even educators have endeavored to lure their audience into a response. So strong has been the urge toward securing tangible evidence of radio listening that few programs now are free from this feature.¹⁵ Its general effect is to make radio programs less desirable entertainment and to confuse the listener with a multitude of offers.

Some time ago, the National Broadcasting Company made a study of the mail inducements used during a four-month period by its clients. It was found that 34 per cent of the clients made no specific offer to attract listener mail; 19 per cent offered a booklet;

¹⁵One program combined three appeals. First, a lucky elephant charm was sent to listeners writing in. Then a picture of Rajput was added to this first offer, and finally, during the last three days of his broadcast, Rajput expressed the hope that if those who wished his return would write in sufficient numbers, the sponsor might continue the series (216).

14 per cent offered a sample; 9 per cent offered recipes; 3 per cent offered photographs of their radio stars; 3 per cent offered membership in a club; 2 per cent offered copies of the theme song or of a musical piece; 6 per cent offered a novelty or specialty of some kind other than those individually specified in the given list; and 10 per cent divided their attractions among various other ideas. This was during 1931 (277). During the first seven months of 1933, 47 per cent offered novelties; 30 per cent, booklets; and 24 per cent, samples. Only two advertisers offered photographs (278). According to National Broadcasting Company figures, samples pulled the greatest number of replies to a station; club memberships, second; burlesque newspapers, such as the *Tompkins' Corners Enterprise*, third; booklets of various kinds, fourth; novelties, fifth. It must be noted, however, that in making these tabulations only mail received by the station was counted. The fact that all mail requests for the Edna Wallace Hopper beauty samples came to the station might have tended to overemphasize the pulling power of samples.

CLUBS AND ENROLLMENTS

One of the methods long used in obtaining listeners' responses, and in fact in obtaining individuals' comments for many types of enterprises, has been the organization of clubs. The radio seems peculiarly susceptible to this type of listening check. Persons tuning in to the radio from all sections of the country are glad to join radio clubs and receive buttons, certificates, and other marks of membership. Children, especially, have been clubbed together by means of radio, and some of the names and purposes of these radio clubs are instructive (*see* Note 36). Thus KFAC formed a "Whoa Bill Club." Children were given membership buttons when they had said "Whoa Bill" instead of making a fuss on the occurrence of anything disagreeable or painful (514). "Whoa Bill" was responsible for children eating an unknown quantity of undesired "porridge." The contribution of KYW was a Safety Club conducted by "Uncle Bob." The purpose of this club was to reduce child fatalities by autos and other accidental causes. Club membership was estimated at half a million (532). The "Big Brother Club" of WEEI caused children to spend more than \$80,000 in postage stamps in four years.

Enrollment of listeners in courses has been carried out with fair success by stations and universities (*see* Note 37). KTAR gave regular courses in which students were enrolled. On receipt of

registration syllabuses were mailed out, and as the courses progressed supplementary printed material was mailed regularly (285).

CONTESTS

From the standpoint of measurement, it is hard to see why the contest should have been so universally favored in inducing radio mail. It is noteworthy that the contest must appeal most strongly to those persons who have plenty of time. This may mean that such persons have lower purchasing power. Only the advertiser who is interested in receiving a large response, irrespective of the nature of this response, and who desires to have radio listeners ponder over his name or his product, can find much use for the contest method (*see* Note 38). Noteworthy ingenuity has been used in devising ways of conducting these contests. Many different types of competitive activity, including multitudes of childhood games, have been adapted to radio use.

In one important sense contests are not suited to radio. In order to eliminate entrants and make the matter of judging the results simple, rather complicated rules must be set up for any large contest. It is imperative that these rules be given to the listener completely so that he will know them and be able to follow them. On the printed page this is easy. The reader can look the rules over and over again until he is sure that he knows and understands them. Constant repetition of contest rules over the radio is extremely tiresome. It is for this reason that broadcasters desire advertisers to refer the listener to the newspaper for the details. A contest conducted by Dutch Masters illustrates well the need for this. Rules were given orally by radio and also published in newspapers. A great many more letters were received from radio listeners who were confused or had misunderstood the rules than from newspaper readers (311). The radio contest should be simple and have few rules.

Uses of the contest.—The justification for contests comes from the publicity which the method itself entails or else the use which may be made of the mail returns. Sponsors favor contests because they build up mailing lists and uncover new prospects (510). Contests and offers also help to merchandise the product (320). The merchandising element in contests as well as in other mail-response inducements is insured by having the listener enter the contest with a package top, cigar band, or other part of the wrapper of a product—evidence that the product was bought by most contestants.

Sometimes the contest has been used in an orderly fashion to check up on results. Compton cites the case of a manufacturer who planned to run an identical contest during the first week of every month. Taking into account variations in summer and in cold-weather listening, this manufacturer expected to have a periodic and fairly accurate check on the size of his audience (231). If entrants to contests can be taken as representative of the whole audience, then this conclusion is justified.

The Dartnell Corporation found that retail stores have used contests, considering them to be the best way of stimulating a large mail response to a radio program, as a test of listener interest. A list of the most popular types of radio contests for use by retailers still included the Limerick contest and guessing contests to name popular songs (46). Contests between entertainers have also been staged permitting the audience to decide by sending in a vote for the best participant.

Types of contests.—No attempt can be made to list all the different types of contests. Only a few of those which have been generally used will be mentioned. Contests can be roughly classified first into those which are in the nature of a puzzle or test, such as composing word lists and Limericks, and guessing names of musical pieces.¹⁶ A second classification might consist of contests in which the listener is asked to submit some evidence of thought on the product advertised or subject mentioned. Such contests include slogan contests, various types of essay and school contests, also suggestions for program betterment, and material for use in programs. Finally, there are those contests where the listener is not required to use much thought, but merely send in telegrams and letters from the greatest distance, call up the station before a certain time, participate in popularity polls, enter a radio lottery, or copy a statement.

Word contests are reputed to have been more successful than other kinds because they necessitated neither opinion nor letter writing, and removed from every contestant's mind the possibility of faking. The actual results could be tabulated easily, and word building appealed to that trait of human nature which rendered the

¹⁶Musical selections were played by a KJR orchestra and were announced by number rather than by name. At the end of the program, listeners were invited to send in a list of the correct names of the selections. Each correct list won a ticket good for a taxi ride (512). A Columbus store found a method of increasing listener attention to its program. A word was left out of a song, and listeners were invited to write in giving the missing word. Merchandise prizes were offered, and brought in about two hundred letters per program (643).

cross-word puzzle, the jig-saw puzzle, and other forms of puzzling entertainment so popular (530). The Richfield Oil Company obtained good results by the use of a Limerick contest. During one month the 27-minute broadcast pulled an average of 1,570 answers in the Limerick contest for each evening. The Company's sales also increased during this period (214). Two radio announcers at KLRA offered a dollar to the first listener who wrote in telling them about any word which they had mispronounced in a commercial announcement (423).

Contests in which the effort is probably worth while for the listeners and the results of use to the sponsor of the contest consist in having the listeners write essays on material given during the program or on the program itself, or write slogans. That there are people who will reply to this type of contest is shown by the six hundred fifty-nine thousand slogans received at the end of thirteen weeks by the Carnation Milk Company (482). Schools of the Air, among them the Ohio School of the Air and the American School of the Air, have conducted contests for best essays, best poems, and best works of art. The American School of the Air received gratifying response to its contest of George Washington pictures. In its poetry contest, Mr. Markham offered to read all the poems sent in (*see* Note 39).

Contests which have as their purpose the betterment of the program or the obtaining of information on program popularity have been widely used. Although many of these contests are merely publicity devices to attract attention to the program, it is possible that useful information may be obtained by such means. The Royal Typewriter Company asked listeners to write in telling whether they preferred classical music or jazz. In a similar vein, the Lucky Strike orchestra played fast and slow tempos and asked the audience to judge which was preferable. Perhaps one of the most complete tests of this nature was that conducted by Montgomery Ward and Company in determining which of four programs was most pleasing to the audience (*see* Note 40).

WOL paid listeners to tell the truth about the station. In the WOL contests, five listeners were given \$5 each for the five best letters criticizing the station and its programs. These contests were held two or three times each year. Contest announcements were broadcast three times each day during one week. Listeners are asked to vote on questions and to be judges in auditions. The National Broadcasting Company proposed to have listeners

judge a debate between Harvard and Oxford. The decision was to be made on the ability of the speakers (718).

Not only are listeners asked to judge the program and to decide what types of materials are most suitable for program construction, but they are even asked to participate in the making up of the program. One station maintained a feature called the "longest song in the world." Verses were sung and the names announced in the program. As a follow-up the verses were published and distributed free. Two hundred fifty thousand copies of the song were distributed monthly (233). The sponsor of a program over WTMJ invited listeners to submit ideas or humorous sketches. Merchandise prizes were awarded for those used in the program (427). WGAL paid \$1 to listeners sending in the best joke, riddle, or humorous reading (479). KFXJ in Colorado invited listeners to send in news material for inclusion in its local news broadcasts (547).

One type of contest which has perennial appeal for the public is that of stumping radio entertainers. The Martha Washington Candy Company invited listeners to try to stump two singers by sending in the names of songs that the singers could not remember or did not know. One pound of candy was given to every person who succeeded; and ninety thousand song titles were sent in for the first ten weeks of the program (45). Offering a full-sized sample only after the listener has made some effort, such as trying to think of a song which cannot be sung, may be better merchandising practice than giving a sample to anyone writing in.

As a final type of contest, and one which seems to have least purpose, prizes have been given for letters and telegrams coming from the greatest distance (50). The ostensible reason for such a contest may be to determine the boundaries of the listening audience for a station, but logically this method should only serve to indicate whether reception conditions are exceptionally good, or whether radio-set owners happened to listen in an area where the station does not ordinarily give service. An Australian station sought to determine its most distant hearers. The competition lasted for a week and brought in nearly sixteen thousand letters (461).¹⁷

Contest prizes.—Ordinarily, the value of the prize offered seriously influences the number of returns in a contest. However, it is not

¹⁷The station believes that these letters give the management an excellent cross section of the station's audience! Nothing is said about coverage. In checking up on a program, WRUF offered live alligators for the first telegram received and the telegram coming from the greatest distance (314).

necessary to give expensive or valuable prizes. Often a little ingenuity in devising the method of bringing about audience response will make up for much in the way of awards.

FREE OFFERS

One of the most widespread and attractive inducements to writers in the radio audience is the free sample of a product obtained by merely writing in (*see* Note 41). Aside from samples, practically every imaginable novelty or article has been offered by radio advertisers at one time or another to those who cared to write for them. Great care, however, should be exercised in choosing the offer to be made to the public. It has been conclusively shown that expensive offers do not necessarily draw large numbers of requests (*see* Note 42). On the contrary, many inexpensive souvenirs and novelties have attracted a large number of writers. A rough classification of free offers includes: photographs; printed material, such as copies of the talks, booklets, and charts; novelties; samples of the products.¹⁸

Free offers as a method of measurement (*see* Note 43).—Irregularity and lack of standardization have almost vitiated the free offer as a method of measurement. In the first place, sponsors are concerned, not with finding out how many people listen to their programs, but with finding out how many returns they can possibly secure from the audience. This may induce them to make more expensive offers than they otherwise would. When the offers become expensive and worth while it is not at all unlikely that news of them is communicated by word of mouth from one who has listened to the program to the person who has not. In the second place, the offers are in themselves not at all similar or comparable. They may have distinct class appeal, as when toy balloons are offered to children. In the third place, the length of the period of time over which the offer is made is widely variable. Offers which bring about an immediate response on the part of the audience may be stopped before too many requests are received, and offers which do not bring in the desired audience response may be continued until the sponsor feels that he has received enough inquiries to compensate him in part for the trouble of making the offer. Some offers are made three

¹⁸Gifts of all sorts from booklets and catalogues to samples have a strong appeal according to KDKA's experience (62). WLW finds that photographs and free samples are good for mail response (606). O'Brien credits pictures of radio artists as the largest listener-response producers. Next to pictures he believes the offer of samples produces the greatest results (307).

times a day; others are made once a day; others are made once a week. Certainly, the frequency with which the offer is made and the number of times it is repeated must have a decided influence on the results.

In the fourth place, perhaps one of the most important influences is the fact that sponsors often tie up their free offers or measurement procedure with merchandising. This means that they require the listener to send in his request with a carton top, cigar band, package coupon, or other evidence of having bought the product advertised. When evidence of purchase is not required, sponsors often tie in the free offer or contest with a visit to the local dealer. In some cases the listener is merely to secure the name of the local dealer in the particular line of goods advertised. In other cases, he is required to go to the dealer to obtain the empty blank or the application form for the free offer. In still other cases, he writes directly to the sponsor, and the sponsor sends him a coupon exchangeable at the local dealer's. In all these ways the merchandising of the goods may be enhanced, but the use of the free offer as a method of measurement becomes extremely doubtful.

In the fifth place, the sponsor sometimes insures a good listener response by combining methods of stimulating it. He offers a photograph of the principal character and a novelty besides. In other cases, he elects to remove the program from the air, and offers some token to persons who will write in saying that they appreciate it. Besides all this, a great variety of outside publicity is given to free radio offers, or special methods of staging the announcement in the radio program are used.¹⁹

It is easy to see that any correct use of baited mail as a method of measuring the audience must rest upon a thorough standardization of procedure (*see* Note 44). Probably it never will be possible to use the free offer to any great degree as a method of measuring the relative popularity of various programs. It is not possible to equate the values of the different offers made, and if the same offer were announced on all programs, it is quite obvious that the audience would not long respond to it.

Free offers have run into the thousands and probably tens of thousands when all the individual programs in the United States are

¹⁹One night during the presentation of a popular broadcast program, it was announced that a photograph of one of the artists was available for distribution to listeners. Only five hundred requests came in. Several weeks later, during the same program, the taking of a flashlight picture of the artists was staged before the microphone. There were eleven thousand requests for this (47).

considered. It has therefore proved impossible in this section to do more than select a number which would be illustrative, and these may not be the most typical. The examples given here are in general outstanding cases where the offer was a huge success. From many sources, it is easy to determine that such cases are not the rule, and that a great many persons have had most disappointing experiences in offering materials to the radio public. Therefore, this section can be of little quantitative use to persons making offers.²⁰

Photographs.—Pictures of individual stars, pictures of casts, pictures of radio weddings, and other pictures have been offered to the radio audience.²¹ Great listener response has been obtained (see Note 45). A picture of the wedding of two characters in the "Main Street Sketches" of WOR was requested by over one hundred fifty thousand persons. A picture of Rajput added to a lucky elephant charm brought in sixteen thousand letters a week (216). Kate Smith of Columbia also has an appeal to the audience from the pictorial side; forty-two thousand cigar bands were received as payment for her picture. The offer was made only once (486).

Copies of talks.—Printed materials in the nature of booklets, charts, newspapers, copies of talks, radio logs, and recipes have been given away. Distributing copies of talks is a suitable method of measurement for the following reasons: In the first place, the demand for copies of the talks gives a measure of listener interest in the subject material. Even if a person had not been able to hear the talk, he would certainly not want a copy of it unless he were interested in the subject. In the second place, the demand for copies of the talk is a measure of the impression made in the mind of the listener by the talk. If the delivery were forceful, the facts of value, and the presentation interesting, it is probable that the radio listener would desire a more permanent record of the talk than either his memory or his notes afforded. The printed copy of the talk provides him with this record. More than three million reprints of talks given on the Halsey Stewart programs (NBC) were distributed both directly and through banks (458). A talk on banking by David Lawrence (NBC,

²⁰It would be highly desirable, if possible, to obtain a complete listing of the responses to all kinds of different offers with the various variables affecting each offer. On such a basis it might be possible for any person offering something to the radio audience to decide whether the offer would be worth while.

²¹One program announcer reversed the usual order of things with unusual success. Instead of offering to give pictures of himself or the radio stars to listeners writing in, he asked them to send in their photographs. Some eight thousand pictures were sent in.

October 11, 1931) pulled nearly two thousand requests for copies (412). The Bank of America offered the listener copies of its speakers' talks, and the printed edition of these talks ran about ten thousand copies each (485). Large numbers of copies of the National Advisory Council talks were distributed during the first year.

In comparing the requests for one talk with those for another in the same series, certain factors such as the serial position and the time of year at which the talk was given need to be controlled. That it is necessary to control these factors is shown by the rank correlation between order in the series and number of talks distributed for the first fifteen psychology talks of the National Advisory Council series. The rank correlation was 77. The rank correlation between position of the talk in the series and the number of letters received by the League of Women Voters from January to June was 70.²² Fewer letters came in June than in January (719).

Booklets.—Bulletins, booklets, and pamphlets have been offered to the radio audience. This is a natural outgrowth of methods used in other fields, where speeches, conferences, and discussions have been followed up with literature. The United States Department of Agriculture makes it a point to refer to bulletins in talks.²³ From experience, the Department of Agriculture Radio Service has found it better to stimulate the interest of the person by means of the radio talk and show him where to find further information, rather than give him the actual details of a live-stock treatment or farming method by radio. The director of the service considers the number of requests for bulletins primarily a measure of the interest of the person in the subject-matter of the talk rather than a measure of the audience listening to the particular program (638), (*see* Note 46).

The British Broadcasting Corporation issues preparatory and supplementary pamphlet material in connection with most of its talks. The demand for these has been used to measure the audience. For A. Lloyd James's course on English pronunciation during 1931-32, it was necessary to order four reprints of the pamphlet to distribute to schools. From these requests the British Broadcasting

²²After a correlation has been obtained between time of year and number of letters, then it might be possible to judge the appeal or lack of appeal of a talk by noticing the deviation of any particular talk from its place in the series. In this sense the talk on the "Voter's Stake in the Government" was least and the talk on the "Tariff and the Market Basket" was most appreciated.

²³Salisbury stated in a 1931 report that the only way to evaluate the results of the radio service from the standpoint of his department lay in consideration of the volume of letters requesting bulletins backing up the subject-matter of the broadcast. The number of requests for bulletins has been large (97).

Corporation concluded that there is a demand for lessons of this kind, although it remains to be proved how far the lessons are effective in fulfilling their aim (60).²⁴ When we note the restrained and orderly use which is made of the issue of bulletins and pamphlets by the British Broadcasting Corporation, then it is apparent that as far as measurements are concerned, the British Broadcasting Corporation has in its hands a much more effective method than we have with our indiscriminate offering of a multitude of things to the public.

Figures of booklet and pamphlet distributions have been used to gauge the success of school broadcasts, college-station broadcasts, and a large number of commercial programs (*see* Note 47). In addition, all kinds of printed materials from diet charts to radio newspapers have inveigled the listeners into writing (*see* Note 48).

Novelties.—The range of novelties offered to the radio audience has been restricted only by the imagination of those persons putting on the program. These novelties have included, according to the National Broadcasting Company (277) and others (48), the following items: play ball, map of Europe, gum-rubber ball, phonograph record, thermometer, tumbler, radio log, radio reminder pad, club pin, surprise package, color chart, print of famous museums, portrait of hero featured on the program, copy of song, tire pressure gauge, cross-word-puzzle book, bridge score pad, coin bank, sample of carborundum, picture and cut-out of Amos 'n' Andy, rag doll, marbles, airplane glider, picture, road map, tin compass for boys, pastry mold, dish holder set, spatula for mixing pastries, wooden salad server, and baby bed. Some of these specialties have been successful. A shoe manufacturer offered a nine-inch play ball in return for the name of the nearest local dealer. The announcement was made three times; twenty-six hundred dealers' names were secured. The Hamilton Watch Company announced a train cut-out; fifty-five thousand requests were received (633). The Wieboldt Stores at Chicago made an offer of a free thermometer to anyone writing in for a card to present at any of the four department stores. A single reference was made on each of three regular weekly musical programs. Over one thousand requests for cards came in, and nearly all were exchanged for thermometers (45). One means of enticing the radio audience into writing has been that of offering a secret gift (47).

Samples.—No difficulty has been found in distributing samples

²⁴Likewise, Burt found that interest in the subject of psychology was shown by the fact that the first pamphlets of talks on this subject had a larger sale than any other pamphlet that had been issued (605).

of certain types of toilet preparations, beauty aids, and cosmetics dedicated to health and happiness. According to reports, one million bottles of Pepsodent mouth wash were distributed. Each listener had to purchase two tubes of tooth paste in order to get the cartons on which to write the request (510). When this colossal distribution was effected, about one radio set out of fifteen performed for the pleasure of Pepsodent-brushed teeth and Pepsodent-gargled throats. WBBM received 15,262 replies, within thirty-six hours, to a one-day offer of a certificate good for a jar of beauty cream at any drug store. The offer was made in the afternoon (428). On the Columbia Broadcasting System was an early afternoon program featuring a popular "blues" singer. A full-sized sample of the drug product advertised was offered twice. Before the week was over, more than fifty-three thousand requests had come in (315). The Sheaffer Pen Company thanked listeners for their answers to three questions about the program by sending each one a sample of ink (488).

Before and after an offer.—On numerous occasions it has been possible to compare the response to a program before an offer was given and afterwards. A program of classical music over WOR, WLW, and WMAQ inspired nineteen to twenty letters a week before a gum-rubber ball which brought in forty thousand requests was offered (629). This is a ratio of one unsolicited letter to two thousand solicited letters. A Hamilton Watch Company program yielded seventy-five to one hundred letters a week until train cut-outs which brought in fifty-five thousand requests were offered. This is a ratio of one to approximately seven hundred. One symphony program received two or three letters a week until listeners were requested to say whether they liked the program; eight thousand letters were sent in, making a ratio of one to three thousand (633).

Verification cards.—In past days listeners were anxious to tune in distant stations in order to test the power of their sets. At that time it was quite customary to issue verification cards which confirmed the listener's report of the program if it were correct. This was a free offer and induced listeners to write from distant places. In one sense a measure of coverage for the station was obtained.

DIRECT APPEALS FOR MAIL

Historically antecedent to the free offer and now relegated to a minor position in stimulating mail response is the direct appeal from the broadcaster to the audience. Audiences have been so

harangued by now that they not only do not write in when solicited to do so but feel offended by the invitation of the announcer. In the early days, however, it was only necessary for certain announcers to ask for letters, and they were received in large volume. Even of late, some personal appeals have been effective. Because of opposition aroused by views expressed in his radio talks, Father Coughlin (1931) held a referendum with the audience as to whether he should give a scheduled talk on the subject of prosperity. Over four hundred thousand letters were received, and about 85 per cent of the writers were in favor of his making the talk. In addition, a fairly sizable amount of money was sent in (645). Possibly, this may be taken as an illustration of the fact that religious organizations stand firmly behind their speakers. In 1933 Father Coughlin's mail response had reached an average of one hundred thousand letters a week (450).

If requests for mail are dramatized in some way, they stand a better chance of overcoming listener inertia. Thus at 6:05 in the morning, an announcer and an organist for WLS engaged in a bet as to whether more than five hundred listeners were tuned in. The organist stood to pay for the week's breakfasts if more than five hundred listeners did not respond. Unable to permit the organist to lose his wager, two thousand listeners wrote in (449).

On one occasion, Stokowski, director of the Philadelphia Symphony Orchestra, requested listeners to write in saying whether they would care to have the brass or string section of the orchestra described during the intermission at the next broadcast. This is a typical example of the wise use of mail solicitation from the audience (see Note 49). When mail is solicited in such a dignified way it cannot offend the audience, and furthermore, many persons would probably be glad to make their preferences known.

Twice a year the Children's Hour of the British Broadcasting Corporation asks its listeners to send in on a post card a list of the six items they have liked best in the previous six months. From these a list of programs is chosen for "Request Week" (710).

PROGRAMS WITH MAIL-RESPONSE APPEAL

There are some programs so composed that they "naturally" result in a large mail response. One of the characteristics of these programs is that they tie the listener directly in with the construction of the program, or appeal strongly to persons disposed to write.

In a Dartnell report of programs found most profitable by retailers, special mention was made of radio programs emphasizing character analysis, handwriting analysis, and revelations of mystics. Stores conducting programs of this type reported unusually heavy mail returns and other evidences that the program was highly popular with many listeners. Handwriting and character analyses were made for those persons sending in the requisite data (46).²⁵ People are extremely interested in programs that tell about themselves, particularly if they are able to write to the broadcaster and receive personal comments on their problems.²⁶ The amazing response to programs giving horoscopes is ample proof of this (324).

KDKA lists old-time songs, popular orchestras, and featured singing leaders as effective mail producers. The experience of this station has shown that most people can be influenced through an appeal to their children (62). Programs of a social nature, such as station anniversaries and featured birthdays of radio stars, bring in a sympathetic response from the audience. Henry Field, of KFNF, received more than two hundred twenty-five thousand messages of congratulation in response to an anniversary program (512).

The radio question-box has many times been used to interest listeners and secure letters from them. WHBD presented a weekly program during which local public officials were interviewed before the microphone. They were asked questions concerning the offices they held. These questions were solicited from the audience (547). Dr. Cadman, who conducted one of the religious hours²⁷ of the National Broadcasting Company, used the question-and-answer method in part. The volume of his mail response was huge.

Programs dealing with controversial issues are sure to arouse mail response. Listeners whose prejudices are in conflict with the speaker's views hasten to tell him the other side of the question. Many of the letters evoked by religious programs are probably due to this challenging of old beliefs.

²⁵All stores agreed as to the ability of these programs to pull mail and arouse listener interest, but questioned whether programs of this type were as good as others in bringing sustained benefits to the store and building good-will.

²⁶It has been found in connection with programs on psychology that those talks dealing with personal affairs and personal problems are received with much interest on the part of the audience and much tangible evidence of response if mail can be considered as such. Listeners write in to ask advice and to secure further information on their own problems and troubles.

²⁷A youth program offered vocational guidance and advice regarding the problems confronting the youth of the nation. It occupied only a half-hour each Sunday for thirty-two weeks; but in order to cope with the response it was necessary to employ fourteen secretaries and a vocational director (309).

Request programs.—The playing of request numbers or broadcasting of request features has always been a successful means of soliciting audience response of a certain type. Even where playing requests is not the custom, letters are received from listeners asking that certain pieces be played. A Montgomery-Ward program, chosen by the audience as the best of four different presentations, depended in part upon poems sent in by listeners and requests for songs made by them (473). WBBM gave a series of programs for shut-ins called "The Shut-in Club" which was of greatest interest to invalids and others unable to go out. Their requests for music and popular acts were considered in building the programs (513). WDBJ had a novel method of enabling listeners to send in their requests. Since a milk company was the sponsor for a series of programs, listeners could place the request numbers on a slip of paper in the milk bottle. Each week twelve letters were selected, and on the night of the weekly program a mythical visit was paid to the writer of each of the letters and his request number played (519).

Reading names.—Often the names of those persons making the requests are mentioned when the piece is played. One disillusioned broadcaster concluded that it is immaterial what is sung or played just so the name of the person making the request is mentioned. Checking back over requests received by his station he found almost the same names day after day (522).

As long as stations think, as KDKA did, that "mail response is encouraged by any plan which makes the listeners believe that they are a part of the program, such as names mentioned in the program" (62), listeners will undoubtedly hear more of this publicity for the public. An Oregon store specialized in personal greetings on the occasion of birthdays, wedding anniversaries, sicknesses, visits, and the like. Requests for such greetings increased every month, and more than five thousand of them had been sent out during eight months (46). WQAM made children happy by reading their names on the date of their birthday. Along with the names, birthday bells and a musical greeting were given (515).²⁸ Why stations continue this practice so extensively is not clear unless they feel that it is better to have an assured few than a vague many.

²⁸The Wisconsin School of the Air read each week the names of children doing the best work (730). The British Broadcasting Corporation used to do this in connection with compositions submitted by pupils listening to radio school broadcasts (300). The *Columbus Dispatch* news reporter inaugurated a system of chartering listening posts throughout the state. Each post was chartered by reading the name of the person who wrote in (108).

AUDIENCE PROTESTS

Threatening to stop programs and service.—If broadcasters have cajoled listeners into sending letters, they have also tried the opposite procedure of obtaining letters by threats. Judging rightly that if a program possessed unique interest for the listener, he would at least make an effort to keep it on the air, broadcasters have threatened to stop programs unless the listeners wrote in expressing their desire to have the program continued. In fact, stations have used this plea on occasions when it seemed as if they might be forced off the air. KWK asked for listeners' petitions when its license to broadcast was in danger of being withheld; one hundred ten thousand names were gathered in ten days (521). Such instances could be duplicated for a number of stations.²⁹ A National Broadcasting Company official believed that the best way of judging a program is simply to say in a courteous way, "If you people do not like this program, I am going to stop" (497). Cases where this method of threatening to stop a program has been used are as follows. The sponsor of "Main Street Sketches" over WOR asked the audience whether the sketch should be continued; sixty-six thousand pieces of mail gave the affirmative answer (48). Rajput greatly increased his already large mail response by expressing the hope that if those who wished his return would write in sufficient numbers, the sponsor would continue the series (216). And, finally, Pepsodent tried this same method out in connection with its program "The Goldbergs."

Discontinuing programs.—In numerous instances it has been possible to observe the audience response after a program was actually stopped (*see* Note 50). In fact, such a large number of programs have at one time or another been removed or changed that it is doubtful whether this method of appeal has the effect it once used to have, unless a program is extremely well established.

Proof of interest in agricultural programs has been found in their discontinuance and not in their continuance. If certain reports are taken off the air, many complaints come in. Two well-known radio stations felt that the agricultural service was not being used and so ordered the programs canceled. They had been off the air but twenty-four hours when mail began coming in large volume

²⁹If listeners' petitions are secured in a bona fide manner, this method of measuring audience appreciation is probably of significance. In the case of KOAC the only consideration was the threatened suspension of service. Questions were asked to determine the extent KOAC was heard in the state and the value placed upon its programs by those who heard them (280).

inquiring why the programs had been eliminated and asking that they be restored (326). The popularity of the "March of Time" program was evidenced by thousands of letters received in protest against its withdrawal from the air (472). The "National Opera" over the WEAJ network and the "Slumber Hour" over the WJZ network brought in hardly any letters. However, when these programs were discontinued, many protests were received (604).

Changing programs.—For test purposes, broadcast programs have been changed both in respect to content and time of presentation. Dunlap suggests this as a testing method and states that the "Ipana" and "Clicquot" programs were able to shift nights without loss of audience or particular protest (47). However, when the original Amos 'n' Andy program given at ten o'clock in the Middle West was shifted to seven o'clock eastern standard time, thousands of complaints were received and various petitions came in. From one railroad a petition with twenty-five hundred names attached requested a return to the former time (322). Cutting hour programs to half-hour has also incurred disapproval of the audience.

Change in content or setting aside of the program may cause a large increase in mail response. Attempts to change the previously described Montgomery-Ward program from its prize-winning make-up brought forth a great many stand-pat letters. During the 1932 pre-election political broadcasts, listeners had many opportunities to be disgruntled at the setting aside of their favorite programs. In some instances, when popular programs were side-tracked for political speakers, the antagonism aroused was great. Large numbers of calls and letters were received by the stations.

As an illustration of the fact that silence from the audience may greet silence on the air, a case given by Felix serves very well. Following a radio custom, an orchestra used a different name each time it appeared on a different program. This orchestra broadcast under three different names and drew large quantities of mail each time. But when the orchestra ceased broadcasting under one name and changed to another, no protest was made even though the audience did not know that it was the same orchestra (50).

If a program is unique and appeals definitely to the prejudices of a certain group, then its cessation will cause protest. If, on the other hand, the program is not greatly different from many others on the air at the same time, and if it does not appeal to any particular body of listeners, there will be no protest if the program stops.

SPECIAL USES OF THE MAIL RESPONSE

Mail response has been used to build mailing lists and merchandise goods, to determine location of the station audience, to ascertain popularity of stations and programs, to decide upon ideas in program construction, to obtain audience reaction to electrical transcriptions, and to learn of audience habits and activities and obtain data gathered by the audience for scientific purposes.

MAILING LISTS AND MERCHANDISING

Both advertisers and educators are desirous of learning the names of persons who are interested in their wares. For this purpose the use of free offers or other inducements to obtain letters is probably worth while. From the names so obtained, mailing lists can be constructed and used for further solicitation by direct mail or as a calling list for salesman (*see* Note 51).

Proof that those who write are especially interested in the product advertised may be shown from the experience of a magazine publisher. Radio talks were given, and the magazine circularized the names and addresses which came from the mail response, and between 4 and 5 per cent of the persons thus addressed subscribed as a result of the first letter. Such a return is high. Circularization of the general public usually brings in one per cent (204).

LOCATION OF THE STATION AUDIENCE

In all likelihood, the most common use of the mail response, when more than mere figures are quoted, is to attempt to show the coverage of the station. Since an accurate definition of coverage is based upon signal strength, it should be clear that mail can only indirectly measure this. Nevertheless, for practical purposes it is important to know where the listeners are located and whether they listen. Mail response gives some indication of this (281), but because of the vagaries of transmission, and because of the desire of the listener to write to distant stations, it may not be representative of the actual audience of a station. This is at once apparent in cases where stations claim national coverage and show mail from every state in the Union. Three stations among many, WSM, WLW, and WTAM, have published charts showing mail received from all forty-eight states, but these long-distance letters are of no significance at all with regard to the audience to be expected for the broadcasting of regular programs.

Competition from other stations is an element which must always be considered in any use of the audience mail to map coverage or to map audience response. Normally, stations are found in or near cities. For any particular station, its competition becomes greatest in centers of vast population and least in places where the population is sparse. As far as relation to physical coverage is concerned, this competitive factor would have a tendency to overemphasize the significance of mail returns from regions of low population and underestimate the physical coverage in places where the population is large. In a mail-response survey of WCAU, certain counties in Virginia and West Virginia would have been placed in the area of secondary coverage because the total population was so small that a few letters produced an abnormally high ratio (53).

Statements from broadcasters on the mail response tend to show that the rural population writes more than the city population. Inspection of the Price-Waterhouse Columbia figures seems to confirm this. In the 1931 survey, a return of 15.7 per cent was obtained from station cities and a return of 17 per cent from smaller cities and towns in the listening areas. Persons in smaller places were apparently more willing to respond. It seems also to be true, to a slight extent, that in the smaller cities listeners are more likely to reply to a questionnaire than in the larger cities. The rank correlation for the 1931 Price-Waterhouse survey between the percentage of returns and the population of each city was .17.³⁰

The Columbia Broadcasting System has prepared an interesting series of maps showing the distribution and relative intensity of the minimum habitual audience of each station by counties. A souvenir map induced listeners to write in and thus furnish the letters on which the maps are based (34). The methods of tabulation and computation have already been discussed (*see* Note 52). These Columbia studies provide the most thoroughgoing use of the mail for audience location purposes.

Mail response also has been used by WEEI to measure coverage or audience location. WEEI³¹ concluded that if a program had to be heard daily for the listeners to follow and appreciate it, any mail coming from this program would be an indication that listeners

³⁰Stations in large cities should, on the whole, have a more extensive coverage as shown by the map method used by Columbia.

³¹This station believes that no more accurate estimate of coverage is available. WEEI's tabulation of mail received from different parts of New England lists separately the places from which one letter came. Of the 721 towns and cities sending mail, 38 per cent were represented by only one letter.

tuned to WEEI consistently (111). KDKA checked the total mail response received by the station with the mail response to specific programs in determining the primary area (see Note 53). KDKA used fan mail to determine the location of the audience and supplemented this with interviews to determine the size (62).

It is the usual thing for a station to make some sort of mail test when new transmitting equipment is installed or changes are made. We encounter many proud statements by stations of coverage based on replies to these tests. WHBU reported receiving letters from twenty-nine states and three Canadian provinces as a result of tests made on a new crystal control composite transmitter. WHBU operates with 100-watt power on a frequency of 1,210 kilocycles. All listeners reported that the volume and quality were good. Needless to say, the assignment of WHBU is shared by many other stations, and it takes no penetrating mind to realize that letters from twenty-nine states have no bearing on the efficient and regular coverage of the station (478).

Mail response has been used by stations to refute audience limitations calculated on the basis of signal strength. Back of this is the assumption that there are many listeners who are willing to tune in on a superior program even though the reception may not be good. One station consoles itself with the thought that in the hinterland of every radio station, perhaps outnumbering the listeners within the primary coverage area, are those to whom interference, distortion, or fading is a necessary evil. To them the program is good by comparison with whatever else their receivers can secure. This station says further that mail response is a certain index to the fact that microvolts mean nothing to the distant listener (523). In a symposium held by the *Broadcast Reporter* in its columns, the pros and cons of popularity versus signal-strength coverage were debated. In general, it was admitted that data on signal strength were desirable, but that actual measurements of whether or not the station had listeners were most important. Many broadcasters felt that signal-strength did not assure listeners (524).

POPULARITY OF STATIONS AND PROGRAMS

Ever vying with each other in producing the most mail response, stations have published the results of their rivalry. WEEI, in a 1930 discourse on its popularity, stated that for six years it had produced more mail than any other Red Network station except

WGY.³² WEEI used this mail response as “another indication of the popularity of WEEI, and of the condensed population of the territory it consistently serves” (111). KSTP was also proud of its achievement in producing mail for the National Broadcasting Company. An advertisement in *Broadcasting* stated that it stood fifth in the mail report of the National Broadcasting Company for 1931 (442). Turning now to WGY, whose superiority in eliciting mail from the audience WEEI admitted, we find that this station makes use of its mail return too. During the months of August and September, 1930, a study was made of the WGY mail response covering a total of twenty-seven thousand letters. A mail-response map was constructed to indicate the intensity of the response (117).³³

Mail response is frequently relied upon to demonstrate the popularity of single programs. It is most often used in comparing one program with another rather than in charting the same program from week to week. Statement after statement is encountered attesting to the success of a program simply because a great number of letters have been received (*see* Note 54). Retail stores have used the mail response to prove that programs have a large audience (260). The Metropolitan Life Insurance Company stated that more than seven hundred twenty-five thousand letters were received in five years. The Company believed this was sufficient evidence of the interest in its program. In a like manner, the “March of Time” relied upon fan mail to show that it had met with approval from all kinds of listeners (538). WLW considered twenty thousand letters received in one day on a single children’s broadcast proof of the popularity and effectiveness of the station (425). The Sinclair Minstrels, starting as a local program over a Chicago station, received so many favorable comments that the show was put on a network of six stations, and then increased to 39 when additional quantities of fan mail were received (493). If this is the real reason for assigning the additional stations to the program, it indicates the use and value put upon the mail response.

The British Broadcasting Corporation analyzes the correspondence of the audience to radio speakers. It finds the large amount

³²WEEI, Boston, 1,000 watts; WGY, Schenectady, 50,000 watts.

³³Two zones were set up. Zone 1 included counties from which WGY received twenty or more letters per ten thousand population, while Zone 2 marked out counties from which WGY received five to twenty letters per ten thousand. Here again is shown the need for a standard form in reporting mail response with respect to sizes of areas, use of single-program mail or total mail, and length of collecting period.

of mail received an intelligent and useful check. From time to time special inquiries of listeners are made (16). One time the British Broadcasting Corporation instituted a daily religious service at 10:45 in the morning. Acceptance of this feature was shown when eight thousand people wrote in their thanks (338). Quite in contrast with this use of the mail response to insure continuation of the program is the policy adopted by an American network in accepting a program advertising a laxative. It was agreed that if two thousand letters were received from listeners objecting to the type of advertising, the program would be canceled (448).

The listener mail has been used to determine with what type of person the program is popular. A program was put on which made no pretensions of being juvenile. In fact, the sponsors did not believe that it was listened to by children. But over 50 per cent of the letters received were written in childish handwriting (221). As the Crossley survey indicates, however, there may be little relation between the mail received and the audience. A program appealing to both adults and children may lose its adult audience without this being reflected in the mail response (704).

PROGRAM CONSTRUCTION³⁴

The mail response has sometimes served as a basis for judgment of the effectiveness of different parts of the radio program, and the extent to which variations in the performance produce a change in audience preference. One of the most significant efforts to relate mail response to program continuity and determine the types of continuity causing the audience to write has been made by Urist. Food-program continuities were analyzed with regard to topic, amount of material devoted to background, amount devoted to entertainment, amount devoted to information, and so on. The standard of measurement for each continuity was the number of mail inquiries received. The continuities were thus roughly classified as poor, medium, and good "pullers" of mail. Urist assumed that the number of inquiries represented the value of the continuity,

³⁴Although criticisms are obtained from listeners on the content of programs and talks, it is sometimes hard to evaluate these criticisms and apply them practically. The British Broadcasting Corporation quotes an amusing example. A talk broadcast from London was attacked in letters on the following grounds: that it had a communist bias; that it was Fascist propaganda; that it was anti-clerical; that it was sectarian propaganda; that it was frivolous; and that it was over-intellectual (22). It would have been hard for the speaker who delivered this provocative and controversial talk to revise it on the basis of the comments he received.

although he admitted that "one broadcast might bring in a small number of returns and yet stimulate sales of the products advertised."

As a result of the analysis it was found that those talks with less time devoted to background remarks were more successful. Conversely, poor continuities contained fewer food remarks. Including recipes in the program seemed to help the number of returns. The relation between inquiries and repetition of the name of specific products also appeared significant. Dialogue apparently was inferior to monologue in bringing in returns (340). Where there are so many variables, it is hard to eliminate the influence of one upon another and make sure that the observed relationship is genuine.

Listeners help the British Broadcasting Corporation select preachers and churches. Every year dozens of suggestions are received from listeners, and the churches and preachers mentioned are placed upon the recommended list. When a number of recommendations converge, or when the persons recommending are known for their qualifications to recommend, technical inquiries as to the suitability of the place are made (16).

Listeners' judgments changed the nature of the program of the Sheaffer Pen Company program. This Company, after asking listeners to criticize its programs, replaced its comedy team with a male quartet (492). WOL, subsequent to holding contests for the best letter telling the truth about the station and its programs, went over these letters carefully. The opinions in each letter were charted to find out what listeners liked and what they did not like. Since no specific questions were asked, the listener expressed entirely his own opinion (481). One advertiser offered electrical transcriptions of dance orchestras, singers, sketches, and instrumental offerings. Of these different programs, presented by sixty stations in a test, the sketches (1931) drew most inquiries for a sample of the advertiser's product (401). WINS secured response to programs by presenting them as surprise pre-views. The station claimed that many unusual reactions were received and that the letters were helpful in the revision for regular presentation (426).

Many matters in the internal construction of a program have been submitted to listeners' decisions.³⁵ One Philadelphia station experimented with the non-identification of the announcer. The executives of the station hoped in this way to judge whether the

³⁵Mail response showed the value of masculine radio appeal for women. A woman advertiser of a face cream obtained a fair response. When she added a man to her program, the responses jumped three hundred per cent.

public preferred to have the announcer on a plane comparable with the feature of the program or merely a figure introducing the feature. In a San Francisco station, announcers received so many letters and telephone communications calling attention to lapses in pronunciation that a teacher of speech was employed to aid the announcers. Blue Ribbon Malt is sure, based on unsolicited fan mail, that sales talk by the program personality is effective (474).

Mail response has been the criterion in deciding upon the relative value of the interview and straight talk as broadcasting methods. WOR came to the conclusion that the interview was better (629). Burt found that listeners to his psychology talks broadcast by the British Broadcasting Corporation were divided on the dialogue versus lecture question. Correspondence, if a reliable indicator, showed that bringing children to the microphone to illustrate the methods of mental testing was one of the most attractive features of the talks (605). Station fan mail has also been used to determine what musical selections the request audience prefers.³⁶

Two types of announcement leads were broadcast over KDYL: "The National Loan Company operates under strict supervision of the state, assuring you of a loan service which is dependable," and "Here's how you can end money worries." The first headline was the beginning of an announcement given over the air four times. Only one applicant came to the loan office. The second headline was followed by exactly the same text as the first, and yet it actually produced an average of thirty-two applicants for each time the announcement was given over the air (265).

Some light on the question of spelling out names is given by Colwell. He claims that mail response to an offer or question over the radio is greater when the names of cities in the address are spelled out. He gives two reasons for this. First, spelling attracts attention, and second, there are thousands of children and adults who do not know how to spell the names of even the larger cities. When names or directions are to be written down, it is better to warn the person in advance to get paper and pencil, and then play an orchestral selection before giving the announcement. This has increased the mail response as much as ten times. Announcements made during dinner time do not bring in much response, probably

³⁶*Broadcast Advertising* asked stations to submit a list of musical numbers that requests and fan mail showed to be most popular with their listeners at the time. More than half of the 24 lists received included nothing but dance music, and half of the remainder put it in first place (483).

for the reason that people are not able to take down the names and addresses or exact information on the offer (606). These facts place still further doubt on the value of using run-of-the-mine mail response to judge the different types of programs.

ATTITUDES ON ELECTRICAL TRANSCRIPTIONS

Mail response has revealed some information about the reaction of the audience to electrical transcriptions. Since there has been a great deal of interest expressed in the possibility of substituting recorded programs for chain broadcasts, knowledge obtained in any way on this subject is important. An advertising-agency review of fan mail from various sections of the country indicates that the prejudice to transcriptions and "canned music" has been largely overcome by the superior quality and careful recording of programs (421). Asked what fan mail indicated in connection with transcriptions, 80 per cent of the radio-station executives who replied stated that the listener is just as favorable to transcriptions as other forms of broadcasts; 64 per cent of the sponsors returning answers believed that the listener has little objection to them.³⁷

HABITS AND ACTIVITIES OF THE AUDIENCE

Figures on the mail response are not only used to show when people write most, but it is further assumed that when they write most they listen most. WOR believes that its summer listening audience is comparable to that of the winter season, based upon listener mail (436). An analysis of Columbia mail led to the same conclusion (55).

Letters from the audience are one of the chief ways of knowing what the radio-set owner does as a result of hearing broadcasts. Listeners write in and say how the programs have helped them and whether they have been able to use the advice given. These audience activities will be discussed at length in Chapter VIII.

As a final use of the mail response, its accomplishment of the collection of widespread data may be mentioned. In England, radio has been used several times by scientists to secure observations necessary to their studies. The migration of birds has been reported by listeners, static observations have been collected, and data on the pronunciation of place names obtained. The Yearbook

³⁷Supplementary information obtained by Hammond through the interview method showed that 45 per cent of persons questioned liked transcriptions; 16 per cent disliked them; and 39 per cent were unable to tell the difference (264).

of the British Broadcasting Corporation for 1931 describes how the Radio Listeners' Club of Central England undertook the task of gathering data on static through a series of scattered observations over a period of several weeks. Fifty members equipped with data sheets were to listen in at the same time in various sections.

SUPPLEMENTARY CONSIDERATIONS

RELATION BETWEEN MAIL RESPONSE AND OTHER METHODS

It is of great importance to relate all surveys together in so far as possible. Therefore, any relationships which can be shown between the mail response and results from other surveys such as personal interview, telephone interview, or questionnaire are of value.

The Yankee Network issued a coverage claim based upon a combination of field-intensity measurements and mail returns. A coverage map based on measurements by the engineering department in the field was made. Then the mail return for a period of three months was tabulated to substantiate the engineering claim (404). WGY related the mail response received from the various regions around the station to the arbitrary 100-mile-radius system used by the stations of the National Broadcasting Company. The 100-mile area fell almost entirely within the coverage of Zone 1 as determined by mail response, and the mail response followed the general form of this "100-mile" area after adjustments were made for other stations and overlapping coverage (117). KDKA combined mail response with personal interview as previously noted. The interview method was used as a check on the coverage determined by the mail response (62), (*see* Note 55).

The general mail response is often combined with the results from restricted local surveys. A method of relating the returns from free offers to the number of known listeners as determined by telephone surveys will be described in Chapter VI. LaPrade obtained figures for the number of children listening to the Damrosch concerts in the following manner. He kept a direct record of the number of music-appreciation manuals sent out to teachers. Then he determined the number of pupils per teacher's manual in certain representative places. In New York these figures were secured by finding out from the school authorities the number of pupils listening to the music-appreciation course. After the number of manuals distributed to teachers was investigated, the ratio came out 1 manual

to 128 pupils. This figure LaPrade considered to be too high for the rest of the country, since there are rather large classes in New York. Questionnaires were therefore sent to ten cities where schools were equipped with radio. In one, a ratio of 450 pupils to 8 manuals was obtained; in another, 5,000 pupils to 50 manuals; in another, 100 pupils to 3 manuals, and so on. LaPrade further noted all comments in letters giving the number of pupils listening, and he was able to check these figures with the number of manuals sent in 67 cases. The ratio was about 1 manual to 75 pupils. These, however, were smaller places. On the basis of all these ratios, LaPrade concluded that 1 manual to 100 pupils is approximately correct (622).³⁸ Sometimes requests for manuals and copies of talks are deceptive. In one instance each person writing in for a copy of a talk was asked whether he had actually heard the radio address; half of the writers had heard about the talk from someone else (501).

Paramount Publix found that 15 per cent of the listeners who had their radio sets tuned in on the day of the broadcast mentioned the Paramount program as one which had been heard. Dunlap interpreted this to mean that the program had been heard through 1,225,000 sets with 3,675,000 listeners. The audience response of 12,700 letters per week therefore represented 1 letter for every 300 listeners—a lower ratio than commonly accepted (48). This case as described by Dunlap serves as an example of checking mail response and surveys against each other.

Is there any relationship between selling goods and obtaining mail response? The case histories of a number of commercial programs would be of the most value here. A National Broadcasting Company executive has said:

Some of the most successful programs on the air get a mere sprinkling of letters each week, while we have known cases of programs which have received record mail responses and which yet have not been really successful in selling goods. . . . a large mail response does not necessarily denote that the program is really successful (277).

Relations of the mail response to audience activity are clearly indicated in two cases. Broms gave talks, offered free copies of them, and conducted excursions related to the subject-matter of the talks. He reported that the "Story of the Hudson" excursion brought out only a small crowd, possibly because of the cost of

³⁸In making the final computations, however, it must be remembered that many manuals are not sent to teachers. Furthermore, not all schools listen regularly, nor do all teachers use the broadcast after receiving the manual.

the trip or the early hour of leaving, while the demand for copies of this talk beat all records (18).

The effect of moving-picture attendance on radio listening, as noted in the mail response, seems to be small. In the fall of 1927, when all the motion-picture houses in Chicago were closed during a strike, Chicago radio stations reported that their fan mail or their telephone requests did not increase. Radio distributors denied any noticeable increase in the sale of receiving sets (52).

EXTENT OF DEPENDENCE UPON MAIL RESPONSE

The pros and cons of the value of the mail response have been discussed continuously for a long time, and probably will be discussed for a still longer time to come. Broadcasters have asserted that the significance of the mail response is little, and yet they have based many conclusions upon it. The grave deficiencies of the mail response as a method of measurement are only too apparent. And yet, because this means of measurement is the only one possible for many types of programs, and certainly the only method available for many more, reliance on it has been persistent. Figures given for station judgment of the audience approval, as reported by the Federal Advisory Council, may be cited here. Judging "audience approval" for 146 different educational programs was based upon mail response in 102 cases. This was by far the most widely employed method of ascertaining whether the audience liked a program.

A Montgomery-Ward retail store, in signing a contract for radio advertising, asked for a hundred letters a day as proof that radio advertising was effective (334), and the Hire's Root Beer Company selected stations to carry its program on the basis of the number of requests for a free sample received by each station (401).

OPINIONS ON THE VALUE OF THE MAIL RESPONSE

A collection of quotations of broadcasters, advertisers, and educators concerning the importance of mail shows a miscellany of opinion which is scarcely a help to the reader. Therefore, the following brief review is made without direct reference to the persons quoted, and primarily for the sake of completeness of discussion of the topic of mail response.

On the one hand, the mail response is favored and esteemed because it contains constructive criticism, helps the broadcaster overcome his own prejudices, is an index of the tastes of the audience,

and shows the interest of the audience in the program. The audience mail received by stations has even been regarded as superior to any survey yet undertaken, simply because of the volume of the response. (Sampling!) On the other hand, dependence upon the mail response has not remained without criticism. Such criticisms are to the effect that mail response represents an unimportant part of the listening audience, does not come from people of "really critical taste and sound opinion" because of lack of time to write, is a relative rather than absolute measure of program effectiveness, shows the changes of audience taste too tardily, does not indicate the number of listeners,³⁹ shows interest in the nature of the offer or subject of the talk, rather than in the broadcast itself⁴⁰ is now entirely dependent upon so-called "hooks," that is, free offers, and the like, is too variable because of seasonal and program-change influences, and does not indicate the true value of broadcast advertising, whether radio sells goods.⁴¹

CONCLUSION

What, then, is to be done about the mail response? It seems fairly clear that its value is limited at best. Certainly, the first thing is to chart clearly the persons who write and find out how representative they are of the population as a whole. Then the second requirement for profitable use of the mail response is to dispense with inducements, unless these are made constant for a large variety of programs. Finally, analysis of mail returns should be conducted by an impartial agency, in accordance with standards agreed upon by all stations. Following these precautions, the mail response might be used to indicate location of the audience and relative interest of the audience in different programs.

³⁹It is certainly true that absence of listener mail does not indicate disapproval (542), as is shown by the lack of tangible response to many educational programs and in the case of the Atwater-Kent and Stokowski concerts, which did not draw one-tenth of the mail of the fifteen-minute morning programs where a recipe book or sample of some product was offered (307).

⁴⁰Fitzpatrick, of WJR, sees in the response of the audience more a measurement of the desire of listeners to have the offer than to register their preference for the program. He says: "If ten announcements offering a cook book will bring 26,000 letters from women listeners, while the offer of a booklet on reducing will bring only 2,600, it is because for every woman who wants to reduce there are ten women who do not. It does not signify that for every woman who heard the cook book announcement, there was only one who heard about the booklet on reducing" (250).

⁴¹WCAE has observed advertisers more interested in getting letters than in selling the product (463).

Author's Summary of Chapter IV

QUESTIONNAIRES are most useful in gathering a limited amount of factual information from a large number of widely separated people in a short time. The questionnaire has been extensively used in radio measurement; returns vary from ten to twenty per cent; mail questionnaires yield from fair to poor sampling of the general public. Report forms are suitable for gathering information and opinions from observers properly selected; they are especially used in judging the effectiveness of school broadcasts. Tests have only been used to a slight extent.

CHAPTER IV

QUESTIONNAIRES, REPORT FORMS, AND TESTS

Since report forms and tests may be allied to the questionnaire for purposes of discussing methods of preparation and types of questions, all three measuring devices will be treated co-ordinately under the subheadings of this chapter, rather than devoting separate sections to each of the three. The purposes, advantages and disadvantages, methods of preparation, types and uses of questionnaires, report forms, and tests will be taken up, as well as some special considerations on their employment in measurement. The questionnaire is the most widely used of the three measuring instruments in radio; therefore, the major portion of this chapter will be devoted to it.

Questionnaires, report forms, and tests are different forms of the same type of measuring device. Their essential character lies in the fact that they are questions usually asked on paper and receiving a written answer. In this way the questionnaire is differentiated from the formal interview, where the same questions may be asked by an interviewer and the answers as given by the listener noted down. Toops defines the questionnaire as "a collection of questions carefully compiled by a research worker for formal individual reply by a number of persons, or respondents, ordinarily not in the presence of the examiner" (104).

PURPOSES IN USING

The purpose for which any means of measurement is used is dependent upon its peculiar advantages and disadvantages. Since these will be discussed in detail, the general purposes in using the questionnaire, report form, and test may be briefly sketched by way of introduction. The questionnaire is used chiefly to secure a sharply limited amount of uninfluenced factual radio information from a large number of persons scattered over a wide area within a short time. The use of the questionnaire in the Price-Waterhouse

surveys follows this purpose. The report form is employed to standardize the extensive and intensive collecting of information at regular intervals from persons who have agreed to co-operate. It is best used after questions of a general nature and those dealing with permanent situations have been answered on a preliminary questionnaire form. The report forms of the Ohio School of the Air have this purpose. The purpose of the test is to elicit responses, information, expressions of attitude, from the listener under controlled conditions.¹ Tests prepared for a League of Women Voters experiment illustrate this purpose.

The questionnaire has been widely used by broadcasters, advertisers, and educators, while the report form has been used but to a slight extent by broadcasters and advertisers to obtain criticism on programs. Sometimes dealers have made reports, and occasionally paid listener critics have been employed. Educators have frequently used report forms. It is relatively easier for them to induce organizations to listen and fill out the forms after the broadcasts. Teachers and pupils in schools, as well as members of adult organizations and individual listeners, have listened to series of broadcasts and reported on the single units.

Specific purposes in using the questionnaire and report forms follow those outlined in Chapter 1. From the advertising side, measurements have been undertaken to determine the brands of articles used in radio and non-radio homes (29), whether articles were purchased as a result of a radio program (341), what dealers think of radio advertising (80), whether dealers have heard customers mention the program of the company, whether radio advertising should be limited (417), and whether a program is popular enough to sponsor (45). General-listener questionnaires have sought to determine station "coverage" (435), radio station preferences and listening habits (37), favorite programs and listening habits to programs, audience activities, and audience opinions. Questionnaires and report forms have been employed to ascertain audience response to details of program construction and transmission such

¹The test is given when co-operation has been secured in connection with some special program, which may have changed the attitudes, thinking processes, or information content of the listener. The test attempts to measure the result of the program with reference to the changes in the listener. Since the co-operation of the listener has been secured, the construction of the questions is determined primarily by what it is desirable to test and how best to test it. This is in contrast with the questionnaire which is limited by what the listener may be readily induced to answer.

as how often the program should be on the air,² what is liked best about the program (488), whether orchestral tones are in balance, what agricultural information is desired (725). An especially interesting experiment was carried out by the United States Department of Agriculture to determine the most effective method of presentation for agricultural information (see Note 56).

In education, attention has been turned primarily to the schools and to listening groups. Teachers, school officials, and pupils have been asked concerning: the number of schools with radio, number of pupils listening to broadcasts, number of schools where parents hear programs, suitable hours for programs, broadcasts found most useful, grades for which program is best suited, suggestions for subjects, desirability of continuing broadcasts, as well as many other topics (5, 26, 89, 213, 238, 502, 626). Listening groups have been sent questionnaires or asked to return report forms for the purpose of indicating attendance at broadcasts, giving the topics discussed at the meeting, setting down questions on which help is needed (620), as well as commenting on the speaker's style of delivery, the content and organization of his speech, and listing the activities undertaken because of the broadcast.³ The list just given is by no means complete, and a further discussion of this matter will be found in the section on types of questionnaires and report forms.

Tests have not been much used by the advertiser since they constitute a laboratory technique. None the less, the advertiser could quite advantageously consider making, on a small scale with a few individuals, exhaustive tests on memory for parts of programs, announcements, names, and on attitudes aroused toward products. The educator is interested in knowing what is remembered from radio programs, and he wants to find out whether listeners can think more logically as a result of hearing a series of programs.

When the purpose of the investigation has been determined, the question, Should the questionnaire be used? must always be asked

²Straus and Company questioned listeners to decide how often its radio-news commentator, H. V. Kaltenborn, should speak over the air. The listeners were to decide between two and three times. As might have been expected, the returns were in favor of three times. Naturally, those persons who were interested in Kaltenborn would answer, and naturally such persons would want to hear him more rather than less. This question is one which secures no useful result so far as the ostensible purpose of the survey is concerned.

³The report forms used in connection with the psychology talks of the National Advisory Council on Radio in Education have been analyzed and the results published in the *Psychological Bulletin* (287).

and answered satisfactorily before undertaking a questionnaire survey (*see* Note 57). A discussion of the advantages and disadvantages of the questionnaire will help to answer this question.

ADVANTAGES AND DISADVANTAGES

Taking up the disadvantages first, the ordinary questionnaire received in the mail does not demand an answer in the same imperative way that a personal interview does (*see* Note 58). If the questionnaire recipient attempts to answer the questions, he probably will not answer all of them. If a particular question is somewhat general, he will seldom give a complete answer; much valuable information may be lost to the investigator in this way. The fact that the respondent has to write his answers, and that writing takes time, serves as an explanation of his disinclination to answer questionnaires.⁴ The general questionnaire rule is that the longer the questionnaire and the more writing involved, the fewer the answers. The difficulty in obtaining answers to certain questions, and indeed in obtaining any answer at all to the inquiry, tends to make the conclusions drawn from the average questionnaire sampling of dubious generality.

Nevertheless, the questionnaire does have practical advantages. It is primarily a means of drawing information from a large area. Since questionnaires can be sent through the mails—indeed, this is the type of questionnaire that the name most often suggests—it is possible to receive answers to any particular question from persons widely distributed. In as much as questionnaires can be mailed simultaneously, and most persons fill them out within a definite time after arrival of the form, the sampling is made at one time. This is highly desirable in cases where the results may change shortly, in fact, would change during the course of an interview investigation. Furthermore, honesty is costly, and to insure it in interviewers is sometimes difficult and involves elaborate checks. The questionnaire sent out by mail and properly keyed to identify the replies makes certain that the returns will be genuine.

As compared with the interview, it is often an advantage to have the questions in printed form, because the respondent can go over them several times to make sure he understands them. The

⁴Presumably, but not necessarily, the written replies received represent more thought on the part of the questionnaire respondent than on the part of a similar person interviewed.

relation of one question to another is easily seen. Furthermore, the form of the printed question is invariable, and in some cases this may be desirable.⁵ The questionnaire can be standardized, tested, and controlled more readily than the interview.

QUESTIONNAIRES COMPARED WITH INTERVIEWS

We can set down on the one side the qualifications of the questionnaire, and on the other side those of the personal interview. It must be remembered that the shorter the questionnaire is, and the more clearly it is phrased, the more are its qualifications enhanced. A greater number of questions may be asked in an interview.

QUESTIONNAIRE	INTERVIEW
Questions standardized	Questions suited to persons interviewed
Selective ⁶ and incomplete returns	Returns approximately complete
Easily controlled by person in charge	Difficult to insure honest and comparable returns with different interviewers
Wide geographical distribution of answers easy to obtain	Concentrated returns from one section easy to obtain
Sampling done all at one time	Sampling carried over a period of time within the abilities and number of interviewers

Although, as commonly used, the returns for questionnaires are selective and incomplete, the contrary experience of Toops may be cited to show that under certain conditions this is not so. He has found that with a sufficient number of follow-up questionnaires or letters, almost 100-per cent returns may be secured (*see* Note 59). Contrasting a relatively complete questionnaire return due to extensive follow-ups with the less gratifying results of some personal-interview surveys, Toops states that at Zanesville investigators were only able to interview 68 per cent of householders (104).

⁵It is a mistake to think, however, that uniformity has been obtained when the questions are standardized and presented in the same way for each listener. On the contrary, the significance of the question may entirely escape one listener and yet be fully apparent to another simply because of the wording. The deft interviewer can perceive this difficulty and avoid it by suiting his questions to each listener, so that the proper meaning is conveyed.

⁶Elder seems to have shown that for a two-question questionnaire the results are not appreciably different from those obtained by the personal interview (37). Starch offers evidence which would make one believe that the percentage return is decidedly different for different classes (101). The person who uses the mail in making a questionnaire should, if possible, endeavor to check his results with a personal-interview survey.

PREPARING AND DISTRIBUTING QUESTIONNAIRES

In this section, the problems involved in selecting the content, phrasing questions, and sending out the questionnaires will be considered. Aspects of these problems must be discussed in the next section in describing the actual questionnaires, report forms, and tests. Nevertheless, the general points may be taken up here.

As an aid to the proper use of the questionnaire, the Bureau of Educational Research at Ohio State University has noted down certain difficulties in the employment of questionnaires for research and survey purposes (702). Coupled with Toops' exhaustive treatise on the questionnaire (104), rather thorough information is available on the subject of questionnaire construction. Some of the suggestions applicable to radio questionnaires are given in later sections, and they are in part applicable to report forms and tests.

GENERAL SUGGESTIONS TO QUESTIONNAIRE CONSTRUCTORS

The investigator should check the preliminary form of the questionnaire on a small sample and revise it. This enables the poor questions to be eliminated (*see* Note 60).

The name and authority of the person making the survey should be put on the questionnaire. This is often necessary in persuading the recipient that it is worth answering. In cases where it would invalidate the results to have the organization making the survey known, this can be handled through real or dummy names. The name of the Massachusetts Institute of Technology was employed in the case of the Elder survey on brands used in the home although the Columbia Broadcasting System made final use of the data.

A concise statement of the reason for sending the questionnaire should be included. No recipient likes to be told to do this or that, but many can be persuaded that they are rendering a service in returning the questionnaire. The percentage of returns will depend vitally upon this statement of justification (*see* Note 61). Elder's letter to housewives stated, "Much of the important work done at universities today depends upon the assistance of women."

Careful consideration should be given to the question of asking the respondent for his signature or name. This depends upon whether the respondent's signature will affect the accuracy or completeness of the responses, and whether signatures are needed to add the weight of authority to the data gathered. In radio surveys, it may be desirable to follow up some of the returns from a previous

survey. This was done with returns from the third Price-Waterhouse survey for Columbia (39). Probably in such cases it is best to secure signatures only from those persons who wish to put them on the questionnaire, which procedure was followed in the Elder surveys and the Price-Waterhouse surveys. Postmarks furnish geographical checks, and the cards can be coded individually.

Many questionnaires set precedents. This is true where yearly surveys are made, and it is necessary to use the original form for the sake of comparable data, although many possibilities for improvement may be seen. Every questionnaire should therefore be carefully constructed so that its use the following year, or afterwards, will not be hampered by the need for extensive revision.

CONTENT OF QUESTIONS

The content of the questionnaire is extremely important, and it is here that in lengthy questionnaires many mistakes are made.

Each item should be carefully checked to see whether the information being sought might not be available from some other source. All radio stations have received questionnaires asking for call letters, frequency assignment, power, time of operation, and the like. Much of this information could be readily looked up in log books or obtained from other sources.

Only the necessary questions pertinent to the study of the problem should be included, and the questionnaire should be as short as possible.⁷ The Price-Waterhouse post-card survey with two questions offers an admirable example of observance of this caution.⁸

Only those questions should be asked which the respondent can and will answer accurately, if at all. It is inexpedient to ask the radio listener whether radio "made him buy advertised products." The listener will probably resent the suggestion that anything

⁷Nevertheless, it is wise to experiment empirically with an increasing number of questions in order to determine the relation between number of questions and number of returns. It may well be that additional information could be obtained with little falling off in the percentage returned. It may also be true that too many questions have been asked and that it would be on the whole more efficient to send two questionnaires.

⁸Columbia justifies the two questions chosen for its Price-Waterhouse survey by pointing out that besides being simple questions, the second is an extension of the first and does not involve a change of category or concept (39). If the listener has already put himself in the frame of mind necessary to answer further questions of the same order, and in fact has perhaps already thought of the answers in answering the first question, then it is permissible to ask these further questions without fearing a loss in return or accuracy. Thinking of the station listened to most involves considering those listened to regularly.

made him buy any product, and therefore not give a truthful answer. Furthermore, with the prevalence of radio advertising, is any other answer than "yes" plausible? It is best not to ask for generalizations of practices in a community where the respondent must give averages. Similarly, it is hard for the respondent to give causes, data requiring research on his part, or technical information with which he is not familiar.

In as far as possible, secure facts, or facts about opinions, rather than opinions.⁹ The question, "Do you like radio advertising?" is not good. What possible interpretation can be put upon the answers to such a question? It is better to select two similar programs, one sustaining and one advertising, and find out which the person listens to and which he prefers.

TYPE OF QUESTION

The formulation of each question should be studied and tried out so that it is interpreted correctly.¹⁰ The question, "Do you like educational programs?" assumes that the listener knows what an educational program is. In such cases, sample programs should be specified. In a WLW questionnaire the question, "Do you like symphony music?" was asked. Some of the replies indicated that the respondents did not know what the term meant (606). As few abstract words as possible should be used; concrete illustrations should be employed freely; and concepts should be simple.

"Yes" and "no" replies should not be asked for when the question assumes a condition which may not exist. For example, "Do you like the broadcasts of the Metropolitan Opera?" is such a question, unless a question on radio ownership and opera listening has preceded it. If such questions are asked, the questionnaire must indicate what to put down if the respondent is an exception.

All so-called leading questions should be avoided. This point has previously been stressed, but may be mentioned again. The

⁹The report of the International Institute of Intellectual Cooperation recommends the use of the questionnaire only when it is a matter of gathering facts of information well known to the person answering (276). If the person makes interpretations or draws conclusions, the questionnaire is not suitable.

¹⁰On a WOSU questionnaire, listeners were asked to mark the hour when they could best listen to educational talks and programs. A list of hours was given so that the best hour could be checked. But the meaning of the question was not clear. The singular "the hour" was not stressed sufficiently. Of the general listeners, 59 per cent in one group and 57 per cent in another group checked more than one hour. Similar questionnaires sent to school officials showed only 31 per cent of those returning cards had marked more than one hour (73). The ability of the group to follow directions must be considered.

question, "Do you like radio stations which put on good programs?" is such a question. It simply answers itself since it is assumed at the outset that good programs are liked.

Where facts are requested, examples of answers may be given. Where opinions are concerned, however, it is better to give all possible answers as a check list rather than single answers as examples. In setting up these possible answers, all the more common opinions may be determined from the literature or preliminary tryout of questions (*see* page 33). Additional blank spaces should be left in the questionnaire for opinions different from those given.

Two questions on the same point should not be asked unless for purposes of checking the reliability of the answer. If the age of the radio set is asked, do not ask also for date of purchase unless this is needed for some reason. On the other hand, the questionnaire constructor should not be afraid of redundancy and repetition if the information is important, and it is essential to avoid any possible misunderstanding—in this case, purchase of second-hand radios.

Questions should be included to check answers which may be unreliable. On a questionnaire, this can be cared for by asking the question in two different ways (*see* Note 62), or by obtaining the judgment of two people. A questionnaire distributed to pupils by the United States Office of Education asked them to check the type of programs most enjoyed. Then the teachers were asked to check on a separate questionnaire the type of program most enjoyed by pupils (51). This furnished a check in the sense that the teachers by observation could tell what programs the pupils liked.

The amount of writing required of the respondent should be reduced to a minimum. The respondent should never have to do any writing if any simpler method of answering can be devised.

Wherever possible, opportunity for short one-word or check-mark replies should be provided. The question, "How often do you listen to Station WWW?" is poor. Much better is the question, "Circle one of the answers to show how often you listen to WWW—daily, every other day, twice a week, once a week, only rarely, never." No unnecessary calculation or computation on the part of the respondent should be asked for.

MECHANICAL SET-UP

Sufficient space should be allowed for each reply, and any qualifications which the respondent desires to make. Ease of tabulation

is obtained by numbering items, classifying them, and dividing the questionnaire into parts. For accuracy, this numbering should be done in the answer space rather than at the beginning of the question. The answer and its number should always be as near together as possible. The questionnaire should be arranged not only with the convenience of the respondent in mind, but with consideration of easy and efficient tabulation of the responses. Paper should be used which can be written on with ink or pencil.

ADMINISTRATION

Administering questionnaires properly is an art in itself. The questionnaire will vary according to the way it is given. Some questionnaires are sent by mail, others are filled out in a group meeting, and still others, called schedules, are taken to the person individually and made the basis for a personal interview. The means of distributing the questionnaire should be decided before it is made up.

Proper sampling procedures should be followed in accordance with the method of questionnaire distribution chosen (*see* Note 63). In some studies questionnaires have been submitted to restricted and atypical groups, without special emphasis on this fact (*see* Note 64). In many other studies, mail questionnaires have been sent only to telephone owners.¹¹ In correcting for these sampling difficulties, care should be exercised that others are not incurred.¹² Methods of distributing questionnaires are discussed in the next section.

Naturally, most radio questionnaires will include a return envelope or card, either stamped or unstamped. It is desirable that the writing of the return address be not intrusted to the respondent.

The advisability of first asking the respondent for his co-operation should be considered, if the questionnaire is of any length. In some instances, it is better to gather information from a small number who are willing to be careful and accurate in making replies.

¹¹The Tanki Mail Advertising Agency believes that the telephone in the home reflects probably more accurately than any other single factor the purchasing power of a market area. It also believes that telephone-directory sampling is accurate in distributing the questionnaires geographically over a densely populated urban area (102).

¹²Correcting for one difficulty in sampling may bring about others. Elder in studying the influence of radio advertising purposely chose only telephone homes, because the economic differences between the radio homes and non-radio homes would not be great for telephone owners (29). However, as discussed in Note 80, telephone owners with radios may differ from telephone owners without radios in other respects.

The foregoing paragraphs adequately describe the cautions which should be observed in making up a questionnaire. Of course, there are numerous other points concerning wording of questions and follow-up procedure which are interesting and valuable. Readers desiring an extensive treatment of the subject together with details for mechanical tabulation should consult a recent book by Toops (104).

TYPES WITH ILLUSTRATIONS OF THEIR USE

We can classify the questionnaires, report forms, and tests as to types of questions included, the method of distribution, and the persons to whom they are addressed, to say nothing of the purposes for which they are used. A rough classification scheme for the radio questionnaire without reference to purpose might be as follows:

- Type of question:
 - Direct
 - Completion
 - Recognition (check mark)
- Method of distribution:
 - Mails (post cards and letters)
 - House-to-house (door bills)
 - License application
 - Group meetings
 - Questions asked by radio
 - Comment cards in packaged goods
 - Polls in magazines and newspapers
- Persons to whom addressed:
 - General listening public
 - Members of the broadcasting organization
 - Special listening groups

Practically every aspect of this classification can be illustrated in actual use of the questionnaire, as will be made clear in this section. A scheme for report forms would be similar, but restricted. Tests have not been used so widely.

TYPES OF QUESTIONS

Questionnaires may be differentiated by the way in which the questions are asked. A great many ways of asking questions have been devised in the attempt to secure the most accurate answers. The so-called recognition type of question has been discussed previously (*see* page 33). Besides this, a completion type can be used. Then a direct question may be asked. A questionnaire on

the programs remembered from the day before could be phrased as follows: (1) What programs do you remember hearing yesterday? _____; or (2) The musical programs I heard yesterday were _____, the talks were _____, the dramatic sketches were _____; or (3) Check the programs which you remember hearing yesterday, _____ melody moments, _____ talk on home economics, _____ golden dream orchestra, and so on. It is important that we know which of these types of questions is most suitable and which has the least error in response. Experience seems to show that the number of answers increases and the accuracy decreases in passing from the first suggested type to the third. In a test of the ability of listeners to recognize programs heard, it was found that many false programs were marked (*see* Note 65).

So many questionnaires and report forms have employed the direct question that it does not seem necessary to give examples of its use. The completion question has not been so often used, although it is desirable because the respondent need not write so much. Columbia's question, "What radio station do you listen to most? Its call letters are _____" illustrates this type. Completion questions have frequently been used on tests.¹³ The recognition or check-mark type of questionnaire has been employed but not widely. A manufacturer on a farm network had no reports on farm listening and wanted to check his program. He sent out a questionnaire listing about twelve well-known and little-known programs. His program was placed in the middle. In this way he was able to compare the interest shown in his program with that in the others (231). Similarly, a plan was worked out to send out a list of all network programs asking the recipient to check the three he liked best. The list was on a return post card with a so-called "blind address." The alphabetical list of programs was shifted by placing the top ten at the bottom after each thousand had been printed. In this way the effect of position in the questionnaire list was discounted (76).

METHOD OF DISTRIBUTION

Mails.—As an example of the simple mail questionnaire used on a wide scale, the Price-Waterhouse survey for Columbia serves well. Double government postal cards were mailed to telephone

¹³Jackson, of CKY, sent a completion test form to all those who wished to participate in a contest dealing with information given in a series of nature-study broadcasts (618).

addresses in cities on the Columbia Broadcasting System Network, and in the case of the 1931 survey, to towns within the intense listening area. Including the fourth survey, almost one million questionnaire cards have been sent out.

House-to-house.—In a few cases, questionnaires have been left at the door after the fashion of the ubiquitous handbill. Needless to say, it is necessary to make some provision to have the filled-out questionnaires returned (business envelopes or cards).

License application.—In Denmark the relative popularity of the different Danish educational broadcasts was first systematically investigated in 1929 by means of the questionnaire. Each listener answered the questions when taking out the annual license (79).

Group meetings.—Meetings can be canvassed to find out whether members attending the meeting have listened to certain radio programs broadcast. During Farmers' Week at Ohio State University, registration cards were distributed which contained these three radio questions, "Do you get WOSU? Do you listen to Farm-Night programs? Shall we mail you programs of Farm Night?" (99).

In some cases, classes of school pupils have filled out questionnaires or reports on program preferences. In other cases, they have taken questionnaires home to their parents. Questionnaires have been given to nine hundred seventh- and eighth-grade pupils in the Peoria public schools (726); to one thousand high-school pupils in schools in New Jersey (271); to nearly one thousand first-through eighth-grade pupils in Ohio schools (67); to pupils in the Oakland city schools (727); to pupils in New York schools (496); and doubtless to many others. The preferences shown by these children are referred to in Chapter IX.

Minneapolis, faced with the problem of finding out what use adults made of the radio to improve their leisure time, had school children take questionnaires home to their parents or guardians. Questions on how much radio listeners listen, when radio listeners listen most, what kinds of programs they prefer, and what kinds of programs they would like to listen to more were asked. Four thousand of ten thousand questionnaires were returned (316).

Comment cards.—Questionnaires have been used as inclosures in packages or as applause cards (comment cards) obtainable at stores. Urist suggests that such queries as, "Was this package or product bought as a result of advertising? If so, in what form? Was the radio program ever heard? Program's name? Was it liked?"

could be included on these questionnaire cards wrapped with the product (341). A typical example of an applause card is that issued by the Edgeworth Tobacco Company. The card solicited applause for artists, containing spaces for name and address of sender, name of station, time of program, and comments (416). Further in this same line, local dealers and stores can have the customer fill out a card when buying goods. The Household Finance Company had clients fill out a form at its request. This form checked the particular type of advertising which brought the clients to the concern. Every type of medium from telephone listing to radio was covered (341).

Questions asked by radio.—Some questionnaires are given orally over the radio, and listeners are asked to write down and send in their answers. The Sheaffer Pen Company asked three questions of the listeners to its program. The questions were: "What do you like best about this program? What is your favorite program? What do you like best about it?" A reward in the form of a sample of ink was given for the answers (488). Stokowski asked listeners to write in concerning the reception of the Philadelphia orchestra and inform him whether the low tones or high tones came over better, or whether the tones were in balance. As a further question, he asked whether all the instruments could be heard clearly.

Tests have been given over the air, and the listener has either copied down the questions to answer them later or replied to questions requiring brief answers at the time they were given. Interesting suggestions as to the possibility of using radio in psychological research come from a report made by Bingham based on the experience of various psychologists in using the radio. He mentions that Root, of Hamline University, included the Seashore pitch-discrimination records as a demonstration and asked the audience to send in their results. A large return was obtained. These records reproduced pairs of tones of different pitch, and the audience was asked to judge whether one tone was higher or lower than the other. Probably one of the first contacts of the radio audience with mental tests came through Kitson. He introduced sample tests in his radio talk and had the audience take part (701).

Polls in magazines and newspapers.—From time immemorial, polls have been taken. Radio stations, magazines, and newspapers alike have reveled in them. Since the poll is a form of questionnaire, it is included here although the method of distributing the

questions and harvesting the answers is not one to win the poll respect. Mail questionnaires, house-to-house questionnaires, and questionnaires distributed at meetings may follow sampling procedures. Comment cards, questionnaires broadcast by radio, and ordinary polls (radio, magazine, newspaper) depend too much upon listener interest for response and do not reach a fair sampling of the radio audience. A common poll procedure is to print questions in a magazine or newspaper and invite all interested to write in their answers; that is, cast ballots for radio favorites. In other cases, printed ballots are circulated through stores, by house-to-house distribution, at local meetings, and by every other available means. The purpose of many polls, however, is not to secure information on the question in hand, but to obtain publicity for the organization conducting the poll.

To mention but a few of the many polls which have been made, those with the following purposes may be listed: Bosch poll to determine the seven leading radio stars of the country. Consider the method of sampling, "The ballots will be distributed through the newspapers, radio stations and stores in a comprehensive tie-in with the company's advertising campaign" (446); the *Literary Digest* poll of likes and dislikes (506, 507, 508, 509); Dupont poll of favorite melodies (483); Hart, Schaffner and Marx football stars (413), *New York World-Telegram* poll of radio editors to choose an "All-American Radio Team";¹⁴ Music Corporation of America poll of radio editors for All-American dance orchestra (recognition test used) (415); *Wallace's Farmer and Iowa Homestead* poll of farmers with the question, "What station do you listen to regularly?" (706); *Radio Digest* poll for favorite station (262); in England the polls on program preferences by the *Manchester Evening Chronicle*, *Manchester Guardian*, *Everyman*, *Daily Mirror*, *Daily Mail*, and *Daily Herald* (16); and an Australian "plebiscite" by newspapers on listeners' likes and dislikes for programs supplied by the Australian Broadcasting Company. Out of seven hundred fifty thousand possible listeners, less than five thousand expressed opinions in this Australian poll (11).

The results of these polls have been used in part to feed the

¹⁴The *New York World-Telegram* polled 132 radio editors in all sections of the United States and in several Canadian cities because "we believed that their constant check on the changing tides of the aerial scene made them well equipped to consider the matter judiciously" (253). The results of this poll are given in Note 93.

vanity of radio stars, and since their results, due to sampling difficulties, are so at variance, many are the poll winners. Then, too, advertisers and broadcasters have pointed to poll results to reassure themselves as to the effectiveness of their programs (706, 262).

PERSONS TO WHOM ADDRESSED

General public.—The questionnaires sent to listeners at large, the general public, are too numerous to list. The questionnaire sent by Columbia may again serve as an illustration. These Columbia questionnaire cards were sent to telephone homes.

Members of broadcasting organizations.—Broadcasting organizations often solicit information from local members, dealers, customers, or other persons who have intimate contact with the organization putting on the program.¹⁵ Chevrolet issued questionnaires to its dealers to find out how successful the programs sponsored by it had been. The questionnaires sent to 4,366 dealers asked: "Have you heard the Chevrolet Chronicles? What do you think of them? Have your prospects mentioned them? About how many prospects have mentioned Chevrolet Chronicles? What do prospects say?" (457). This questionnaire illustrates the type that a program sponsor might send to his representatives. Checks of yes and no, and good, fair, and poor were indicated as the answers for these questions.

A large department store sent a four-question questionnaire to one thousand of its charge-account customers. Two of the questions asked were, "Do you listen to the———program over Station W WW from 8:00 to 9:00 A.M.? If so, how often?" On the basis of returns from such a questionnaire, the store decided that the program should be sponsored by it (45).

In educational circles, and for educational purposes, the questionnaire has circulated freely. The National League of Women Voters organized listeners' groups and had them fill out questionnaire report forms. In 1931, these so-called "laboratory groups" sent their answers to a prepared list of questions to the radio office week after week. These answers were to supply a running commentary on the points about which the committee felt the greatest need for information (86).

Rarely, other organized groups are asked to co-operate in fur-

¹⁵Endicott Johnson had four hundred of its salesmen listen to various stations. The salesmen were asked to submit in writing an opinion stating the date upon which they had listened, the hour of the day or night, and whether the reception was good, excellent, fair, or poor (119).

nishing information. WPG determined its "coverage" by making inquiry of the chambers of commerce in a number of cities (435). Questionnaires have also been addressed to groups of professional persons to obtain group opinions.

Special listening groups.—Under special listening groups may be included general occupational groups of individual listeners for whom programs are specially prepared or other groups which have been brought together by an interest in the broadcast. These classifications are made up of rural listeners¹⁶ as such, teachers using programs in classes, and others.

KOAC formed special groups to listen to programs and checked on the membership by means of report forms and blanks. Any group could enroll as a radio club, even though it consisted of only two neighbors. The blanks asked for a record of the attendance¹⁷ as well as for comments on the meeting: "Questions raised upon which further information is desired. Your opinion of the radio broadcast.——Radio reception: excellent—good—fair—poor—." The reports were to be mailed to the station immediately (620).

Some of the most important measurement of the effectiveness of radio broadcasting has been done in the schools, and therefore the reports of teachers constitute a significant document on the results achieved by broadcasting. It is for this reason that questionnaires, report forms, and tests for the use of teachers and classes are considered here in such detail. The facts that attendance at the broadcast programs and administration of informal tests can be so easily controlled in schools help to explain the value of the reports.

In 1930, Arnold sent an exhaustive general questionnaire to secondary-school principals all over the United States (*see* Note 66). This survey determined the percentage of pupils using radio in the schools for which returns were made. Reasons for not using the radio were also obtained as well as curves for the growth of the use of radio in schools. The schools reported which courses had been successes and which had been failures. After replies had been secured from the principals, the teachers named in the replies were sent further questions and asked to rate programs (5).

¹⁶The Bureau of Agricultural Economics of the United States Department of Agriculture sent seventy-eight hundred questionnaires to farmers in New England to determine what agricultural information was desired and how well the broadcasts were being received (725).

¹⁷WEAO broadcast a course on parental education and asked parents to send in filled-out attendance cards for the broadcasts heard. In addition, more formal reports were requested. The response was not great (226).

Most Schools of the Air have used report forms, either for the separate subjects and single broadcasts or for all the broadcasts during the whole term.¹⁸ The Ohio School of the Air uses both. The Wisconsin School of the Air secured reports from teachers at the end of the first semester. The various subjects were listed, and the person reporting was asked whether these had been used regularly, occasionally, or never, in his school. In addition, information was secured as to the approximate number of listeners each time, the grades the program was best suited for, and a statement on the desirability of continuing the program. Finally, a space was left for "frank criticisms and suggestions regarding the subject-matter and the speakers." All of these questions for the entire number of subjects offered were put together compactly on one page with a place for the teacher's name, the school, and the grades (626). This type of questionnaire can be recommended for a survey of the general effectiveness of the radio programs.

For specific criticism, the method utilized by Maddy is suitable. Maddy distributed free lesson booklets in connection with his teaching of band instruments over the radio. These lesson booklets contained post-card questionnaires, called "criticism cards," which could be detached and mailed after each lesson. The filled-out cards helped Maddy correct weaknesses in the method of presentation, especially in regard to timing each lesson to meet the average student's ability (293). Some such control is necessary in all types of radio programs where the listener is expected to be active during the broadcast. It is certainly necessary in foreign-language lessons where the pupil must pronounce the words after the radio teacher has said them.

Worthy of note is a study made by Tyler of the Oakland schools on the use of news broadcasts in the classroom. After visitation among various schools, a comprehensive questionnaire check list was drawn up and submitted to schools using the broadcasts (105). The importance of such studies lies in the fact that they are carefully carried out and that they are carried out by the school system using the broadcasts rather than the broadcasting agency itself. More frank and useful reports are obtained in this way.

¹⁸The North Carolina School of the Air obtains letters and reports from teachers and school officials. The enrollment is determined from the reports sent in by schools. Report-form questions include the number of pupils listening, number of schools with radios, number of schools listening regularly, and number of schools making provision for parents to hear broadcasts (90).

The Ohio School of the Air has been experimenting with teachers' report forms for some time. The first one used was constructed by Koon and is described in an article by him in *Education on the Air*, 1930 (284).¹⁹ In revising this form, filled-out reports were carefully checked to determine which questions the teachers had answered and which they had not. The questions which the teachers had not answered were eliminated. Other questions were rephrased and rearranged. The new report form (second form), while preserving a place for comments and written remarks on the lesson, was otherwise entirely of the objective multiple-choice type. For each question asked, several answers were indicated, the teacher being requested to check one or more. These answers had been selected for the most part from those made by teachers and therefore corresponded to the type of answer usually made. This report form is reproduced in *Radio, the Assistant Teacher* (44, see page 206).

There are several considerations to be dealt with in arriving at a good report form. First, the report form must be as short as possible with due respect to the amount of information needed. An impression of brevity is gained by having all the questions on one page. Second, the questions must deal with fact and observation as far as possible. Third, all questions of opinion or judgment are better answered when some form of comparison is possible, as between two lessons or talks. This was determined definitely from the response to the National Advisory Council on Radio in Education psychology report forms. Here the replies to such questions as, "How was the delivery of the speaker?" were almost uniformly "excellent." Fourth, some means of motivating the person reporting and making it easy for him to return the report form must be sought. Fifth, expense must be considered in utilizing the report form on any large scale. The third Ohio School of the Air report form, which is reproduced in the Appendix, was an attempt to consider all five of the above points. For factual questions suggested answers were given. On matters of opinion the teacher compared one broadcast in the series with another (see Note 67).

In England, as in other countries, much has been done in developing means of reporting school programs so that the broadcasters

¹⁹In connection with programs on vocational guidance, similar report forms were sent to 263 high schools in Colorado and numerous schools in other states. The plan was to receive a reaction from every high-school principal immediately after each program had been heard, but few of the schools responded in this manner (729).

may know what types of programs are impressing the pupils and what activities they undertake because of the programs.²⁰ The subcommittees in charge of the different programs such as history and geography have been interested in enlisting teachers' support. The history committee asks teachers to send in regular reports on the material and presentation of the broadcast talks, together with any suggestions for improvement and information regarding the way in which they themselves relate the broadcast talk to the ordinary work of the school (63). In both history and geography, teachers have been sent questionnaires and report forms to fill out. Teachers have also kept weekly diaries (21). These reports are given careful consideration by the British Broadcasting Corporation, and the speakers are also asked to regard the suggestions contained in the reports sent in week by week by teaching members of the appropriate subject committee, or in letters received from other teachers. Unfortunately, one of the difficulties in training radio speakers arises from the conflicting opinion of teachers regarding the success or failure of particular broadcast talks (27).

Work sheets and compositions are reports made by pupils and are a necessary supplement to the report by the teacher. For the Cleveland schools, a complete set of work sheets or activity blanks for pupils' use has been developed. On these work sheets, the pupils answered questions, traced routes, mapped products, and made calculations. By analyzing these work sheets, it was possible for the broadcasting teacher to know which points he had made clear and which he had not. This was especially true in elementary arithmetic where each teacher reported the exact mistakes made by the children in her class. With such information at hand, the teacher who was broadcasting arithmetic could accurately diagnose the difficulties and present lessons suited to the specific needs of the pupils. The National Broadcasting Company issued work books for its Music Appreciation Hour. From the books sent in, the National Broadcasting Company was able to judge the effectiveness of the broadcasts in teaching certain points (622). Undoubtedly, more careful consideration and check are needed in making out work books for pupils. In doing this, the purpose of the work

²⁰Even in Sweden (213) and Germany (254), the questionnaire has secured valuable information on school broadcasting. In Sweden a questionnaire was sent out by the department of education to all the schools which had requested programs during the season. Information on the number of classes which had followed the talks was obtained.

book should be kept clearly in mind. It is possible to use the books as a check on the radio lesson, and it is possible to use them as a help and supplement to the radio teaching. The uses should not be confused, and the latter is by far the more important educationally. If special work sheets or rating sheets are not available, pupils may take notes on the radio broadcasts or make summaries and abstracts of the talks. The making of a summary is in itself a comment on the effectiveness of the talk, since a loosely organized talk is hard to brief. Students in Iowa State College listened to the National Advisory Council talks and made such summaries (327).

In England, compositions were submitted to the British Broadcasting Corporation from a large number of schools which took geography in 1929 and 1930.²¹ These compositions were carefully studied, and certain conclusions were drawn with regard to the value of the various broadcasts in the series (23). Compositions are especially valuable when it is desirable to find out what part of the broadcast leaves a lasting impression, and what the pupils can do in relating the material to their other classroom work or their daily lives. In the case of the British Broadcasting Corporation history broadcasts, the children were asked to write a composition about any one of the single broadcasts in the series. Their choices were therefore a measure of the relative influence of the different broadcasts.

In some cases, these work sheets and compositions have come to the dignity of a test. In rare instances, college credit has even been given for satisfactory completion of these tests. Here we are not dealing so much with classes formally organized outside of the broadcasting station as with individual listeners following a radio course. Oglethorpe University and the University of Utah (545) are among the universities which have given credit for courses and required examinations. Oglethorpe, in its correspondence radio-conference courses, proposed to offer standard correspondence courses with the conventional readings, work sheets, and tests. It was planned to vitalize such courses with radio lectures and illus-

²¹A principal in one of the English schools feels that the composition is one of the best ways of following up a broadcast lesson. He regrets that the British Broadcasting Corporation has discontinued the practice of selecting the best essays and announcing the results over the radio. In his own school the children write compositions after the broadcast. The composition exercises are corrected by the teacher in the usual manner. The child with the highest number of marks is then allowed to copy his or her composition into a special book kept for that purpose, and thus a complete record of the course of lectures written by the scholars themselves is obtained. The pupils compete eagerly for the privilege of writing their composition into the book (300).

trations and at intervals to hold conferences on the campus between the teachers and radio students (91). Many other organizations and stations have asked listeners to send in examination papers, although credit has not been given. Sometimes these tests have been specifically constructed to diagnose the effectiveness of the radio course, rather than to judge the proficiency of the student. The University of Wisconsin tested a music and current-events course broadcast to schools and found them more effective than ordinary classroom teaching (245). Similarly, the Bureau of Educational Research at Ohio State University carried on an extensive testing program on school geography talks and French lessons (69, 68).

In Russia, systematic courses have been given by various radio universities. The followers of these courses sent in their home work for correction and comment to the universities. There was a special department to handle correspondence from listeners and suggestions for improvement. In 1931 the number of radio scholars at Moscow alone was said to have reached one hundred thirty thousand (79, 241). Likewise, Switzerland found in the radio a means of reaching her people educationally. Courses for apprentices in the various professions were given. These courses were made compulsory under law for young people in isolated districts, and examinations were based upon the lectures broadcast (79).

Tests on information retained by the pupils are not the only tests which are of importance in insuring the proper use of radio as a classroom aid. Above everything, both the broadcaster and the teacher should be sure that the receiving apparatus is working properly, and that the pupils will hear everything spoken into the microphone without fatigue. Reception is dependent both upon the apparatus and the acoustics of the room in which the pupils listen. To guard against the danger that teachers and children may become used to a standard of reception which completely falsifies the voice of the broadcast speaker, and which may impose a definite, if imperceptible, strain on the hearing of the children, special reception tests have been devised by the British Broadcasting Corporation. The tests consist of word lists which are broadcast for five minutes. Schools are urged to receive three of these tests, the first at the beginning, and the other two about three-quarters of the way through each term. In taking the reception tests, classes of between 10 and 15 children (twelve to fourteen years old) record three of the broadcast word lists. The children

are asked to record what they hear even though this may be an unintelligible word. These lists are corrected, and the receiving set is judged by the Central Council for School Broadcasting (26).

SPECIAL CONSIDERATIONS

One of the important considerations in making a survey is cost. On the face of the matter it would seem that the cost of a questionnaire survey would be much less than that of an interview survey. This assumption, however, is based on the number of contacts and not on the number of completed returns. A personal-interview survey by telephone will net about 80-per cent returns from all calls attempted and 98 per cent of all calls put through. The real cost comparison with a 10- to 15-per cent return on a mail questionnaire becomes clearer when this fact is considered.

In the Crossley survey interviewers are paid at the rate of about 15 cents a telephone call, which includes time consumed in selecting names according to an economic-level sampling procedure. Hettlinger computes that the telephone survey including collection, tabulation, interpretation, and general overhead costs about 40 cents per call (269). In difficulty of questions the 1932 Elder survey is comparable to the Crossley survey. Even with the name of the Massachusetts Institute of Technology on the letterhead, this survey netted a 12-per cent return. Under the three-cent postal rate the cost per return would have been 27 cents, not including costs in addressing the questionnaires. The two-question Price-Waterhouse post-card survey (18 per cent replies) cost about 11 cents per completed return, also excluding addressing costs.

For surveys covering a period of time and including many questions, the interview seems less costly. For quick, extensive surveys with few questions the mail questionnaire may cost less.²²

PERCENTAGE OF RETURNS

In sending out questionnaires, the use of a post card or letter may make a decided difference. Since the expense of mailing each is not the same, it is important to know the relative return.

²²In the questionnaires mentioned, no follow-up was included since results for a short specific period of time were desired. Toops believes that the follow-ups on a questionnaire get complete replies with little added cost. He estimates, however, that six months is required properly to follow up the first issue of the questionnaire (104).

Columbia made test mailings to settle this point before undertaking an extensive survey. It was found that double post cards without envelopes pulled higher percentages of replies than return cards inclosed in envelopes with personal letters (37).

In estimating the probable return from questionnaires and the advisability of using them, it is valuable to know the experience of others. Accordingly, some statistics on the number of returns for different types of questionnaires are given here. Needless to say, these are only representative for the specific type of questionnaire, the time it was sent out, and the persons to whom it was sent. None the less, the returns are indicative. The Minneapolis questionnaire distributed through the schools netted a high return in 1931. Although the questionnaire was somewhat lengthy, 40 per cent were brought back (316). But a questionnaire sent to schools by the United States Office of Education, in connection with the program of the American School of the Air, brought in only a 10-per cent return. The questionnaire was rather long (51). A Pennsylvania farm survey netted about a 20-per cent return from farm radio owners selected at random in certain counties (93). WOSU questionnaires (quite long) brought in less than 10-per cent replies from city and rural listeners (71). A New England survey of farmers was honored with a 12-per cent return (725). A questionnaire sent to sixty thousand Colorado farmers brought a return of 2.5 per cent (601). The Tanki survey of Pittsburgh in 1930 obtained a 16-per cent response to a medium-sized questionnaire (102). Returns on the Price-Waterhouse one- or two-question double post-card surveys were as follows: cities in 1930, 17 per cent (38); cities in 1931, 16 per cent, and listening areas, 17 per cent (37); cities in 1931, 17 per cent (39); cities in 1932, 18 per cent (31). The constancy of these figures is impressive. The two Elder surveys for 1931 and 1932 netted 14 per cent and 12 per cent for a rather lengthy and difficult questionnaire return card inclosed with a letter bearing the heading of the Massachusetts Institute of Technology (29, 32). Toops quotes Eigelbronner in connection with returns for commercial questionnaires. According to this author, a return of 8 per cent to 10 per cent is considered good for those types of questionnaires sent out to dealers and consumers as part of a market survey (104).

The Price-Waterhouse studies give information on the promptness of questionnaire returns. The double post cards were sent out during six successive days. The tabulation of the results was begun

with the first day returns were received from any one city and continued for ten days. Within this time, 95 per cent of the total returns were received.

DIFFICULTIES IN TABULATING RESULTS

There are innumerable considerations which arise in tabulating the returns from any questionnaire. This is true even if the questionnaire is made simple, and the listener merely has to check the proper answers. In phrasing the questions, the possibility of difficulties in tabulation should be taken into account. In reply to the question, "Which station do you listen to most?" some listeners may feel that they listen to no station most, or that they listen to several stations to the same degree. In such cases a preliminary question may be asked, "Do you listen to one station more than to any other? Yes— No—. If so, its call letters are —." Columbia found in its listening-area survey that so few listeners answered its question, "Which station do you listen to most?" with one station only, that the results could not be tabulated. Some listeners did not answer it at all; some listed two stations; others, three. On the first of the Price-Waterhouse surveys, Columbia counted only the first station set down when two or more were given in answer to this question. It was assumed that the stations were listed in order of preference. On the following surveys, Columbia did not tabulate returns where two or more stations were listed in answer to the first question (37). In the Tanki survey, split station preferences were not tabulated under the separate stations (102). The desire of listeners to check more than one hour in a WOSU survey of time preferences has already been described (*see* page 96).

It is evident that precautions should be taken to avoid these undesirable answers when first wording the questions. It is also clear that in presenting the results, an indication of the type of treatment made necessary by the listener's disregard of the instructions should be given. In the case of the Tanki Agency report, the grouping of split station preferences together probably had the effect of making one station seem more popular than it really was. This was the station for which the report was made.

Author's Summary of Chapter V

PERSONAL investigations of listeners include noting casual comments, observing audience activities, and making formal interviews. The personal interview is employed to obtain a considerable amount of information from a relatively small number of persons all located within a limited area. Sampling is usually adequate; care must be taken to insure honest interviews and avoid influencing the radio owner's replies.

CHAPTER V

METHODS OF PERSONAL CONTACT

For purposes of accurate measurement, the formal interview is a most important method of personal contact. For the great majority of programs, however, broadcasters still depend upon informal reports and conversations as a gauge of their significance. These informal reports come spontaneously from the lips of the listeners, or they are called forth by a little judicious priming on the part of the broadcaster. They will be considered first in this chapter as an introduction to the more exact formal interview.

INFORMAL COMMENTS

SPONTANEOUS COMMENTS

To attempt to give more than a few illustrations of the spontaneous comments overheard by broadcasters would be difficult. There are no rules of place, time, and context for hearing such comments. The chief caution to be observed by the broadcaster in accepting such evidence of the success of a program is the one expressed in connection with every other kind of measurement. It is, Is the comment a fair sample of the opinion of the total audience or of an important minority group? We can determine this by studying the person who makes the comments. It is needless to say, beware of the remarks of friends of performers, wives of broadcasting officials, members of the same luncheon club, and hosts of other listeners who have some personal interest in a program or who have the same tastes as the broadcaster.

Spontaneous comments may be heard everywhere. A program director, in the misty, early days of radio, commuted to New York by means of a twenty-minute ferryboat ride. Public reaction came to him in the form of overheard comments on the programs of the night before from fellow-commuters (50). For one program, significance was found in the enthusiastic statement of the elevator boy that the program was really "dramatic" (333). In another case, a

broadcasting representative obtained "very definite and valuable audience reaction information" from a succession of noontime meetings and evening banquets with business men in different parts of the country. Public comment on all sides must have told the broadcasters what the audience thought of their handling of the 1932 political speeches (228). And in rare cases, casual comment has informed the station manager concerning a grave defection in one of his programs (*see* Note 68).

Sometimes the broadcaster sitting in his office is visited by persons who wish to tell him how much they have been helped by the program or how much they have enjoyed it. One broadcast on personal problems, "House of Dreams" (KPO), brought many people in to see the speaker (711). A bank found that it was a frequent occurrence for the depositors and other clients of the bank to come to the officers and mention their enjoyment of the bank's broadcast (240). These spontaneous comments form a valuable addition to the broadcaster's information concerning public reaction and preference if they are interpreted correctly by him.

SOLICITED COMMENTS

Naturally, the broadcaster himself is not in a position to hear any great number of spontaneous comments and expressions of opinion regarding radio. He has therefore organized groups of persons who will report to him what they hear. He also uses existing organizations to bring to him the reports which individual members may gather or make themselves. In this way a firm with dealers in many cities can check up on the program which it puts on over the air. The agricultural-extension department of a university can tell what it is accomplishing through its use of radio by means of reports from the county agents. Educators can find out through adult discussion groups and associations what effect educational programs are having. The report forms used in such undertakings have already been discussed in Chapter IV (*see* page 106), but here the primary concern is the organization of the reporting system.

Agents, dealers, and representatives.—In a sense, the agricultural-extension departments are in a favored position to determine the effectiveness of their programs. They have already formed an organization of county agents who are in close contact with the farmers. It has therefore been possible to obtain information through these agents concerning the reception of the station in different parts

of the state and the use made of the programs. Such was the case in Iowa (637). In Florida, the state marketing-bureau service was checked by reports from agricultural representatives throughout the southern districts (1). KOAC asked listeners to a course in the selection of textiles to enroll directly through the station or through the office of the home-demonstration agents in certain counties. In counties having no home-demonstration agent, enrollment was made through the office of the county agricultural agent. In this way a close tie-in of the extension agents with the radio work of the station was achieved, and the county agents were placed in a position to secure comments on the radio programs (620).

The local dealer or representative¹ is in a position to observe the effectiveness of radio in selling merchandise. According to one report, dealers have listened to programs and checked the influence of the programs in terms of sales volume (272).² In many cases people come into stores and in asking for certain articles mention that they have heard them advertised over the radio. If the dealers remember these comments, and a little persuasion may cause them to note them down, they are an important indication of the effectiveness of particular programs. Clerks in one dress shop frequently reported serving customers who had remarked about having heard the dress department advertised over the radio (108). Customers can also be asked whether they had heard the specific offer made on a radio program.³ A southern shoe merchant wished to test the popularity of two stations. He ran an early morning program of phonograph records with brief merchandising announcements simultaneously on two stations daily for a week. Sales clerks asked all customers, who inquired for advertised items, to which station they had listened. A large majority had listened to one of the two stations (45).

Just as dealers in stores obtain an indication of the effectiveness of radio through the comments of customers, so salesmen calling

¹The Great Northern Railway determined the reaction of the public through its traffic representatives, who were situated where they could observe the public response (711).

²This was determined by sending men into the field to interview dealers.

³At Detroit, series of announcements were made over four stations calling attention to a free offer of house painting and also to special prices on paint. The people who came into the stores of eleven dealers were asked over which station they had heard the announcement. There were 3,108 returns from the announcements. When the costs were allocated it was found that the costs per return per station were as follows: WJR, 9.2 cents; WWJ, 9.8 cents; WJBK, 34 cents; and WXYZ, 25.5 cents (720). This instance shows how the sponsor may test out stations for his own purposes.

upon prospects find that the influence of the radio program may be measured in terms of the cordiality with which they are received. The American Household Furniture Company found that its program resulted in a noticeable improvement in good-will and confidence shown toward the salesmen of this company when calling upon women in their homes (46). Similarly, the Davey Tree Company reported that a substantial majority of people upon whom Davey salesmen called mentioned the radio programs. The salesmen encountered a much more pronounced friendliness. They claimed that almost everyone with whom they came in contact knew about the Davey Company in a favorable way, in contrast with a much more limited knowledge of the Company previously. Aside from this, a much greater and more general confidence was shown (237).

Occasionally, trained interviewers are employed to gossip and engage in casual conversation with listeners. National Radio Advertising determined audience areas of stations by having field men hold discussions with radio listeners in various regions to learn first hand their preference for stations (119). One large advertising agency which wanted to know more about morning listening habits secured the services of an experienced woman investigator with the requisite smile and the right amount of "personality." She called upon several thousand women listeners with intent to gossip. When her errand was announced at the door, a large proportion of the women asked her to come in and sit down. Then "they talked about what they liked and what they did not like, and why. They talked about their housekeeping habits in relation to their listening habits. They talked about their husbands' listening habits and the listening habits of their sons and daughters" (231). If the interviewer can note down adequately such comments and steer the conversation to certain standard questions, then the method is much worth while. But if it is just a matter of gathering hit-or-miss comments, then most experience in evaluating the results of such interviews is against the method. The British Broadcasting Corporation employed so-called "education engineers" to visit schools and to report the reactions of teachers and the nature of reception (27).

Discussion groups and classes.—In educational circles, there are many groups which are more or less independent of the broadcaster, but which have a leader who can observe and transmit the comments to the broadcasting organization. This is the case with discussion groups. In the United States, we have not made any too great prog-

ress in tying up the radio broadcast with such meetings. However, a few cases can be cited. The National League of Women Voters organized groups to listen to a number of talks in the regular series. Questionnaires were sent out. In the majority of groups these were filled out collectively. The leader filled out the questionnaire from a digest of the group discussion (86). This is, therefore, typically a case where the leader, as an observer, listens to the comments of the group and then reports. The leader is in direct contact with the opinions of the group and can sum up the comments more adequately than could a central organization not in touch with the individual person. If the leader is capable, we have in such instances an example of the interview or personal-reporting method at its best. The interviewer or reporter knows the persons and knows the material they have been hearing. He is therefore in an unusually favorable position to report the real and true attitude of the person toward the broadcast. Burt credits the leaders of such groups with furnishing most of the information about the success of talks broadcast by the British Broadcasting Corporation (605).

Because of its importance, the fairly complicated structure of the British Broadcasting Corporation discussion-group reporting system has been rather completely described in the Appendix (*see* Note 69). The secretary of the local discussion group sends in comments and questions to the lecturer. Before the group breaks up for the evening, he finds out whether there is any point on which further information is necessary. He reports details such as the age of the members of the group, their occupations, and their sex. He comments on technical matters such as the speed of delivery. The number of discussion groups now organized in the British Isles makes the reports of these discussion-group leaders of profound significance for the broadcaster and the speaker.

Teachers in schools are able to report on the reactions of pupils to talks and give a digest of their comments. In Chapter IV, report forms for securing these comments from teachers were discussed. Schools of the Air in the United States are alive to the importance of securing direct evidence from the teachers. The North Carolina School of the Air asked its teachers to "note the reactions of the pupils during the listening period and in the discussions following" (89). Such information is used in revising and improving the educational program. However, the United States has worked out no such thorough system of teacher and group reporting as in England.

In England, the Central Council for School Broadcasting, at the outset of its work, sought the help of teachers in framing the programs and in assessing their value to the schools. Subject committees were formed. On each of these committees the majority of the members were teachers using the broadcast courses in their schools. Reports were received on almost every talk from teacher members (27, 337). Some of the types of observations which teachers can make are extremely important. For example, the English Committee of the Council attempted to evaluate the lessons on speech and English which A. Lloyd James gave. The opinions of teachers were analyzed. Almost without exception teachers agreed that the course interested children and aroused them to speech-consciousness. Many of the teachers were also of the opinion that as a result of the lessons there had been a marked improvement in the children's speech. In forming this opinion, some teachers relied on day-to-day impressions, while others devised methods of having their own opinions confirmed by outside observers. A number of training colleges followed this speech course with classes of students and contributed valuable suggestions for alterations in the method and content (60).

Meetings and conferences.—Meetings and conferences on radio broadcasting and on the place of education in radio take on the aspect of measurement at times. If the group is composed of listeners as well as broadcasters, and in most cases the broadcasters are listeners themselves, then it is possible to obtain much critical comment and suggestion with regard to different types of programs. A glance through the discussion sections of the proceedings of the various Institutes for Education by Radio will convince the reader that much is to be learned from the opinions of a critical group of persons interested in broadcasting. Undoubtedly, there is room for conferences in which more listeners will take part and join in the discussion and formulation of broadcasting policies.

In the west of England, the British Broadcasting Corporation made plans for conferences where listeners would have an opportunity to express opinions concerning broadcasting (305). A booklet, *Wireless Discussion Groups*, describes the advantages of such conferences. In these meetings it is possible for listeners to meet the broadcaster and to discuss the talks freely. The speaker, as is not always realized, has his difficulties. He naturally wants to make himself understood, and he knows that it is difficult to keep the attention of an audience which he cannot see, and which is

made up of people differing widely in knowledge and in previous experience. He therefore welcomes the chance to meet the listener. Such matters as the use of technical terms may be thrashed out and the best ways of getting the material over determined (22).

Cleveland teachers using certain programs provided by the Cleveland public-school system have met together and discussed the programs with the broadcaster. Each teacher had carefully noted the difficulties which occurred in her classroom, and was ready to criticize various parts of the radio lesson. The persons preparing the radio lessons could then discuss details and make improvements.

When people are gathered together in groups, it is possible to extract information from them whether they are assembled to discuss broadcasting or not. At banquets for fathers and sons, the supervisor of agricultural education in Illinois found out how many of the boys and their fathers were listening to certain programs for farmers by requesting them to raise their hands.⁴ Austrian broadcasts stimulated attendance at specially prepared exhibits and museum displays. In one case, each visitor to the museum was requested to give details regarding himself, with the result that some valuable statistics were obtained as to the relative interest created among various classes of persons by the educational talks (79).

Meetings can also be arranged in the form of auditions for programs before they are broadcast. Such auditions are commonly held in studios; in some cases, programs are recorded and the program director and his staff study them at leisure without rehearsing the cast (531). If the persons present are capable of judging the program from an artistic and audience standpoint, the audition is an excellent pre-measurement of the program. One radio station asked a number of schools to prepare and put on programs over the station. Sometimes the program was presented to a school audience by means of the public-address system before bringing it to the radio studio (14).

THE FORMAL INTERVIEW

The general purposes for which the interview survey is used do not differ greatly from those which are characteristic of the

⁴Such informal information can be secured quickly and may be indicative. Generally, however, it is wise to distrust opinions given orally in groups. It is easy for one or two persons to sway the whole audience, especially when the question is not of much consequence to the majority. In all these cases the "yes" tendency of individuals would be marked.

questionnaire survey, and therefore reference may be made to the first and fourth chapters. The purposes may be illustrated most readily by quoting actual surveys. Some of these purposes were to determine the number of radio sets (United States census), the stations listened to most (56, 62), the kinds of programs liked (56, 96), the hours of listening (56, 96), the relation of economic status to listening habits (96), the quality of reception over the listener's receiver (625),⁵ the number of farm and other practices adopted through the influence of radio (97),⁶ and the attitudes of school and university officials toward broadcasting (209, 106).⁷ This list is not complete, and it is representative rather than analytical.

In contrast to the mail questionnaire, the personal interview is employed when it is desirable to obtain a considerable amount of information from a relatively small number of persons all located within a limited area. Under such conditions with honest interviewers the interview gives a better sampling. It is for these reasons that the interview is chosen in preference to the mail questionnaire.

SCHEDULE CARDS AND INTERVIEW QUESTIONS

In making interviews, the interviewer is usually equipped with a questionnaire or schedule card. The schedule card, with abbreviated questions and blank places for coded answers, is valuable in keeping interviews uniform and in making sure that no questions are left unasked. Sometimes the schedule card is kept in the background and glanced at occasionally to see that all items have been included. The interviewer tries to avoid giving the person interviewed the impression that the latter is going through an examination and that the answers he gives will be promptly written down at the close of the interview. In other instances, however, the interviewer shows the schedule card to the person and asks permission to record the answers. This is a more accurate method, since the interviewer does not have to trust to a memory which may occasionally deceive him. Furthermore, in the hands of the average, not too highly trained interviewer, a better impression may be produced by this

⁵Testing the listener's receiver was included in a survey carried out by members of the Institute for Radio Engineers. It is obvious that judgments of a technical nature would have to be made by a specially trained personnel. The interviewers in this case were unemployed engineers (625).

⁶See the report of this in Chapter VIII.

⁷A research member of the Columbia Broadcasting System staff visited heads of different organizations, including superintendents of schools, to determine the attitudes of these organizations toward radio.

frankness. Another method of interviewing employs the questionnaire directly. Here the interviewer asks the person upon whom he has called to fill in the questionnaire. The function of the interviewer is to explain any difficulties and motivate the person to answer completely every question.

The framing of the questions for the schedule card is almost as important as the framing of questions for questionnaires sent directly to listeners. For this reason the points discussed in the third section of the preceding chapter should be reviewed. No attempt will be made in this section to analyze completely the types of questions used and the precautions to be observed. Rather, stress will be laid upon the experience of interviewers and illustrations taken from actual schedule blanks.

The questions on the schedule card may be placed there merely for the guidance of the interviewer in conducting and recording the interview. In this event, abbreviations may be used as long as they remain intelligible to the interviewer, and the whole card may be made as compact as possible. However, accompanying or in place of such schedule cards, it is wise to have a sheet recording the complete and exact form of the questions and another sheet containing pertinent hints on the way they should be asked (70).⁸ The questions are to be asked orally, and therefore care should be taken to word them so that they are easily understood when heard. It is therefore doubly important that the questions be tried out in sample situations to determine their appropriateness.

Trying out questions on actual persons in test interviews is but one phase of the problem of securing proper questions and valid responses. The field test, as it may be called, determines whether the questions are such that the listener can give a ready answer. The test does not necessarily determine whether the answer is accurate. It may be found that listeners readily indicate the number of hours during which they listen daily to the radio. But is this the true number, or does it even approximate the true number? We definitely need to be able to combine the results of laboratory tests, where

⁸Hettinger suggests that the following precautions be taken in making out the schedule card for an interview survey. The questions should be formulated on the basis of experience with listeners' habits and preferences. They should then be subjected to rigorous preliminary tests before being employed. In addition, check questions should be designed to furnish confirmation regarding the principal elements of the study. The schedule should be divided into the simplest possible elements to reduce to a minimum the danger of the answers being influenced by the investigator (56).

an actual record of the number of hours the listener was exposed to the radio is kept, with the answers to interview questions. Then we will be able to know and correct for the error involved in the answers under certain conditions of listening.

Although difficulties with questions have already been discussed to a considerable extent, a few illustrations derived from experience in interviewing are given here. These difficulties concern the content of the questions and its relation to the ability of the listener to answer, as well as the special types of phrasing used in asking questions. When the content of questions concerns likes and dislikes, opinions, personal matters, and the listening habits of friends, there is ground for doubt as to the significance of the answers. In phrasing questions, preference choices should be presented concretely, floating reference points should be avoided, exact expression of the purpose of the question should be studied, and rephrasing for check purposes should be considered.

Content of questions.—Answers to questions on “likes” are difficult to interpret. Questions are asked, “Do you like music?” “Do you like comedy?” “Do you like news reports?” Naturally, every listener will like such programs although he may not like specific representatives of each group. It is important to find out the listener’s preferences for details and specific types of presentation, rather than for program types in general. The utility of tables showing the relative preferences for music, drama, comedy, news reports, and talks is therefore limited.

Asking listeners to describe their opinions and attitudes is asking for a type of introspection few people are able to perform. The following questions from the schedule card of a survey are illustrative of a type which the ordinary interviewer and listener would find it difficult to answer. The first question was, “Do listeners know that it is advertising that pays for programs?” Then good-will advertising was explained to the listener, and he was asked whether he would like to have advertisers return to good-will advertising. Finally, he was asked whether he would prefer to buy from such advertisers (625). It is difficult to see how a listener would know whether he would really prefer to buy from such advertisers when faced with a choice. The average buyer finds it hard to judge his own motives. Such questions as these are best used when a number are standardized and put together to form an attitude scale. In an interview survey made by Houser, listeners were encouraged

to say what they thought about radio advertising. A differentiation in scoring the answers was made on the basis of whether the listener volunteered the information or had to be questioned. In this way, some indication of the importance of the opinion was obtained.

Questions involving personal information are often not accurately answered. These questions include those which deal with income, rents, and money generally. For this reason investigators have sought other means of determining the economic status of the persons interviewed aside from direct questions. In one case this was done by having the interviewers estimate the income. They were given detailed instructions on this point, and the general accuracy of the results was checked by a comparison of the rental values of the homes in the districts (56). In another survey interviewers judged the economic level from the furniture and living conditions (617).

One of the cardinal principles in building a suitable questionnaire or interview schedule is that the questions should deal only with those facts with which the person interviewed is familiar. Hence, it may be asked whether questions should deal with the listening habits of the other members of the family.⁹ This type of question was asked in a Philadelphia survey and great similarity between the answers given by the person interviewed for himself and for the other members of the family was reported (56).

Phrasing of questions.—There are many ways of asking the listener about his preference for stations. Usually it is considered better policy in asking preference questions to make them concrete. This may be illustrated in the following paraphrasing of an example from Toops. Instead of, "Which do you prefer, Radio A or Radio B?" one might ask, "If you were buying a new radio, would you buy Radio A or Radio B?" (104). A market-research organization made a radio survey in which the questions were asked, "What broadcasting station do you prefer; that is, if all stations were to be closed except one, which would you choose? Which is your second choice?" (646).

Some questions, although adequate from the standpoint of content, are not phrased so that tabulation of the results is easy. Of this type is a question with a so-called "floating reference point." Such a question as, "When did you last listen?" is a factual type of question from which the regular listening habits of the audience

⁹Answers to such questions should be later checked with the members of the family whose views were given by the person first interviewed.

may be inferred.¹⁰ However, the correct tabulation of the answers is difficult because this depends upon the time at which the interview took place. If the interview is made in the morning, the answer "yesterday" will obviously not have the same value as if the interviews were made in the afternoon or evening. This question might either be asked at one standardized time or rephrased so that the answer is given in terms of units using the time of the interview as point of departure. The question might be asked in this way, "How many hours is it since you last listened to the radio?" But the difficulties with this re-wording of the question are evident. It requires the person interviewed to make all the calculations which the interviewer should make. If questions concerning larger intervals are asked, no trouble is experienced. The question, "When did you buy your radio set?" is quite correct.

In phrasing questions, the investigator should be sure that the words express exactly what he has in mind. This may be illustrated by questions dealing with the time at which the listener tunes in. Riegel criticizes the question, "Do you listen at eight o'clock? nine o'clock?" when it is evidently the purpose of the investigator to find out whether the listener listens between these periods, that is, from eight to nine o'clock. Of course, it is probable that the listener understands the question in the sense that it was intended. Nevertheless, it is perhaps just as wise to phrase the questions accurately, so that there is no possibility of misunderstanding. Riegel phrases his question, "Do you listen between the hours of eight to nine? nine to ten?" (96).

Wherever accuracy of data is highly desirable, it is advisable to insert check questions. In the calculation of the percentage of the audience listening to a given station, the basic question may be asked in different ways. For KDKA, the questions were: "What stations do you listen to?" "What station do you listen to most of the time?" "What programs did you hear yesterday?" Obviously, the second question would act as a check on the first, since the station most listened to would naturally be listed among "the stations listened to." Furthermore, it might be expected that when asked what stations he listened to, the person interviewed would name first the station to which he listened most (*see* Note

¹⁰It is easy to compute from the results of this question the number who listen daily, semi-weekly, and less frequently. Starch checked his interpretation of the results for "When did you last listen?" with those for another question, "Do you listen daily?" The results were quite similar (101).

70). This could easily be determined from the results of the KDKA questionnaire by computing the percentage of persons giving the station most listened to as the first station in the list of those regularly listened to.¹¹ KDKA related the results for "the stations listened to regularly" with the mentions of the programs heard the day before the interview. The stations giving out the programs were identified, and the number of mentions for each was determined.

In the so-called "roster" method, a complete list of programs for the preceding day is shown to the person interviewed, and he is asked to identify the ones he has heard (*see* Note 71). In one such survey, the individual program names were placed in squares under the appropriate station. Half-hour programs were given two successive squares, hour programs, four successive squares. The programs were identifiable by the hour, the name of the station, and program name. In listing the programs, however, the titles of some programs included the names of several radio stars or identifying marks, while others contained but one (compare "Ed Wynn and Texaco Fire Chief Band" with "Singing Sam"). It is obvious that the suggestive qualities of each listing should be equalized, if the listener's identifications are adequately to represent the programs he has actually heard. "Ed Wynn" should balance "Singing Sam" or "Ed Wynn, Texaco" should be countered with "Singing Sam, Barbasol." Sustaining programs always suffer in such surveys because of lack of multiplicity of names.

SAMPLING

Correct sampling for some purposes is easier to secure through personal interviews than through mail questionnaires or telephone surveys. The selection of homes for any given area or section may be determined by an arbitrary field method. Every fifth house in a certain sector of the city may be taken, or interviewers may go down one street after another taking every tenth house.¹² By such a procedure, adequate representation of the city may be secured.¹³

¹¹If the percentages were found to be high, then Columbia might use only one question instead of two in making the national questionnaire card surveys. The first question, "What station do you listen to most?" would be unnecessary.

¹²One market-research organization samples by interviewing one family in twenty on every street and every cross street. The experience of this organization leads it to believe that information obtained by such sampling is almost as accurate as that obtained from interviewing every family in the locality (646).

¹³Questionnaires may be sent to a proper sampling of the city if city directories are used for addresses. As stated before, however, the return is

In order to understand sampling procedures as applied to interviewing, we can examine methods of actual surveys. Riegel carried out his sampling of Buffalo in the following way. On the basis of the census, 72 tracts were set up corresponding to the economic, racial, and national groups. The questionnaires were apportioned to the tracts in accordance with population in the census. Adequacy of sample was determined by taking small samples and comparing them with larger samples. Riegel studied the relation between hours of listening and financial and sex differences. There was little difference in the results for the different groups. This means that in studying listening hours, deviations in the sample with respect to economic level and sex will not seriously influence the results. Riegel's financial classifications were: income under \$2,000, \$2,000 to \$2,999, \$3,000 to \$4,999, and over \$5,000. The persons interviewed were asked to approximate their annual income, and in addition they were asked the monthly rent paid or the rental value of their home as a check on the income (96), (*see* Note 72).

Hettinger followed a similar procedure. A proportion of .5 per cent of the total families in Philadelphia was taken. Population statistics of the 1930 census were used in apportioning the samples. Different subdivisions were made of the territory and a number of interviews assigned to each. Adequate proportional representation of all economic, social, and racial groups was secured, both at Philadelphia and in other areas investigated by distributing the number of families to be interviewed in accordance with the density of population. Adequate distribution within a given district again was secured by selecting small units, usually four blocks square, scattered throughout the area embraced in the district, from each of which a maximum of from three to four interviews was to be made. In the case of townships, where this method was impracticable, wide distribution of the interviews was secured by carefully planning the territory in conjunction with investigators familiar with the districts in question. In order to equalize the time sampling, the time of day at which the interview was made, Hettinger arranged that no more than 50 per cent of the questionnaires were to be secured in the evening and no more than 20 per cent during the week-end (57).

Now, it is not enough to carry the sampling through carefully,

not equally representative of the different economic classes. If the telephone directory is used for a mailing list or telephone interviews, a selected sample with high radio-set ownership is secured.

because even then irregularities may creep in and chance variations may have some effect. In reporting a survey, the nature of the sample should be given. This is possible where the age, sex, occupation, and income of the persons interviewed are obtained. Hettlinger sets a commendable standard by describing his sample in terms of the mentioned factors. This description enables the reader to know exactly what sort of people formed the basis for the conclusions drawn. Even if these facts about the audience are not used for further breakdowns in the data they are desirable in interpreting the results. Were such information about the samples used in surveys and the systems of classification made standard, then results could be compared with those for other sections of the country.

The number of persons interviewed per one hundred of the population has varied considerably. One market-research organization found that a five-per cent sampling of homes gave results almost as accurate as those obtained from interviewing every family (646). At Omaha, a survey partly conducted by personal interview also attempted to cover five per cent of the homes in the city (107). An Oklahoma City survey also sampled five per cent (118). In a study for KQV, the interviews were specified at the ratio of one for every forty-six radio homes (490). The Shepard Stores had interviewers call on one in every sixty radio-set owners in Boston. For KDKA, the ratio was one interview for each one hundred fifty families with receiving sets (62). McVarish suggested a practically enumerative sampling of one individual in every five homes (627).

Starch, in a survey of national scope, decided that five thousand radio families properly scattered geographically and by population groups would be sufficient to secure reliable results. He stated that returns from five thousand families, as has been demonstrated many times, yield as a rule highly satisfactory and reliable results. As a proof of this, Starch quoted a newspaper survey where three thousand interviews yielded the same result as thirty thousand. And as proof of the reliability of his own sample, he checked the results obtained in Iowa with the figures furnished by the assessor for radio-set ownership (101).

Whom should the interviewer see in the family? Certainly, for the purposes of the average survey, the answers of children and servants should not be accepted (611). Should the answers of old persons be taken if it is apparent that they are living with their children? It is evident that certain classes of persons will be at

home more than others and thus distort a general sampling. This is certainly true in the case of men and women, and is the reason why many surveys avoid the difficulty of equal sampling by stating that the purpose of the survey is to interview women.¹⁴ Other surveys attempt to secure masculine replies by undertaking the survey in the evening when the men are presumably at home. For some surveys which deal with questions of fact, such as whether the radio is turned on, it apparently does not matter particularly whether the man or woman of the house gives the information. For surveys dealing with more complicated questions, it does matter.¹⁵ Investigators should give the sex of their sample by stating that so many men and women were interviewed, rather than so many families.

The time of year at which interviews are made and the time of day are both important and should be indicated in the report of the survey. It is well known that conditions favor more distant reception in the winter. For this reason, KDKA took May as an average month between the winter and summer. The interviews were made throughout the whole month so that a fair sample of each day of the week and several samples of the same day at different times during the month were secured (62).

INTERVIEWERS

The heart and soul of the interview survey is the interviewer. Burt and Gaskill's laboratory experiment is enough to show that the interviewer wields a tremendous influence in determining the answers. In a psychological study involving some eight hundred persons, university students said "yes" in over one-sixth of the cases when asked whether they had seen objects which were not present in an exhibited motion-picture film. Aside from slight differences resulting from the form in which the question was asked, a marked difference existed between the results obtained by one investigator and those obtained by the other. One investigator received a "yes" answer in 19.3 per cent of the instances when he asked the sugges-

¹⁴A question of some importance is the similarity of tastes of husbands and wives. Hettinger's statements in regard to sex differences give us information on this point.

¹⁵In the Crossley survey the person interviewed is asked to name the programs heard on the day previous. It is quite common for the woman of the house to say, "My husband and the boys had the radio turned on for a while last evening, but I was busy and didn't pay much attention." Then in some cases, if the husband is at home, the wife will ask him what was heard. This is enough to indicate that interviewing one side of the house does not entirely solve the problem of what is heard by the whole family.

tive questions. The other investigator received only 16.1 per cent "yes" answers (222). This is the type of result one might expect to obtain when asking the question, "Did you hear the XXX program Monday evening at 7:30?" It would pay the station desiring to make a good showing to hire an investigator with a persuasive voice and appearance.

More information is needed on the subject of training investigators. All studies say that the investigator was well trained. Few say how he was trained. Hettinger, at least, gives the following description of this phase of his survey. Students who had had previous experience in work of the same type were used as investigators. Each district was assigned to one or several investigators. In most cases two or three persons worked over a given district to avoid possible bias on the part of a given interviewer. Each investigator received in addition to his questionnaires a map of his particular district marked with blocks from which it was specified that he should secure his interviews. The investigators also received carefully prepared detailed instructions regarding the technique of the interview and the manner in which the questionnaires were to be filled out. Investigators were drilled in the application of the instructions. Conferences at which attendance was compulsory were held every other day so that problems could be discussed, and a careful check was kept on the progress of the work. Scrupulous care was taken to absolutely insure the authenticity of the interviews (56, 57).

As an aid to honesty in reporting, Elder paid the interviewers for each interview regardless of whether the questions were completely answered or not (709). On the other hand, Riegel paid the investigators (university students) a given sum for each completed questionnaire (96). This is an important point, and it should be clearly known whether payment solely for completed interviews tends to cause the interviewers to extract information which does not exist.

There is a great difference in the degree to which the person directing the survey allows the interviewers to participate in the sampling. WBZ instructed its investigators to visit representative sections of the trading areas in which the interviews were made (116). Crossley, although giving explicit instructions with regard to sampling according to economic classes, permitted the local interviewer to make the final choice. This may be contrasted with the system used by Hettinger and other investigators in city surveys where each interview was almost completely specified. Naturally,

when the survey is carried over a wide area and in different cities, it is necessary to have the local interviewers exercise discretion.

Personal-interview surveys have been criticized on several scores. The honesty of the interviewers has been doubted (621). Then there is a tendency for the interviewer to prompt or ask questions in leading forms. Crossley suggests that its interviewers prompt listeners with reference to different program types, although precautions are taken to minimize the effect of this by mentioning several different kinds. Aside from this, the personal interview is objected to on the grounds that the person interviewed is influenced to say what he believes the investigator wants. This is attributed to the self-consciousness of persons when asked what they like. They want to appear better than they are. Therefore, the anonymity of the mail questionnaire may bring back more candid answers.

PERSONAL OBSERVATION

Probably the most important use of personal observation as a means of measuring the effectiveness of radio programs occurs in the schools. In the Cleveland schools, as previously stated, teachers noted any difficulties which occurred during the broadcast and brought these to the attention of the broadcaster during a special meeting for that purpose. Members of the British Broadcasting Corporation Schools Department visited schools and observed the effect produced by the broadcaster. These reports were conveyed to the speaker week by week (27). Drucek reports that groups of selected principals visited Chicago schools, where equipment gave excellent reception, to note pupils' participation (238). California school broadcasts were controlled by stationing a member of the broadcasting committee in each classroom receiving the lesson. Careful observations as to the kind of reception, qualities of the speaker's voice, speed, articulation, repetition, and the attitude of the class were made (554). Maddy gave lessons in band instruments over the radio. After a number of lessons he visited many of the radio classes scattered throughout the area. From these visits he was able to compare the work of the various groups with similar classes directly taught. In England, however, a recording instrument called the Blattnerphone enabled speakers to witness their own broadcasts in special cases. The speaker was present, incognito, in a schoolroom and could observe the effect of his delivery (27).

The recording of audience reaction in discussion groups has already been described for those in England. In the United States this method has been followed in a few instances. At Ohio State University county agents observed the response of audiences assembled to participate in a combined radio picture presentation. In each of the local groups the pictures were projected by means of a lantern (331). In another experiment, radio talks were used as a central feature in conducting discussion groups on motion-picture appreciation. High-school and adults group were observed. The observers followed a very comprehensive form sheet, and from their reports much significant information is available with regard to the influence of the radio talk on subsequent discussion. In some instances verbatim reports of the discussion were obtained (343).

Observation in the home has not been developed to any extent. However, one such study has been carried out by students in a university class. These students made notes on the times at which the radio was turned on in their homes, the number of persons listening, the activities of the persons while the radio played, the nature of the method of tuning in, and whether the same person who started the radio turned it off.

Although it is not possible to judge accurately audience response from studio visitors, this source of comment should not be overlooked. In fact, it should be helpful in judging advertising continuity, announcements, and talks. In most of these instances, the visible presence of the speaker does not add so significantly to the performance as in the case of vaudeville teams or dramatic sketches.

While attending a radio performance of the Sinclair Minstrels the studio listeners gave perfect attention; but during the long technical announcement they twisted, squirmed, and mopped brows, acutely conscious of the heat which had been forgotten while they were being entertained. In the studio they could not talk, but even here they did not listen to the commercial statements (488).

One final strategic position for the observer is the sales counter. If specially radio-advertised items are placed on sale, it is possible to observe the customers and note whether radio is mentioned by them in purchasing the article. Probably, this procedure would only be effective if followed up by an interview with the customer.

Author's Summary of Chapter VI

TELEPHONE interviews may be made while a program is on the air to determine the number of listeners. Otherwise, short interviews of the ordinary type may be undertaken. The telephone is most advantageously employed when a large number of city-wide interviews must be made within a limited time. The telephone sampling is always restricted; but reaches a group of which approximately ninety per cent own radios.

CHAPTER VI

THE TELEPHONE IN MEASUREMENT

TELEPHONE CALLS RECEIVED BY STATIONS

The telephone occupies a dual position in the matter of radio measurement. It is an avenue for solicited and spontaneous audience response after the manner of fan mail, and may be used as a means of questioning listeners following the methods of the mail questionnaire and the personal interview. Both of these uses of the telephone will be described in this chapter. The first section deals with the telephone calls received by the station.

SPONTANEOUS RESPONSE

Telephone calls to the station are brought about in many instances by the same sort of circumstances which elicit mail response. The listener turns to the telephone when he wishes to know the time of a program (639), whether the local station will carry it, and other information regarding a forthcoming broadcast. If a program is interrupted or omitted, the impatient listener will often call the station.¹ "Great Moments in History" was a program which brought in few letters. One night it was canceled for a special concert. Over five hundred telephone calls were received asking why the broadcast had been dropped. Practically none of those calling by telephone had written a letter to the station (47). During the 1932 election campaign, radio stations and listeners entered into frequent conversations with each other on the subject of substituted programs with a political cast.² Announcers' mistakes will cause listeners to telephone as well as to write corrections. When a Detroit sport announcer credited a touchdown to the wrong half back all records for telephone calls on the broadcast series were broken (452).

¹WOR experienced telephoned audience response when programs were changed at the last minute. The station believes, however, that if the changes had been announced in advance, no complaint would have been made (629).

²Hard describes an occasion when Senator Borah was addressing the radio audience. The telephone girls of the studio spent the whole period answering remonstrances from listeners who wished to listen to the professional entertainment team he had displaced (447).

Listeners often call the station for information of almost any sort. In fact, the broadcasting station can easily assume the place which a newspaper usually occupies in this regard. One small station reported the following as typical of daily telephone calls. These calls included a question about the World's Series, a call from someone who had lost a dog, a plea from an anxious housewife who had caught a turtle and wanted the cooking expert to tell her how to make turtle soup, and requests for music. There is not much in this list to use as a means of measuring the effectiveness of individual programs, although an indication of the relation of the station to the community is given. As an example of the service rendered by radio stations in special times of stress and need, the experience of a small station during a tornado may serve. The station broadcast information as fast as it was received; sent calls for relief workers, reassured anxious friends and relatives who telephoned for information. Some eight thousand telephone calls came in during the night of the tornado, and fifteen thousand were received the next day (318).

In illustration of the number of telephone calls ordinarily received, figures for the National Broadcasting Company can be given. The New York studios at one time received two hundred calls daily, most of them between six o'clock in the evening and midnight. Whenever anything unusual occurred, the switchboard of the network was deluged with telephone inquiries. Occasionally, toll calls for request numbers came from points as far away as Texas or Canada (424).

SOLICITED CALLS

Not all the illustrations of solicited calls to be given in this section were derived primarily from the use of the telephone as a means of measurement. Rather, the telephone calls were either included in the method of conducting the program or of merchandising a product. Indirectly they measured the effectiveness of the program.

Efficient use of the telephone has been made in tying up discussion groups with the broadcasting station. At Ohio State University several groups were organized to listen to poultry talks. After the main talk in each meeting the county agent collected all the questions raised by members of the group. These were telephoned into the station. The speaker was then enabled to make a second talk and take up the questions raised by the listeners. During the interval the station broadcast a musical program which was not tuned in by the discussion groups (331).

The telephone has also been used by WRC in an unusual type of broadcast called the "job auction." The announcer recited the qualifications and circumstances of each job seeker. Listeners who had jobs to offer were invited to telephone the station during the course of the auction. The radio audience was informed of the progress being made in placing the men. The names of those persons offering employment were read over the radio (439).

Some broadcasters actively encourage telephone calls in the same way they solicit mail response. Playing request numbers is an old and tried method. Harry Lauder's fifteen-minute program brought four hundred telephone calls to WJZ, one hundred of which were for request pieces. Many persons wanted to know when Lauder would sing again (48). One station reserved certain hours for special request programs. A half-hour before the program, listeners were invited by the announcer to telephone requests. Even would-be club members have been exhorted to enroll by telephone. WMCA broadcast a Sleep Time Club after midnight. Listeners were invited to join the club by means of telephone calls. In a few months over fifteen thousand members had enrolled (251).

Information concerning merchandise and services has been requested by listeners as a result of hearing radio programs. WTMJ put on a program in which a Mrs. Grey described new things seen by her during the preceding day in the various stores, shops, and offices. Listeners were invited to write or telephone if they wished to know where any of the described new articles could be found. For two or three hours after each broadcast, Mrs. Grey and her assistants were kept busy on the telephone answering inquiries (471).

Occasionally, broadcasters alarm telephone officials by precipitating deluges of calls (344, 548). Service at Minneapolis was stricken by a race after angel-food cakes. A bakery over WCCO announced that angel-food cakes valued at 49 cents each would be given free to the first ten people requesting them. The telephone service was reported to have been completely tied up. More than seven thousand calls were identified as resulting from the broadcast, and the telephone company exacted a promise that the announcement would not be repeated (491). This use of the telephone response by stations as a method of measurement is handicapped by the fact that the prize offered is of too great value to give the telephone calls much significance with regard to the popularity of the program itself. Furthermore, the chance element involved in giving

the first ten persons a reward is not sound. It is preferable to give everyone calling within a certain time a less valuable sample or token. Contrast this conclusion with that of Cummins who states that the lottery is one of the best ways to prove to a merchant the value of his program. As an example he cites the case of a large department store which did not think the orchestra program sponsored by it was getting results. At the end of the program an announcement was made that some lucky listener would receive \$10. In one hour 907 calls were received, and the telephone company recorded over fifteen hundred incomplete calls on the meter (463). As a method of measurement for radio programs this is an excellent way of proving that human beings have not outgrown an interest in \$10!

Solicitation of telephone calls as a means of measurement brings about a more immediate but less satisfactory response than appeals for mail. The telephone switchboard can only carry a limited number of calls as contrasted with the limitless capacity of the mails. Furthermore, requests written on paper with names and addresses are easier to count and to use for other purposes than are telephone requests. The advantages of the telephone are that the time limit for response can be sharply restricted, thereby offsetting listener-to-listener communication when more valuable offers are given, and that most listeners prefer to talk rather than to write.

THE TELEPHONE SURVEY

As now practiced, there are two fairly distinct types of telephone survey. In one, the listener is called at the time a certain program or station is on the air, and the interviewer determines whether he is listening to this station or program. This is a factual survey. The investigator merely tries to determine what is happening in the radio homes of the city at a given time. This type of survey is sometimes called a simultaneous or coincidental survey. The other type of survey consists of questions on listening habits and is the telephone equivalent of the ordinary personal-interview survey conducted in the home³ or of the mail questionnaire. The time at which the survey is made is not a matter of such consequence as in the case of the first type of survey.

³It is possible to duplicate the simultaneous or coincidental telephone survey by means of personal interviews at the house. The difficulty of sampling different districts in the city and the time consumed in making the interviews, however, militate against use of the face-to-face interview for this purpose.

CHARACTERISTICS OF THE TELEPHONE SURVEY

Although the telephone is used in place of the ordinary interview survey to ask the listener a number of questions about programs, it is most esteemed as a means of conducting a simultaneous inquiry into the home. More and more investigators are relying on the simultaneous type of survey to obtain the "facts" (see Note 73). From these facts they are piecing together information to give a complete picture of the listener's habits and trends in radio listening. The listener is less and less asked what he usually does. More and more he answers questions on what he is doing at a specific moment.

From these considerations it follows that one of the chief purposes of the telephone survey is to obtain a count of the listening audience, to determine how many are listening at a certain time to a certain program. Further purposes revolve around those discussed for the questionnaire and personal-interview surveys, except that over the telephone a question is often asked to find out whether the listener can name the sponsor of the program he is hearing.

The importance of the simultaneous survey warrants a separate discussion of its advantages and disadvantages before considering those generally characteristic of the telephone interview as a whole. As first disadvantage, the method of the simultaneous survey, by interrupting the program, conflicts with the purpose of the broadcaster in putting it on.⁴ As second disadvantage, the simultaneous method usually secures little information from each person interviewed, although a large number of persons may be called within a short time. This means that if any large number of sponsors resort to this method, the patience of the radio audience will be rapidly exhausted. The simultaneous method is a method par excellence for one station or one sponsor to use, since he need ask only for information relative to his own program without direct use of the name. For radio as a whole, it is a poor method of measurement. The Co-operative Analysis of Broadcasting, with all its defects, secures information from one interview which is potentially of interest to sixty-five advertisers. The chief advantage of the simultaneous telephone method, as previously stated, is that it seems to secure factual information (uninfluenced by memory). A second advantage lies in cost (per interview); a third in ease of administration and control of interviewers.

⁴Imagine the outraged feelings of the 519 listeners to the Standard Symphony broadcasts when they were called to the telephone in one survey by the Standard Oil Company to record their attendance at the program.

Since the Arnold Research Agency has presented a rather comprehensive statement of the occasions when telephone interviews may be used, its recommendations are reproduced here. Telephone interviews may be used to advantage when the information to be obtained is fairly limited and consists of definite facts such as radio programs heard and preferred; when a large number of widespread interviews must be made within a limited length of time, as during the course of a given radio program; when unclassified interviews are wanted or interviews classified only by the type of neighborhood; when selected persons are to be interviewed, such as individual magazine subscribers, known purchasers of certain products, automobile owners, business men at offices, and so on; and when the cost is important, since in comparison with mail questionnaire the cost is rarely greater and may be much less.⁵

Conversely, telephone interviews are at a disadvantage when extensive information is desired (with a long questionnaire or schedule card there is little advantage in cost for the telephone interview and the results are definitely less accurate); when analysis of the listener's attitude is desirable; when observations of the person and comments on and interpretations of the replies by an intelligent and trained interviewer are needed to select the proper answers; and when the information to be obtained must be classified on the basis of buying power, rental value, income, age, nationality, intelligence, and the like (8, 467).

QUESTIONS

How can questions be phrased so that they are suitable for the telephone interview? Evidently, they must be brief and require little explanation. In a face-to-face interview it is possible to amplify a question so that understanding of difficult questions is obtained. The telephone interviewer can hardly hope to do this.

Simultaneous telephone survey.—Bevis and Amos made a rather careful study of the questions to be used in a simultaneous telephone survey.⁶ Several different forms and wordings for each question

⁵Cost of complete telephone interview has been computed as between 15 and 40 cents (8). Crossley pays about 15 cents for each completed interview.

⁶The simplest form of the simultaneous radio telephone survey is exemplified by the Gannett Newspaper radio test. The questions asked were, "Do you own a radio? Are you listening to the radio this evening? To what station are you listening?" (712). The American Newspaper Publishers Association extended the scope of this survey method by adding a fourth question, "What is the program supposed to advertise?" (2).

were tried out in test calls. For this reason their questions are given here in detail, as well as some of the comments on them. After the preliminary-approach technique had secured the co-operation of the person to be interviewed, he was asked, "Do you own a radio?" In response to this question, many said they had two. The second question was, "Is it turned on now?" Bevis and Amos found this question suitable, although it could be condemned on the grounds that listeners might turn their sets off to answer the telephone. Bevis and Amos claimed that people usually mentioned whether or not they had turned the set off when the telephone rang. Compare this question with one which takes care of this difficulty, that is, "Was your radio set turned on when you heard the telephone bell ring?" (98). The third question was, "Do you know what station you are listening to?" Such a question might antagonize listeners, and it is possible that it might be better to say, "May I ask the name of the station to which you were listening?"

The fourth question was, "Do you know the advertiser who is putting on the program?" Here is, of course, one of the crucial questions for the advertiser or sponsor. But it is still a matter of uncertainty how accurately this question checks the facts which the sponsor desires to know (*see* Note 74). This way of phrasing the question was chosen by Bevis and Amos after careful consideration of other forms. They decided to use the term "advertiser" instead of "sponsor" in order to avoid ambiguity (13). However, many institutional programs are conducted on a publicity rather than advertising basis, while other programs emphasize the product. Any question on this subject should have two parts and be phrased somewhat as follows: "May I ask the name of the program to which you are listening?" And if needed, a second question could be added, "Do you know the advertiser putting on the program or the name of the product advertised?" Answers to the first question will give the name of the program as the public generally knows it. This is important information for those sponsors who are using featured talent. If the listener gives the name of the advertiser in answer to this first question, then the second question is not necessary unless information on ability to name the product is desired. If featured talent is named or the technical title of the program, "Gold Medal Express," is given, the second question will elicit the further information in regard to the advertiser and the product. The phrasing of the question also permits the names of sustaining programs

to be given and does not place the listener in the position of not being able to answer the question because it does not refer to him.

The questions on a simple effective type of telephone survey, widely used in the East, included, "Have you a radio? Was it turned on when you answered the telephone? Would you mind telling me to what you were listening?" If the responder mentioned the name of the program, the interviewer then asked, "Do you know what station that program is on?" If the responder, on the other hand, mentioned the name of the station, the girl asked, "Do you know what the program is?" (98). This served as a check on the answers and, furthermore, was an intelligent use of a flexible technique. It is important to ask questions so that full information is secured, but it is also important to let the listener answer as he will. The interview may usually be shortened by elimination of the question, "Have you a radio?" Directly asking, "Was your radio turned on when the telephone rang?" causes the 5 per cent who do not own radios to say so immediately (78). Arnold also omits the second question (7).

In studying these simultaneous-survey questions, it will be noticed that no one of them asks, "Are you listening to the XXX program over Station XYZ?" This is an important point, and neglect of it is apt to invalidate the whole survey. If the investigator is interested in one special program, it is better not to ask direct questions about it, but ask questions which will elicit the name of the program from the listener or permit him to compare the name of the program with the names of the other programs. There have been many surveys conducted, however, where this type of question has been asked with "gratifying" results for the sponsor of the program or the station manager. In one case the following question was asked, if the program named by the person interviewed was not the one in which the investigator was interested, "Have you ever heard such and such a program which comes over such and such station at such and such a time?" In another survey, a Washington shoe store called one thousand of its customers. The name of the shoe company was given and then the customer was asked whether he listened to the company programs (615).

In making out questions for any type of survey, it is well to anticipate the various answers which the person could make. These will be a guide in phrasing the questions and in setting up the report forms. When a simultaneous telephone interview is attempted, any one of the following possibilities may occur. First, the number

may be disconnected; second, the line may be busy; third, the person may not be at home; fourth, the person may not speak English; fifth, the person may not wish to respond; sixth, the person may not own a radio; seventh, the radio may be out of order; eighth, the radio may not be turned on at the particular time the call is made; ninth, the person may not know what program or station is tuned in at the time of the call (98).⁷ Knowledge and consideration of those eventualities are of importance in tabulating the final results and drawing conclusions. For example, are persons whose lines are busy or who do not answer to be counted as not listening to a radio?

Ordinary interview surveys.—Questions on ordinary interview surveys conducted by telephone have obtained information on the hours the radio set was used the previous evening, the number of people and their ages who listened, the names of the programs heard in rank of preference, the station names, and the listener's selection of the best programs on the air along with reasons for considering these programs best (8, 74), (see Note 75). No attempt will be made in this chapter to discuss in detail the form of the questions used in asking for such information. The general rules laid down for the questionnaire and the personal interview may be consulted.

SAMPLING

Sampling in telephone surveys is necessarily limited to the list of telephone subscribers, and so it must be taken for granted, in the first place, that the results of a telephone survey are not typical of audience response in general.⁸ This makes it imperative that unwarranted extensions of the conclusions from the data be avoided. Within these restrictions, telephone sampling is relatively easy when no attention need be paid to classification by economic groups, location of residence, nationality, or race. The problem resolves itself simply into a mechanical matter of selecting names at random from the telephone book (7). For the sake of mutual understanding of survey results, it might be desirable to adhere to some common or standard method of sampling names from the telephone directory. Then, in reporting the survey, it would be necessary only to specify the method by name. The main precaution to be watched in selecting names is that the use of only one section of the book be

⁷Ten per cent of the total calls in a Minneapolis-St. Paul survey were ineffective; the line was disconnected, busy, or information was refused (78).

⁸The justification most often given for the use of the telephone survey is that telephone subscribers represent buying power better than other groups.

avoided, since certain initial letters are characteristic of different nationalities. Especially for the simultaneous type of survey, where it is necessary to have the sampling thoroughly random, names should be selected from the telephone book by going from cover to cover at frequent intervals.

In one survey names were picked throughout the alphabet by dropping a pencil point upon a page opened at random and taking the residence number nearest the spot (712). This is not a recommended procedure. Usually, activities which seem completely random are not as effective in producing a chance distribution as planned selection of names. Telephone books tend to open more easily at some pages than others, and pencil points are apt to be dropped in the same places. In an Omaha survey, approximately the first sixty telephone numbers in each alphabetical division were called, this being relied upon to give geographical distribution (107). A still better method is that used at Boston. An ordinary telephone book was divided into sections assigned to interviewers. The interviewers chose several names at random from each page in their respective sections, proceeding toward the back of the section and then going over the sections again and again as the day progressed. Each section was thus covered many times in a day, thereby avoiding any chance of calling too many names of the given initial during any particular hour of the day (98). This last method might be varied (perhaps improved) by having the interviewer take the first name in every column throughout the entire section, then the second name, and so on. If still more representative alphabetical sampling were desired, the tenth and twentieth names in the columns could be taken on the second and third times through the section. In Minneapolis and New York surveys, selected telephone numbers were placed on individual cards, thoroughly mixed, and dealt out to the interviewers. In this way consecutive order of the numbers alphabetically or by telephone exchanges was avoided (78, 4).

Of perhaps even greater importance than geographical sampling is time sampling, especially in the simultaneous telephone survey. Unless the interviews are spread over a representative series of programs, the conclusions with regard to station preference can be faulty. To illustrate the great differences prevailing in sampling practices for the simultaneous type of survey, the following figures are given for different surveys. The interviews were made between 8:30 to 9:30 P.M.; 6:30 to 10:00 P.M.; 9:00 A.M. to 6:00 P.M.; 9:00 to

9:15 P.M.; 7:30 to 10:00 P.M.; and 9:00 A.M. to 10:00 P.M. (*see* Note 76). There is one conclusion which can be drawn from these various time samplings. All of these results are valid and instructive in so far as the results are given for single hours or programs. When the results are combined and given to show the total superiority of one station over the other, they lose their significance.⁹

Why does one station survey during the daytime? Why does another station make a survey from 7:00 to 7:15 P.M. eastern standard time? The answer is clear. The station feels that such a survey becomes it better than if the survey had included other hours. This may be good sales promotion, but it is poor measurement. Surveys of the simultaneous telephone type, when they are used to measure station popularity or station listening habits, need to be comprehensive in time sampling. All stations need to use the same basis. Surveys to determine the popularity of a single program are necessarily made at one time; that is, the time the program is on the air. Here, however, it is necessary to sample several different occasions. Thus Bevis and Amos were able to show that different competition produced different results. At Evanston the A and P Gypsies had one-fourth of the audience on Monday, but only one-sixth of the Thursday evening audience when the program competed with Lucky Strike (13). In determining when a telephone survey should be made, it is advisable to note any attractions which would render the results atypical. On one occasion, at Columbus, a large morning sale made it necessary to call 45 homes in the morning in order to complete 7 interviews. Experience of the Telephone Company has shown that in general it is hard to obtain telephone interviews early in the morning, at noon, and late in the afternoon.

One of the reasons why the telephone survey has gained in popularity is found in the high relation between telephone ownership and radio-set ownership. The following percentage figures for different surveys will show conclusively what a large proportion of telephone subscribers are set owners: 85, 95, 95, 89, 91, 83, 90, 76, 86, 90 (*see* Note 77). These figures are already out of date so that telephone ownership is now almost synonymous with radio ownership.

⁹WBZ took the results of the survey of the Yankee Network and computed its own popularity. But instead of leaving the figures in an hourly breakdown, WBZ combined them to infer that it was the most popular station for the entire three evening hours treated in the survey. Since, however, the survey of the Yankee Network showed WBZ leading for only one of these hours, at which an overwhelmingly popular single program was put on over WBZ, it is obvious that the results were misleading when combined.

If so many telephone subscribers possess radios, it is important to know how many radios are left over for those who do not have a telephone. A calculation with WGY figures gave a 13-per cent radio ownership for non-telephone subscribers in the Schenectady area (*see* Note 78 for details of the calculations). Several years ago the ratio of telephone homes with radio to non-telephone homes with radio was 5.5 to 1 in Evanston, Illinois.

It is of value to know how many persons will be at home when telephone interviews are made. For the various surveys, the results are as follows, and the persons at home are given in percentage of the total number called: Columbus, 85 per cent; Omaha, 80 per cent; Gannett, 79 per cent; Gallup, 82 per cent; American Newspaper Publishers Association survey, 82 per cent; Bevis and Amos, 82 per cent; Forker, 73 per cent; Arnold Research Service, 74 per cent; Minneapolis survey, about 85 per cent; Milwaukee survey, about 70 per cent (120). It is surprising how constant these figures are when the differences in time and geographical sampling underlying them are considered. Bevis and Amos found that after the fifth ringing of the telephone bell, only a negligible number of people answered the telephone. They therefore marked persons "not at home" who did not answer before the fifth ring (13). This might be used as a standard practice if the ringing interval elsewhere is the same as at Evanston. In Minneapolis six rings were allowed (78).

The person called, however, may not care to be interviewed. In the American Newspaper Publishers Association survey these unwilling persons amounted to one per cent (2). Bevis and Amos found 2.9 per cent unwilling to talk (13). Arnold Research Service gives the number of persons who refused to talk, or were unable to understand, or did not speak English as about 2.4 per cent (8). Bevis and Amos in evening interviews found the telephone answered by two women to every man.

The number needed to secure a proper sample has been discussed in other chapters. It may be restated that the Omaha (107) and Columbus (43) surveys attempted to include 5 per cent of the homes in the city. Other samplings have been less; few have been greater.

INTERVIEWERS AND METHODS OF INTERVIEWING

Sometimes telephone interviewers receive special training; in one organization, a number of interviewers with tested voices were employed for telephone surveying (537). Often interviewers are

college students as in the Columbus and Omaha surveys mentioned previously. Telephone girls are also used by many organizations. In fact, the Telephone Company itself at one time furnished an interviewing service (627), and in making interviews in behalf of its own program, estimated that the average interviewing girl could secure 75 complete interviews during the day (4). This figure holds for a regular interview of average length and may be compared with the Crossley type of survey where each completed interview averages about ten minutes. For the simultaneous telephone survey, Arnold requests interviewers to secure 40 interviews an hour (7).

Important in setting the stage for proper co-operation on the part of the person called are the opening words of the telephone interview. For this reason some of the "telephone approaches" used in different surveys can be profitably studied. Bevis and Amos worked out what they believed to be a good method. The approach consisted in having the telephone interviewer give her name and say that she was a student of Northwestern University.¹⁰ When the name of the interviewer was given and the name of the person interviewed employed in making the call, most people feigned to know the interviewer. The form of the opening statement was, "Is this the _____ residence? I am _____, a student of Northwestern University. We are making a survey of the radio listeners in Evanston for our advertising class." The inclusion of such words as "census" or "survey" made it easier to get information (13). Approaches used in other surveys were: "Pardon me, this is an independent radio survey; do you own a radio?" (712); and "Good morning (afternoon, or evening). This is the Radio Research Association. We are trying to find out what people are listening to on their radios at this time of day. Would you mind telling me—have you a radio?" (98).

Occasionally, it is worth while to solicit co-operation from respondents by previous notification. It is practicable sometimes to send out mail notifications of the impending calls or to submit the questionnaire in advance and telephone for the answers.¹¹ In other cases, it is possible to build up a list of respondents who can be called again and again, either on the same or different subjects (8).

¹⁰Bevis and Amos claimed that people were usually able to distinguish when fictitious names were given.

¹¹Reversing this procedure, Kirkpatrick secured promises of co-operation by a telephone call before mailing a questionnaire. Returns from listeners contact by telephone were about 49 per cent as contrasted with a 32-per cent return to questionnaires mailed without notification (64).

In this way, co-operation may be secured and perhaps increased accuracy and reliability in replies.

Some form of check should be incorporated in every survey. Either some of the same people may be called again to verify the information received or check questions may be placed in the original questionnaire. In some cases verification of the information obtained in interviews has been accomplished by sending letters to the person reported as interviewed. These have shown a remarkable degree of reliability in the telephone results according to the Arnold Service (8). This test should be a part of every survey.

RELATION TO OTHER TYPES OF SURVEYS

The relationships existing between the results of telephone surveys and the results of other methods of measurement should be known. There is at present, unfortunately, little information on this subject. Forker described a plan whereby the relation between requests for a free offer and the actual audience as determined by a simultaneous telephone survey was ascertained. At one time a dust mitt was offered to the radio audience. There were 1,893 inquiries sent to one station alone. The audience for this station was determined by telephone survey; 72.8 per cent of the persons called were at home; 48.7 per cent of those at home had their radio sets turned on; and 16.6 per cent of those were listening to the particular program in question. The total audience figures were computed in this way: 523,416 families were in the station's ten-mile area; 112,269 families were listening families (applying Crossley figures of 60.5 per cent for radio-set ownership x 72.8 per cent x 48.7 per cent); 18,637 sets were tuned to the particular program (112,269 x 16.6 per cent); 57,774 listeners were in the average daily audience (18,637 x 3.1, the Crossley figure for listeners per set). The audience figure was divided by the number of inquiries to give a ratio of 1 to 31. It was thus possible to multiply the inquiries sent to other stations by the same ratio and compute the total audience for all stations for this particular program. Forker stated that other surveys of this kind gave ratios of 87 to 1 and 144 to 1. He believed that some sort of an average could be applied, and that the development of this procedure had possibilities (252).

For the Crossley survey, which is carried on, for the most part, by telephone interview, tests showed a close correlation between the results of telephone and face-to-face interviews (74). Comparisons

at Hartford between Price-Waterhouse questionnaire returns and answers to simultaneous telephone interviews showed little difference in the results on station preferences (281).

Probably, the most comprehensive comparisons between survey results have been carried out at Milwaukee by Station WTMJ. Simultaneous telephone calls, telephone interviews (including the Crossley type), personal home interviews, and mail-questionnaire inquiries were all made. There was considerable relationship between the results when differences in wording of the questions ¹² and general methodology are taken into account. As a detail of procedure, it is interesting to note that housewives appear to be more willing to answer the telephone than the doorbell (120).

¹²In the regular interviews and on the questionnaires, radio owners were asked, "Do you usually listen between seven and nine in the morning?" In the simultaneous survey, the set owner was called between those hours and asked whether his radio set was turned on. The telephone interview showed 36 per cent listening between these hours; a post-card questionnaire survey showed 33 per cent. The simultaneous survey indicated an average of 10 per cent tuned in at each moment of the two hours (120). Probably the last figure is the most useful figure, but it is also important to know that from three to four times as many sets as are tuned in at one particular time will have been turned on some time during the two hours. The difference in the wording of the questions prevents inference as to lack of reliability.

Author's Summary of Chapter VII

THE most accurate methods of sales analysis are those in which sales due to the influence of radio can be compared with sales not due to radio; sometimes a product is radio advertised in one region and not radio advertised in another similar region; sometimes similar products are sold, one with radio advertising and the other without. Charting increased sales without any basis for comparison does not necessarily prove the effectiveness of radio. All types of products may be sold successfully. There is apparently no known relation between mail response and sales, and not much evidence for a thoroughgoing relation between popularity of program and sales.

CHAPTER VII

ANALYZING SALES RESPONSE

The inclusion of a special chapter on sales analysis is made necessary by the emphasis now placed on selling goods by means of radio. This field furnishes numerous instructive examples of the influence radio can wield in other phases of our daily life.¹

In interpreting the results of any sales analysis and correlating these results with the type of program given, one point is especially important. Does the sponsor of the program wish to sell his goods immediately, or does he wish to build up good-will or public acceptance which will enable him to sell goods over an extended period of time? A study of advertising programs on the air at the present time will show how greatly the advertising varies with the purpose of the advertiser, and how wrong it would be to analyze the results without reference to this purpose. For some products, no other type of advertising than good-will advertising appears possible; for others, direct selling seems to be the only significant method. Fundamental advertising-measurement study needs to be carried out to determine what types of advertising are best suited to each product, whether emphasis on long-run sales is feasible, and finally how far the advertising on the program can be minimized in favor of the entertainment aspects without losing effectiveness.

METHODS OF SALES ANALYSIS

The common types of studies which have been made in analyzing sales effectiveness are: advertising product entirely by radio and charting sales curve; relating changes in advertising to changes in sales; comparing sales in districts with and without radio advertising, for it is assumed that all other advertising factors for the two districts are equal; comparing sales for similar products, one with

¹A book is advertised by means of radio. There is an increased demand for this book in the stores; people wish to buy it. It is evident that the increased demand in stores should be correlated with an increased circulation in libraries, if libraries possess the book.

radio advertising and one without; comparing radio with other media (newspapers) in sales effectiveness. In all of the methods just given, the sales are charted and related to certain factors. In addition, customers have been asked reasons for buying, or the comments made by purchasers in buying have been studied.

SALES DIRECTLY TRACED TO RADIO

Case histories of radio advertising are replete with examples of the immediate sales effect of programs. One of the commonest methods of testing the effectiveness of the radio program is that of advertising the goods in no other way. Marshall-Field's, Bamberger's, Wanamaker's, Macy's, Bloomingdale's, Gimbel's, and other stores throughout the country have used "radio specials." These articles are not otherwise advertised, although announcements of the radio program advertising them are featured in newspapers and in the store displays. The sales of this merchandise can be fairly attributed to the radio program. The advertising cost can be calculated and charged to the specific article (306). In a large department store, it is thus possible to test the effectiveness of radio for a great number of items.

Many concrete cases of specific results could be mentioned. It would also be possible to cite numerous examples where no response, or only a discouraging response, was received. Unfortunately, not enough information is available with regard to the latter cases. The conclusion, however, is clear. Radio can sell goods, and this may be proved by making special announcements over the radio and checking the number of articles sold. It is equally clear, however, that immediate sales do not measure the whole effect of radio. According to the Dartnell report, few stores felt that a simple count of the number of items sold within a day or two following the program revealed the complete result. Most stores believed that there was an added good-will effect which was particularly emphasized if the program contained music or entertainment. Besides this good-will effect, which might be shown in the purchase of merchandise other than that specified in the radio program, there was also a cumulative effect in that purchases were made a week or a month or more later.

RELATING CHANGES IN ADVERTISING TO CHANGES IN SALES

One of the commonest, if not most desirable techniques in studying sales is the famous "before and after" method. It is assumed

that sales continue on a straight line, and that the effectiveness of any advertising innovation is to be measured in a change in the sales response. A manufacturer, planning to devote one fourth of his advertising appropriation to radio, wanted to know whether this reapportionment would be better than the former advertising procedure. He put on a relatively inexpensive daytime program on one station and watched the sales for six months, expecting that the change in sales before and after the program would be noticeable. Other program sponsors have had an opportunity to observe results when a program was removed from the air.²

In fact, practically every radio advertiser has been in a position to observe sales response and its relation to his radio programs. But is this a suitable method for judging radio effectiveness? Elder thinks it is not. He believes that asking a group of manufacturers to furnish under proper safeguard their sales-volume figures for a period before and an equal period after they began advertising over the air is not a sound method of analysis. This is so because changes in sales volume cannot consistently be attributed to any single item of sales promotion, in view of seasonal and cyclic fluctuations in trade and the constant state of flux in sales policies and personnel, as well as distribution methods (29). "Before and after" studies are not valid unless some means of comparison with existing trends is at hand. This comparison involves a different type of method and considerably more control of the whole procedure (*see* Note 79). Such methods will be described in the following section.

TERRITORIES WITH AND WITHOUT RADIO ADVERTISING

In determining the effectiveness of radio advertising, the sales response in territories exposed to radio has been compared with that in territories not exposed. According to this method, radio advertising is used in some cities and not in others, although the product is distributed to all cities. It is assumed that while the groups in the different cities are not the same geographically, their habits and buying power are the same.³ A borax company checked its sales and found that the sales increases followed closely the territories where adequate radio coverage had been secured (462). One food

²It was reported that the College Inn Food Products lost its entire distribution in one section because the radio programs were discontinued (520).

³In one case, a drug company checked stocks for a period of weeks in selected stores in a town where an advertising campaign was in progress, and in the stores of a comparable town near by. In this way a standard was obtained for judging the effects of the advertising in the one town (231).

company used radio in several cities. A definite check was made of sales figures for those cities as against other good markets throughout the country. From this it was concluded that radio resulted in a sales-volume increase averaging 100 to 500 per cent (272).

In some cases attempts are made to ascertain the brands used in regions with and without radio, rather than to determine the actual sales figures. The Elder survey is by far the most important survey of this type which has been conducted for radio. Comparisons are made in two ways. In the first place, Elder compares the brands of products used in radio homes with those used in non-radio homes. This comparison is of especial interest in summing up the effectiveness of radio advertising as compared with no advertising by radio. As a further analysis, Elder compares the brands of products found in radio homes where the radio is used a great deal and in radio homes where the radio is used but slightly. In the second place, for single brands Elder is able to compare the use in those cities where the brand is radio advertised with the use in those cities where it is not radio advertised. In this case figures are computed for both radio and non-radio homes. It is thereby possible to determine that a specific product is used more extensively in radio homes than in non-radio homes in cities where it is radio advertised, and less extensively in radio homes than in non-radio homes in cities where it is not radio advertised. This type of comparison is important since in a way it neutralizes the effect of any selection in the sample.

Because of the significance of the Elder survey as a method of measurement, a rather full analysis has been made of the validity of the conclusions and the difficulties of interpretation. This analysis is included in the Appendix (*see* Notes 80 and 81).

Similar to the Elder survey is a type suggested by Compton where, through personal interview, housewives are asked in radio and non-radio towns what brand of a certain product is used and when the use of this brand was started. It is claimed that housekeepers can remember for two months back when they changed over from one product to another (231). Since many food products are now being advertised by radio, it might be interesting to apply the Elder technique to a study of grocery orders. The grocer could put down the brand requested on the charge bill. Then it would be a simple matter to determine whether the customers had radios, ask them a question on the amount of use, and correlate the kind of brand purchased with the extent of radio advertising.

SIMILAR PRODUCTS WITH AND WITHOUT RADIO ADVERTISING

Instead of using different territories or radio and non-radio homes for the comparison of the sales response to one product, it is possible to study the sales for two similar products advertised in different ways. This is what the American Safety Razor Corporation did. The advertising of the Ever-Ready razor was concentrated on radio entirely, while the Gem razor used the standard publications which years of advertising experience had shown to be the best. Both products were of the same price and of the same general appeal to the buyer (332). The razor manufacturer decided at a later date to use radio also for advertising Gem razors (480).

RADIO VERSUS NEWSPAPER ADVERTISING

At various times, direct comparisons have been made between the sales effectiveness of newspaper advertising and radio advertising. One of these is described in a Dartnell report. A test was made in three Chicago stores. Only one medium was used at a time, and two or three weeks were allowed to elapse between the various tests. A face powder at 49 cents was used as the article to be advertised. The same amount was paid for radio and newspaper announcements. According to these figures, little difference was shown between radio and newspaper advertising as to results obtained per unit cost (45).

Another example of a direct comparison between radio and newspapers was made in this way. For the test, the manufacturer of a shampoo selected three territories in which his sales had been equal and satisfactory over a period of years. An advertising campaign with increased appropriations was prepared, and at the end of the test period, sales increases were used as the gauge of the merit of the medium. In territory No. 1, where newspaper advertising only was used, the sales were increased 3 per cent; in territory No. 2, where radio only was used, they were increased 40 per cent; while in territory No. 3, where both radio and newspapers were used, they were increased 80 per cent (296). It is not stated whether the advertising appropriations were equal, and, furthermore, the novelty effect of radio advertising must be discounted. In a test, not on sales response but on inquiries pulled, it was found that the cost per inquiry for radio was half that for the publications used. An equivalent circulation coverage was used in both cases with the same expenditure of money and the same advertising formula (530). In a study reported by Columbia, the cost was one-tenth for radio (36).

A comparison between other media and radio is implied in a Columbia Broadcasting System publication on net profits for leading national advertisers using radio and not using radio (42). The chief difficulty with this study is that advertisers using radio also used other media and presumably were in a position to advertise extensively through several media (including radio) because they were making a profit.

ASKING CUSTOMERS REASONS FOR PURCHASE

In certain cases it has been possible to check directly on the effectiveness of radio advertising by asking customers the reason for their purchase of a particular product.⁴ In other cases, the investigator has been content simply with identifying the source of the information about the article, whether it came from newspapers, radio, direct mail, or conversation with friends (36). Customers have commented on hearing the articles advertised over radio (108).

EXAMPLES OF SALES RESPONSE

In the case histories of radio advertising, practically every type of product is mentioned, and sales results have been secured for some examples of almost all of these. Probably the most pertinent indication of the type of products which radio can successfully advertise is to be found in the advertising appropriations devoted to radio by different concerns. The figures contained in Hettinger's *A Decade of Radio Advertising* will give information on this matter. The purpose of this section is merely to indicate specific instances in which radio has sold certain types of merchandise and services.

BOOKS

Radio has on occasion proved itself an ally to the printed word and encouraged the reading of books, magazines, and newspapers.⁵ In England, broadcast talks have had a definite effect on the sale of books. The *Listener* gives the results of a talk by Harold Nicolson

⁴Elder criticizes any type of survey which questions consumers as to the form of advertising influencing them in making purchases. He believes that good advertising tends to establish itself largely by means of unconscious effect (29).

⁵Macy's noted occasional increases in book sales, which the saleswomen said were due to radio. Usually, however, no noticeable change in the sale of books was evident, in spite of the number of book reviews given (624). A report on the book trade in Germany stated that many sales were made as the result of the radio book hour which awakened a desire in listeners to read.

on "Samuel Butler." In the talk, Nicolson recommended Butler's autobiographical novel, *The Way of All Flesh*. Such a demand arose for copies of the book from booksellers that supplies were exhausted, and at the time copies were practically unobtainable. *The Way of All Flesh* was originally published in 1903, and according to the *Listener*, Mr. Bernard Shaw and others then did all they could to make it well known, but it remained for broadcasting to create such popular demand by introducing the book to thousands who had never previously heard of it (505).

Some books, notebooks, and textbooks have been written especially to be used in connection with broadcasting. In Denmark the popularity of the foreign-language talks was gauged by the number of textbooks bought. Some fifty thousand textbooks in English and German, and twenty thousand in French were sold to listeners (79). Psychology broadcasts, under the auspices of the National Advisory Council on Radio in Education stimulated sales of psychology notebooks prepared especially for the series; twenty thousand copies of the first *Listener's Notebook* were distributed.⁶

MAGAZINES AND NEWSPAPERS

In the magazine and current-periodical field radio has brought new subscribers. A report on the United States Office of Education experiment in placing sets among the mountain people showed that Lowell Thomas' talks had stimulated subscriptions to the *Literary Digest* (714). Dunlap cites two examples of radio's influence in promoting magazine circulation. Collier's began its radio programs in January, 1927, and had at that time a circulation of 1,284,000. In June, 1927, the circulation was 1,387,000; and in June, 1930, it was 2,257,000. These figures were obtained from the Audit Bureau of Circulation. Similarly, *True Story* had a circulation of about two million copies before it went on the air. In July, 1928, *True Story* began broadcasting with a supplementary advertising campaign to call attention to the broadcast. During the year, news-stand sales increased 21 per cent over the annual sales when no "True Story

⁶Two hundred copies of the first *Notebook* were secured for students in the department of psychology at Ohio State University and purchased individually by these students. Reception from the nearest station broadcasting the talks was not satisfactory, and the time of presentation interfered with student activities. A check-up in psychology classes revealed that only a few students had listened to the talks in relation to the two hundred who had purchased copies of the *Notebook* (608). In this case, the sale of each *Notebook*, rather than representing a large number of persons, represented, instead, about one-tenth of a listening person.

Hour" was on the air (48). Naturally, radio is a prime promoter in the sale of radio periodicals. The consistent rise in circulation among English radio papers is very interesting. For example, the *Radio Times* went up from 1,000,000 in 1929 to 1,600,000 in 1931; *World Radio* went from 127,000 to 258,000 (16).

The *Milwaukee Journal* feels that radio has been helpful in selling newspapers, and it believes that its two periods of radio news flashes act more or less as an appetizer rather than discouraging the listener from reading the detailed news story (234).⁷

FOODSTUFFS

In the sale of foodstuffs, radio has proved itself useful. WLS reports the case of a breakfast-cereal manufacturer who increased his distribution in the Chicago area from but two dealers to five thousand dealers. No other form of advertising was used. Sales were measured in terms of box tops sent in (437). As a fitting accompaniment to success in distributing breakfast cereals, the tale of a coffee program may be added. A certain coffee was rated about seventeenth or eighteenth among the coffees sold in its market before radio broadcasting was begun. Within ninety days, two thousand new accounts had been opened in southern California alone, and after further broadcasting the coffee came into third place on the west coast with regard to tonnage, money value, and number of cans of coffee sold (345). Besides counts of direct sales, an index to the number of dealers backing the product is important.

Sales response may be used to measure the value of certain specific items in radio continuities. One of these is the mention of price. The Atlantic and Pacific Tea Company was permitted to give prices in its program. Reports coming in to headquarters indicated that more than seven thousand stores were showing an increase in sales as a result of the new policy.

One humorous illustration of an instance where radio did not sell goods is related by the non-advertising British Broadcasting Corporation. In an English village, the radio set in the inn was dismantled because the discussion to which broadcast talks gave rise had a distracting influence on the amount of beer consumed.

⁷During an election, WTMJ, the station of the *Milwaukee Journal*, broadcast the general trends at appropriate intervals. Announcements were made that the complete and final returns would appear in the earliest morning edition of the *Journal*. Any listener desiring to have a copy delivered at his door could have this done by calling up the office and ordering it. Within a few minutes after the first announcement, 750 calls were received (235).

GENERAL MERCHANDISE

The Dartnell report gives cases of direct announcements. A department store at Rochester broadcast a special offer of card tables at 79 cents at eleven o'clock in the morning; 140 card tables were sold in the afternoon. At a Chicago shoe store, over one hundred women bought \$1.95 hose of a new shade and mentioned hearing it advertised on the radio. One announcement was sufficient to sell 51 pairs of hose at \$1.35 for a New England department store (45).

From a measurement standpoint, such isolated cases have no particular value, although they do indicate the possibilities of the use of radio. Similarly, the picture of a local druggist struggling unavailingly to rid himself of 136 dozen bars of a private brand of soap over a period of two years is appealing, and we are especially glad to know that one program on a single station sold the whole lot within two days (103). No one should be blinded, however, into thinking that radio will unfailingly move his own white elephant.

AUTOMOBILES AND HOUSES

Now we may consider some of the more difficult types of merchandising which radio has performed. Elder selected for his test of effectiveness of radio advertising those products which were largely independent of personal salesmanship. He believed that they would exhibit most clearly the results of radio advertising. However, the following instances will show that sales in almost all business lines can be attributed to radio. Over WNBZ a program of "educational nature" was credited by one automobile dealer with the sale of 60 per cent of his used cars for the year (518). Surely this is a tribute to the possibilities of education on the radio! In another case, a local automobile concern increased its used-car sales four times over in one and a half months at one-fifth of its previous advertising costs (103). A new field has been opened to the radio advertiser through the installation of radios in automobiles. WMAZ made an announcement for an automobile repair shop concerning its service in checking up cars. A tourist on the open road picked up the program while thirty miles away. On reaching the city in which the station was located, he drove up to the automobile shop, told of the announcement, and had his car checked (429).

Some listeners are so impressed with radio programs that they permit them to influence their choice of a home. A program entitled "Camptown Minstrels" was followed the next day by the sale

of a \$10,000 home. The program was put on the air about five times, and six other homes were sold. No other form of advertising was used (267). KDKA did its bit in selling listeners a last resting place. A program, put on every Sunday for two years, sold more lots than one of the oldest cemeteries had sold in fifty years (723). WGST also broadcast a program to sell cemetery lots, and cemetery lots were sold. The statement of WGST is "that if radio can sell cemetery lots, we maintain that radio can sell anything, provided it is handled in the proper manner" (256).

EXCURSIONS AND BANKS

A comparison of radio stations was made on the basis of attendance at excursions. Three excursions were planned from Cincinnati with the same tour, at the same time, and the same price. Excursion A used Station X and booked 73 passengers; Excursion B used Station Y and booked 97 passengers; Excursion C used Station Z and booked 129 passengers (457). If the excursion conditions were identical, and the announcements similar, this is an interesting example of one way in which the relative effectiveness of stations can be measured.

It perhaps might not have been thought that radio could be used to secure deposits for banks, interest persons in insurance, and dignify loans. The Illinois Automobile Club credited more than 50 per cent of the increase in its 1931 insurance business to a program over WMAQ (431). The Bank of America is reported to have built up its deposits by means of radio talks (485). Certain middle-western banks were helped in a time of stress and avoided runs by dramatized stories of "unfounded rumors." Confidence in the banks was restored by this means (510). President Roosevelt's talk about the 1933 bank closure was a good example of the influence radio can have in dealing with such intangibles as confidence.

INDIRECT JUDGMENT OF SALES

There are several ways in which we may obtain indirect judgment as to the sales effectiveness of radio programs. In the first place, the listener may be asked to participate in a contest, sending in a package top as his entry; second, we may judge from retailers' reports; third, we may ask persons whether they have bought radio-advertised products; fourth, a study may be made of the number of

advertising clients who stay with stations and continue broadcasting; fifth, the interest aroused by radio advertisements may be noted; and sixth, we may interpret the results of other types of measurement in terms of the amount of goods sold.

EVIDENCES OF PURCHASE

Naturally, package tops, labels, cigar bands, and other evidences of purchase do not show the total sales response to any particular program. Furthermore, in their present use by radio sponsors, they represent a type of forced sale, and do not therefore show how effective the normal program is in selling goods. Nevertheless, as one writer says, "The advertiser was not satisfied with fan mail complimenting his program. He wanted definite sales reactions in the form of labels and box tops" (308). Specific mention of certain offers of this type has been made in Chapter III.

DEALERS' REPORTS

Retailers and dealers can give their opinion on the sales value of a program as well as actual figures on the number of articles sold; 53 per cent of the dealers for a certain brand of paints and varnishes had traced new customers and definite sales results to a broadcast, while 43 per cent were unable to give any dollar estimates of the result. More than half of this latter group, however, remembered a few, or several, or many sales when the customer had mentioned the program as the source of information (348). Urist suggests that listeners be invited to secure free samples or special offers from dealers in order to give a listener-interest check and carry prospects into the dealer's store (341). Reports from dealers showing the number of listeners who called and estimates of the sales made through these visits could be of great value.

In some surveys, dealers have been asked which medium they think has been most effective in advertising certain products (721). In such a survey it was determined that radio was primarily responsible for the sale of six out of ten leading drug-store item groups (454). Caution must be used in interpreting replies on such surveys. Radio may attract the attention of the dealer because of its novelty.

ASKING THE LISTENER

In numerous surveys, listeners have been asked whether they purchased products as a result of radio advertising. For conven-

ience these figures are grouped together here and the specific references given elsewhere (*see* Note 82). The percentages of persons answering the (generalized) question, "Have you purchased products as a result of radio programs?" for various surveys were: 26, 64, 50, 66, 62, 28, 26, 24, 30, 19, 31, 24, 47, 56. Since the methods of asking the question were so diverse, no average of these figures has been computed. In other surveys, listeners have been asked whether they had purchased specific radio-advertised products and whether the purchase was due to hearing the radio program (85).

TESTIMONY OF CLIENTS AND ADVERTISERS

Sometimes clients disclose whether or not broadcasting has been an advertising success for them.⁸ At times, stations have depended upon these statements to show the popularity of the station with listeners (111). Reference to clients, however, will not have much significance unless the clients themselves employ some approved method of testing radio effectiveness.

To prove the general effectiveness of radio advertising and the effectiveness of advertising over particular stations, statistics have been quoted regarding the number of clients to continue broadcasting. WBBM claimed that because its contract-renewal ratio was high, this was an indication of the effectiveness of the station. The renewal ratio has been defined as "that percentage of a station's clients who are operating on renewed contracts" (441). According to a Dartnell report, only four stores out of several hundred indicated that their experience had been so unsatisfactory that they would not use radio advertising generally or for specific types of audiences (45).

INTEREST IN ADVERTISED PRODUCTS

The effect of radio advertising can be measured in ways other than by direct sales. The interest aroused in the product can be measured, and this is of vital significance for direct sales. WNBF reports that a jeweler offered a special article to be available when the store opened in the morning. The radio announcement stated that the supply was limited. When the jeweler arrived at seven-thirty, fourteen customers were waiting in the corridor for the store to open (518). Would-be purchasers at Washington were spurred to even greater activity when the proprietor of a shop decided to use

⁸Where the client is unwilling to make a report, physical evidence may be at hand to show that he has prospered through the use of the radio program. He may have increased his plants. Such was the case with Tasty Yeast.

radio advertising exclusively in selling out his merchandise. Announcements made over two radio stations several times stressed the fact that the sale would start promptly at nine o'clock Saturday.

In a down-pouring rain, hundreds of women were waiting to get in the store at the opening time. They crowded into the area way, and finally the pressure of the crowd smashed in the windows on both sides of the entrance to the store. Ten women were hurt. The police were called. The fire rescue squad was summoned.

Aside from the toll in injury, approximately \$2,000 was taken from customers who were able to get into the store to purchase merchandise (249). Fortunately, most appeals to the audience are answered with more restraint from listeners.

RELATION OF OTHER MEASURES TO SALES RESPONSE

In attempting to fathom the significance of the mail response, broadcasters have often wondered whether it is related to sales. Does a program which brings in much mail response sell large quantities of goods? As yet no answer is available to solve this vexing question. It is certain, however, that some programs with poor mail response may stimulate sales. One advertiser decided to attempt to increase his mail, since sales had shown a close relationship to it in the past. An offer of prizes brought an immediate jump in fan mail, as was expected, but the sales failed to join in the jump (330). On the other hand, another advertiser was able to use mail response to his program as an indication of general program effectiveness (*see* Note 83). Sometimes the sales response follows the mail response; other times it does not. Each advertiser must determine the relationship for his program himself.

There is the same lack of definite relation between sales response and other measures of program popularity. The Association of National Advertisers found that some programs, not even mentioned in the Crossley survey, sold goods. Conversely, others which impressed themselves on listeners' memories were not successful from a sales standpoint (623). Elder confirmed this conclusion by noting that one program which ranked high in popularity studies showed only mediocre results in terms of new users created (242).

Author's Summary of Chapter VIII

AUDIENCE activities may be measured by methods previously described, including especially personal observation. Audience activities of importance are reading, adopting recommended practices, making things (handicraft), and attending radio-publicized events. Recording devices have not as yet been used in measurement to any extent. Field-intensity surveys indicate coverage, that is, where a station may be heard, and also to a greater or less degree the location of the listening audience. Most broadcasters prefer, however, to measure the location of the audience directly through listener surveys.

CHAPTER VIII

SPECIAL METHODS OF MEASUREMENT

In this chapter are gathered together miscellaneous methods of judging the extent to which radio influences its audiences. In the first part of the chapter, activities of the audience are stressed and classified according to the type of activity, rather than the method of determining the activity. Information concerning these activities has been derived from mail response, mail questionnaires, reports, personal interview, and direct observation. To gain a proper impression of the importance of measurement in radio, it is desirable to group together some of the results of measurement. This is the purpose of the first half of this chapter in discussing audience activities, which may take the form of reading, making things, sending in contributions, and adopting practices recommended over the radio. The activity of buying has already been fully discussed. Attendance at various radio-publicized functions is also a significant audience activity and may be easily observed.

Indirect methods of measurement, where audience response is mirrored in the reviews of radio editors and the opinions of local station managers, should not be neglected. Nor should the possibilities of mechanical and electrical recording devices, which can be placed directly on the listener's set to determine length of listening and stations heard, be overlooked. Methods of measuring signal strength are properly the subject-matter of engineering. Nevertheless, since they are so intimately associated with a determination of the effectiveness of the radio station, a brief résumé is included.

ACTIVITIES OF LISTENERS

One of the most pertinent questions in using radio for purposes of adult education is this. Does the radio stimulate listeners to read more about the material discussed? The treatment of any particular topic by means of radio must be of necessity limited, and only those aspects of general interest can be taken up. In

describing agricultural practices over the radio, it has been found wise merely to indicate the general nature of the practice and its uses and to refer the listener to special agricultural bulletins.

READING

At the present time, it has not been found possible in many cases to segregate the effect of radio in prompting reading from other causes.¹ Some libraries have noted definite influences from radio talks in the circulation of their books. Books reviews, given over Station WOI in Iowa, caused Wisconsin libraries to protest because they could not supply the requests for the books mentioned (637). In Iowa, book announcements over the same station caused librarians to note an immediate demand for the books reviewed (499). The Yearbook of the British Broadcasting Corporation for 1931 stated that several librarians had collected evidence of the influence of broadcast talks on their book issues. In the Fort Wayne Public Library a study was made of the books and magazines which pupils of the seventh and eighth grades had been influenced to read through radio broadcasts. It was found that pupils in a school receiving the American School of the Air programs had read many more books than those in any non-radio school in the city. The pupils in the radio-equipped school were credited with eighteen good readings to one poor reading, whereas the pupils of the best non-radio school had three good readings to one poor reading. Pupils in both radio schools and non-radio schools heard broadcasts on books and magazines outside of school hours (616).

Figures have already been given for the increase in circulation of listeners' magazines and notebooks. Since some of these, like the *Listener*, deal with the content of the broadcast, it may therefore be assumed that radio talks have stimulated reading on the subject-matter of talks.

To give a concrete case of how radio explanations may help persons in approaching reading materials, a letter may be cited which was received from one man who said that he had never been able to comprehend the Sino-Japanese situation until he had heard several broadcasts over WCAU. After hearing the broadcast interpretations he was able to read the newspaper dispatches from China with understanding (225). Undoubtedly, one of the chief services

¹Efforts to measure accurately the results of a series of psychology talks were rendered difficult by the special publicity given the books by libraries. Some advertised the talks and put all the designated books on display (217).

which radio can render is to introduce listeners to previously unknown subjects and suggest books which they may read in following the topic.

LISTENER CONTRIBUTIONS

Over and above huge volumes of mail, radio stations and broadcasting organizations have been the recipients of contributions and gifts of all sorts, either upon request or without solicitation. Realistic manifestations of appreciation have been directed to the radio performers. These have been Virginia hams, Louisiana sugar cane, Vermont maple syrup, Georgia peaches, Montana sombreros, Arizona cowboy "chaps," California oranges, as well as linen, cats, dogs, pencils, shoes, tires, and so on *ad infinitum* (553). The kind of gifts sent in is an indication of the type of audience attracted. Sentimental presents have been sent to dance band leaders, while the "Sisters of the Skillet" received freak inventions and trick toys.

As shown by this type of measurement, listeners are quick to sense the needs of performers. When a radio artist appears to have a cold, the public may send him cough drops. If more explicit mention is made of the performer's difficulty, then the audience is sure to respond. On one program the announcer explained that the singer was affected with a cold. The audience response was expressed with twoscore bottles of cold remedies. Similarly, a statement by Guy Lombardo concerning the strings on his violin was responsible for the arrival of 193 yards of violin strings (553).

Some of the audience response verges on the fantastic. Listeners send in gifts in response to dramatic situations in the program as though these situations really existed. In response to Andy's expressed need for a typewriter, an L. C. Smith of about 1880 arrived in perfect working condition. On the occasion of Andy writing a letter with a nickle because he could not find a pencil, nearly five gross of pencils came in. Bones and dog biscuits by the bushel were sent to Amos for his dog. At the time Amos and the Kingfish started their bank, hundreds of listeners sent in dollar bills asking that savings accounts be opened for them (322). Surely these are some all-revealing facts about the American public mind.

Equally impressive and more useful is the audience response when listeners are requested to send in contributions for certain worthy or charitable purposes. On numerous occasions relief work has been aided through the participation of radio stations in appealing to the audience. In one such case a tornado had swept over a

region near a small station. By noon of the next day the station was organized to raise funds and secure whatever help was needed. Neighbors telephoned in offers of money, food, clothing, and shelter, and even the loan of threshing machines and hay balers to the sufferers (318). Appeals made in behalf of drought-stricken Arkansas brought \$38,000 in cash and many carloads of food to WNAX to be forwarded. Later another appeal was made for the farmers of the middle northwest. About \$30,000 worth of feed from about one thousand listeners was sent in for the use of the needy farmers (422). As a further illustration of the public response in times of stress, during heavy floods in Alabama several years ago, one station alone collected \$200,000 for the aid of the victims of the flood together with many carloads of clothing, food, and general supplies (59). In England, appeals have been broadcast asking financial aid for recognized charitable institutions, such as hospitals not supported by the state but maintained by voluntary contributions. Eminent persons have made appeals and met with a considerable measure of success. The total collected in this manner in Great Britain alone during 1931 was £65,674 (59).

At Rochester, an effort was made to secure eight hundred pairs of earphones for inmates of the Auburn State Prison. Within six weeks, listeners to one station had completely outfitted the prison so that each convict could have radio during his leisure hours in the cell. In addition to this, there were enough pairs left to provide for the patients of a local sanitarium for tuberculosis (246).

Radio has been used to locate missing persons and desired articles. Officials of the Chicago Century of Progress Exposition required a yoke of oxen and did not know where to locate them. One broadcast over a Chicago station brought in no less than thirty offers (517). Police in this country have used the radio to locate persons of unknown whereabouts. Similarly, broadcasting has been used effectively in England for the establishment of contacts with missing persons or with relatives of the sick. During 1931, in Great Britain, 378 broadcasts out of a total 910 were definitely successful. Chemists, who made errors in the execution of prescriptions, have been able to warn their clients before any injury resulted (59).

EXHIBIT MATERIALS

Audience contributions of a more educational nature have been successfully solicited. The Office of Radio Education in Mexico

was able to judge the progress made by pupils in some of the radio courses from the exhibits sent in. More than eight hundred different pieces of work were received for an exhibition held by the Radio Office. Some of the work was stimulated by a series of lessons on the uses of crêpe paper (325).

In Vienna, a course known as "Bastelkurs" was offered by the Austrian Radio Corporation. This course gave instruction in handicraft for children. The children made various types of objects, such as dragons and dolls. Contests were conducted and as many as five hundred persons entered. Exhibitions of the "Bastelkurs" handicraft attracted large numbers of visitors (268).

PARTICIPATING IN SCIENTIFIC STUDIES

Previous note has already been taken of the custom in England of having radio listeners gather certain items of information which might be of interest to scientists. Lloyd James collected place pronunciations for about fifteen hundred different names through the help of wireless listeners (60). Other uses made of the radio to appeal to listeners for scientific co-operation were as follows. One scientist asked for information about the date when blackbirds lay their first eggs. Records came from all parts of the British Isles, although listeners could only record the date of the laying of the first egg by visiting nests every day until the first egg appeared. Sixty listeners recorded the date of the laying of the first egg and date of hatching. Another scientist representing the Royal Meteorological Society asked listeners to note the time of the first flowering of the blackthorn. Over two hundred fifty persons offered their services as recorders to follow the Society's directions. In a third case, information was asked about red and gray squirrels, rabbits and hares, and so forth. Some of the most valuable information on this subject came from schoolboy and schoolgirl listeners. In one experiment listeners were asked to record the number of taps heard during a demonstration before the microphone. The aim of the experiment was to secure information on the masking effect of one sound by another. Nearly one thousand listeners sent in records. Listeners were asked to contribute dreams in another study (16).

CHILDREN'S ACTIVITIES

Various activities of children have been initiated through radio programs. In the main these activities are centered around clubs

which the children join. Significant success has been obtained with children's safety clubs. KMOX sponsored a "Careful Children's Club." Statistics of accidents to children were compared with the growth of the club. KYW sponsored a similar club and claimed that children obeyed safety instructions given to them. As one of the results of listening to radio in the Cleveland public schools, it was noted that fewer retests were needed in administering the hearing tests in rooms where the radio was regularly used (210).

PRACTICES ADOPTED

One question occurs to every educator who gives a radio program with the aim of teaching. That question is, "Does my audience put into practice any of the ideas which I give them?" This is of particular concern for agricultural broadcasters who attempt to give the farmers useful information of a practical nature. The results of a number of surveys on this point are reported by Salisbury. These surveys were carried out by personal interview of farmers and rural dwellers in sample sections of states. The surveys were made between 1926 and 1930 by the Office of Co-operative Extension Work in the United States Department of Agriculture. From these surveys it was found that the percentage of homes with radios getting useful agricultural and home-economic information from any station was 84. The percentage of those getting extension programs to adopt practices due to radio was 21. In relation to other methods of extension teaching, radio was responsible for 2 per cent of all practices adopted (97), (*see* Note 84).

Swedish pupils were instructed in broadcasts concerning the measures necessary to protect their health. As a result of the broadcasts, pupils began sleeping with windows open, drinking milk, and following other practices suggested (213). A few other examples could be cited (*see* Note 85), but the lack of much information on the extent to which practical ideas are gained from radio programs shows how great is the need for investigation in this field.

POLITICS

Radio has played important rôles politically and governmentally. Two striking instances of the suasive force of radio were the nomination of Field for a United States senatorship by means of Station KFNF in Iowa (484), and the near election of Brinkley to the governorship of Kansas. Brinkley, a patent-medicine man, had no experi-

ence, no organization, no press or party support, nothing except the broadcasting station, yet in a three-weeks campaign he induced almost a majority of the Kansas voters to go to the polls and write his name on the ballot (297). An entire city government in San Francisco was elected through a radio campaign (230). In Spain, radio played a part in the proclamation of revolution and checking of excesses; in England, a government radio campaign was credited with electing an administration; in Brazil, radio overthrew the government (297).

Turning from electioneering to the functioning of government departments, it is evident that radio can render useful service here. During the 1930 census in England, the Registrar-General of Great Britain described to the listening public of the country the object of the census and the manner in which the returns were to be made. The Registrar-General afterwards paid tribute to the aid which had been given to him by the radio (59).

THE LISTENER'S DESIRE TO BROADCAST

One measure of the importance of any medium of communication may be found in the desire of people to use it.² When agricultural programs were first started over WBZ and WBZA, it was difficult to obtain speakers for each of the five weekly noonday programs. After two years of broadcasting, all kinds of agricultural organizations and community groups, including fruit-growers, poultry men, dairymen, and others asked that they be allowed to participate. They had come to feel that by means of radio, information could be given to the greatest number of persons in the shortest period of time (326). One store judged the results of its program by the number of children applying for auditions to perform on a special program called "The Little Red Schoolhouse Hour." Children were required to go to the store to obtain audition cards (46).

HUMAN-INTEREST STORIES

The mail to stations often discloses human dramas in which radio has played an important rôle. Not much practical significance is attached to these cases since they are more or less unique, but they are needed to complete the picture of radio as a national factor.

²WTMJ put on a series of Wisconsin community programs. Communities as far away as one hundred fifty miles were interested enough to work up a program and send as many as fifty persons to Milwaukee to present it. Each community was allowed five minutes to present a speaker on its city; the balance of the time was taken up by local talent (234).

A dramatic program pictured a child being left on a doorstep. In response to this program, the following letter was received:

That particular program, and you, Mr. Roth, united a family, brought a young father and his baby together, where all else failed. Tears blur my eyes as I write this, so if you have trouble in reading it, forgive me. . . . You and that wonderful program brought me back to sanity and my boy. God bless you! (273).

Each radio station has files of such letters, and they furnish a useful theme whenever it is desirable to give a sermon on the values of broadcasting. Unfortunately, such letters, unusual and interesting as they are, may blind the reader to the effect which the program is having on the audience as a whole (*see* Note 86).

PROGRAMS AROUSE PROTEST

The importance of a program can be measured by the protests of organizations with reference to the material presented. The treatment by Amos 'n' Andy of the third-degree problem stirred up much discussion. Newspapers all over the country wrote editorials on the program, on capital punishment, on the efficiency of the local police force, and on crime in particular. The president of the International Association of Chiefs of Police protested vigorously against the criticism of police methods. Engendered by other scenes in Amos 'n' Andy, statements of disapproval came from lawyers (342). All of these protests measure the significance which groups of listeners attach to the program in influencing listeners.

INSTALLATION OF RADIO SETS

Aside from all these miscellaneous activities induced by radio programs, the hearing of broadcasts tends to perpetuate itself by causing listeners to use their sets more frequently³ or purchase sets if they do not own them. The latter circumstance has been illustrated in the case of the United States Office of Education experiment where sets were loaned to mountain people. In one section, one-third to one-half of the mountaineers appeared to be on the point of buying

³Increased listening to local programs in psychology was one of the consequences of the broadcasting of a psychology series on a national scale. The local programs were broadcast by the faculties in the respective universities, and the heightened interest of the audience was reported by university radio officials (217). In a study of radio-equipped taxicabs, it was found that passengers became interested in a program and took the taxi the whole way instead of to the nearest (New York) subway station. Radio cabs were chosen in preference to other cabs, especially for long distances; radio cabs showed increase in average earnings over non-equipped cabs (207).

their own sets (714). Educational broadcasts have been influential in promoting the purchase of sets by schools. Single cases have occurred everywhere of the purchase and installation of radio sets in schools to permit the pupils to hear specific broadcasts. The Damrosch concerts have been responsible for the equipping of many schools with radio.

In one sense, the whole general effectiveness of broadcasting in interesting the public can be measured by the increase in radio ownership. In the United States, figures are available through Radio Retailing and other sources for the production and sale of radio sets during a number of years. Columbia has issued an important analysis of radio-set ownership. This study revised the 1930 census figures to bring them up to date for January, 1934. Corrected figures were given for each state, showing 17,948,162 homes with radio for the whole United States. This was 60 per cent of the total homes (122). In foreign countries where a license system is in operation, it is possible to show the increase in number of licenses from year to year. Whether the number of licenses can be used directly to determine the success of a country's broadcasting system is not clear. The number of licenses in England in 1933 was more than five million (17) and has been cited to prove the success of the British system, while Denmark had at one time a higher percentage of listeners than any other European country (275).

AUDIENCE ATTENDANCE

As a special type of listener activity, attendance at clinics, concerts, museums, stores, and other places merits particular consideration. Although it is notoriously hard to measure and analyze the diverse human activities, it is relatively easy merely to count the number of persons present at a given event or place. Variations in attendance can then be related to the radio program through the elimination of other factors.

Another approach to the problem of the effect of radio upon attendance is direct questioning of listeners. Kirkpatrick asked radio owners whether they attended church, theaters (movies), and concerts more or less because of the radio. Most listeners felt that the radio had not influenced their attendance habits. For those who were influenced, the radio had caused decreased attendance at all three functions in the majority of cases (64).

Listeners have been led to attend clinics, consult doctors, dentists, and others for advice as the result of broadcast information. At one time talks were given by members of the staff of the Judge Baker Foundation at Boston. The purpose of the talks was to educate the public about the work of the clinic. After each of four talks a few parents came in saying that they had heard the talks and would like to have help with a child who presented some problem (603). In Europe, specifically in Jugoslavia, talks on medicine and public hygiene were given by some of the most eminent specialists in the country. Following the particular broadcasts, large numbers of invalids, notably those suffering from venereal disease, visited medical men (79). While all such cases are isolated, and perhaps not exceedingly weighty in number, they are illustrative of the intense effect which radio talks may provoke. If a listener makes a personal call to obtain advice, he is indeed deeply moved by the radio program.

Among the numerous places of entertainment, increased attendance at concerts, shows, theaters,⁴ sport events, hotels, night clubs and studio performances has been attributed to radio.

On the whole, figures and opinions concerning the effect of radio in stimulating attendance at concerts have been contradictory, and the same is especially true with regard to sports.⁵ Radio has been credited with increasing attendance at concerts of the Philadelphia Symphony Orchestra (48). An orchestra in England had been steadily losing its patronage. Arrangements were made by the British Broadcasting Corporation for this orchestra to play to the radio audience. Attendance at the concert hall eventually was restored and even exceeded the former number. Undoubtedly, there are other cases where radio has deprived concerts of their auditors. Perhaps the solution to this paradox lies in the fact that radio can stimulate attendance at specific advertised performances and yet decrease attendance as a whole to similar events.

Many have been the occasions when broadcasters have checked the popularity of their stars by listener attendance at performances

⁴*Abie's Irish Rose* was broadcast from the Studebaker Theater stage in Chicago. By actual count at the box office, 2,876 persons mentioned when purchasing tickets that they had heard the show over the radio. This was within forty-eight hours after the actual broadcast. Radio listeners also telephoned to the theater to find out when they could purchase tickets (205).

⁵Football officials of various universities came to agreement and eventual disagreement regarding the broadcasting of games. The British Broadcasting Corporation claimed at least that broadcasting may help football. The Arsenal Football Club made a record profit as a result of co-operation with the British Broadcasting Corporation.

open to the public. These appearances have taken the form of the regular programs put on in the studio or a presentation for broadcasting held in an auditorium.⁶ In other cases, the stars have appeared in local theaters or have given programs in other towns and cities. In still other cases, receptions have been held at which the performers took part. The proof of the popularity of the Sinclair Minstrels program was inferred from the fact that spectators were admitted to the studio by invitation only, and that invitations were mailed at times for programs eight weeks ahead. The studio accommodated more than four hundred visitors. Some stores found broadcasting from studios in their own establishments so successful in attracting people that they installed complete outfits to handle their regular programs in view of the public. One store broadcast in its show window (46).

The results achieved by such outstanding persons as Kate Smith in attracting listeners to public performances are well known; but even minor program stars have drawn in the public when they appeared in theaters or movie houses (546, 536). In one instance, a sponsor tested his program by announcing twice that on a certain evening the players participating in the show would be at the company's place of business to greet any listeners who might appear; four thousand persons came to shake hands with the radio cast (261). Incidentally, this company, the Buffalo House Wrecking and Salvage Company, reported that it had to call out the police reserves to protect it from the mob. Radio has even brought people to watch a house being built. A program in Baltimore centered its dramatic theme about the building of a home actually being constructed in one of the suburbs. Crowds of people came to watch the putting up of the house featured in the broadcast (438).

Radio invitations have attracted people to libraries, to museums, and to schools. Even educational tours have drawn their membership from the radio audience. In New York City talks on civics were broadcast over the municipal station. Although no exact record was kept of persons who mentioned hearing the talk and came to the municipal library as the result, the library believed that this was a considerable number. Some museums set apart special rooms to house temporarily the objects to which reference is made in the

⁶One station arranged a special program of radio artists each Saturday afternoon in a big meeting hall of a hotel. Listeners secured free admission tickets at retail stores. Advertisers over the station measured the effectiveness of the radio programs by the number of people who came for tickets (463).

current broadcast programs. In Austria this was especially well worked out, and arrangements were regularly made between the broadcasting organization and the museums and art galleries to make special displays of those treasures which were referred to in the broadcast program (79).

Richtera, of Vienna, has described how listeners were requested in special broadcast announcements to indicate their interest in demonstration evenings. A special reply card was prepared for this purpose and groups of fifty to one hundred persons were invited for certain days and times. The success of these conducted parties was so great that the organization was kept busy many times daily for weeks until the demands for admission were exhausted. The demonstrations included physiological exhibits showing how the heart beats. All the demonstrations tied up closely with the broadcasts. Careful and exact statistics were obtained about those attending, and it was evident that the visitors to these events were really drawn from all classes of society (95). Viennese exhibitions of radio handwork attracted over forty thousand visitors (268). Broms conducted excursions in connection with the subject-matter of broadcast talks. An excursion following a talk entitled "First Lessons in Flying" brought out a trip attendance of seven hundred (18).

Radio has stimulated attendance at schools, and it has also caused people to take up studies for which they previously had evinced no interest. A teacher of botany for the Ohio School of the Air reported that the enrollment in a regular university course taught by him had doubled because of his broadcasts (635). One piano teacher in New York reported that he had obtained twenty-one pupils from among those in his neighborhood who followed the radio piano lessons of the National Broadcasting Company (81).

It has also been noted that the use of broadcast programs in the schools may be an aid in prevention of absence and tardiness. In California, talks on geography and history were so popular that, coming at the beginning of the school day, they reduced the percentage of tardiness in schools equipped with radio (312). At a Swedish school, two hundred mothers met in a classroom to hear radio hygiene lectures (213).

Cooking schools and home-making clubs have been sponsored by various companies. Measures of the attendance at these open sessions have shown the effectiveness of radio in bringing people to meetings (260). Cooking programs were broadcast by a utility

company in Chicago over WENR, and demonstrations were held in connection with the program. A morning lesson on the subject of cake decorating was attended by over fifteen hundred women (465). A cooking school sponsored by WTIC drew large volumes of mail. Besides this, thousands of women came to inspect the kitchen and to meet the person conducting the series (301).

One of the chief concerns of advertisers and sponsors of radio programs has been to attract people to retail stores. Various ingenious ways have been utilized in bringing this about. In the first place, the entrants to contests may be required to go to the stores and purchase the article in order to send in the package top, carton, or label. In other instances, the listener is merely requested to secure the name of the near-by dealer and send it in to get the radio free offer or sample. In still other cases, entry blanks, copies of the printed talk, applause cards, and the free offer itself are made available to listeners coming to the store. As an illustration of the effectiveness of some of these methods, Urist gives the report that the Chrysler contest announcement brought more than three million prospects into dealers' showrooms (341). In connection with a twenty-six weeks Graham-Paige program, fifty thousand etchings of Edgar Guest's poems were called for at dealer establishments (644).

INDIRECT METHODS

Indirect ways of measuring the effect of radio programs are allied to ones previously mentioned. Press notices and opinions of radio editors may be watched. These persons, besides bringing their own critical judgment to bear on the program, receive letters from listeners and come into contact with them. The local heads of national organizations, such as the League of Women Voters and the Foreign Policy Association, can ascertain the feeling of the local group with regard to programs. Finally, the reaction of the local station to a chain or recorded program is often a comment on its popularity. If stations add programs, this may be due in part to the fact that they are convinced that the program will be popular with their audience.

RADIO EDITORS

Since radio editors make a practice of listening to programs and also receive letters from listeners, they are in a position to

pass judgment concerning the effectiveness of radio programs. In fact, on these grounds it might be worth while for stations to arrange for auditions at which the program reviewers would be present. In order that reliance on radio editors may be deserved, these editors should carefully distinguish between their own comments and the ready-made copy received from broadcasting companies and publicity agents.

The British Broadcasting Corporation feels that the press should be a great help, particularly in arranging talks, if it would offer more general criticism (16). Press comments have been considered seriously by broadcasters as shown by Denison's statement concerning a Canadian history series: "One of the most interesting by-products of the series was the many editorial comments and the great amount of criticism received each morning following a broadcast." Through this means, those arranging the Canadian history program learned whether or not it was up to standard.

As one means of measuring the influence of programs, we can observe the reaction of the public to listings as they are now given in the newspapers. At the present time, metropolitan dailies in their news columns refuse to identify radio programs by trade names, and mention the names of the artists with great frugality. Editors report that they have received few complaints from readers since this new policy was adopted (299). This is inferred to be further proof that the artist's name means more than that of the product or the sponsor of the radio program.

ADDING AND DROPPING CHAIN PROGRAMS

According to a National Broadcasting Company executive, one of the best tests of the popularity of a program has been the fact that local stations wished to add it to the list of programs received from the chain (497).⁷ The Child Study Association inclined to this same view and gave the demand from stations and outlying districts to be hooked up with the network as proof of the influence of its programs (614).

While local stations are interested in pleasing their audiences by broadcasting types of educational programs meeting with the most response, it does not entirely divorce their choice of chain features from certain novelty aspects. When a new program is

⁷This occurred at one time in connection with MacDonald's talks for the Foreign Policy Association.

designed for a network, and much publicity given to it, stations may wish to carry this program on account of the newness and news value, rather than for the intrinsic merit of the program as proved over a long period of time.

MISCELLANEOUS METHODS

Miscellaneous ways in which the popularity of specific programs or stations may be inferred are listed briefly here. Two instances of the popularity of Amos 'n' Andy were found in the facts that some theaters had to stop their shows while the comedians were on the air, and former President Hoover is reported to have decided to delay a speech in Salt Lake City until Amos 'n' Andy had finished their program (88). At one time, about forty theaters at Detroit picked up Amos 'n' Andy as an added feature of their early evening performance (342).

In certain ways it is possible to deduce logically when the radio audience should be largest. Roxy at one time chose Monday night for his main broadcast. As reported by Dunlap, he reasoned that if fewer people attended the theaters on Monday night, and statistics showed this, probably they would be at home after their week-end of pleasure and might more probably listen in (47). This type of inference could be applied to many other activities. The telephone exchanges might be in a position to note whether the lines were as busy during certain programs as during others, and relate this with trends in telephoning for previous years. Habits of radio listeners might also be inferred from other data. For instance, Hettinger believed that figures on electric-current consumption during the summer indicated radio listening (55).

One suggestion has been made to the effect that a radio publication for combined programs be issued by the networks. The distribution of this bulletin should be of value in indicating audience location, since if a charge were made for the issues, its circulation would be confined to active listeners (407). Whether any of the present so-called listener publications in the United States give information on audience location is problematical.

RECORDING DEVICES

Although the possibilities of measurement using a mechanical or electrical recording device would be unlimited, little develop-

ment has taken place as yet in this field. Reports have been circulated concerning devices to record the times at which the set is tuned in together with a station identification mark. None of these devices has been used more than experimentally. Stanton, however, has perfected an instrument which will record the exact time at which a radio set is turned on. The device can be attached between the current input (wall socket) and the leads to the set. It does not affect the operation of the set in any way, and will record for six weeks without attention (641).

One instance has been described where radio programs were furnished by a relay system to several hundred subscribers in a locality in the south of England. An apparatus was arranged to find out when listeners switched on and off. From five to six o'clock in the afternoon there was music and nearly everyone was switched on, as was also the case for the six o'clock news broadcast (498).

The extent of radio listening could be measured in terms of electric-current consumption if all sets drew an equal amount of current and the basic consumption due to electric lighting and use of household appliances were known. Modifying this principle, it has been suggested that an attachment be fixed to each set which will permit the listener to vote by pressing a standard current-consuming button. The radio speaker would ask the listeners to press the buttons simultaneously to indicate the number present. This number would be read off in terms of increased current use as indicated on the local power-house meter. Listeners could vote "yes" and "no" on questions asked over the radio by pressing the button at the proper time as directed by the radio speaker (350). Since the equipping of eighteen million sets with voting buttons is a practical impossibility, listeners might be requested to signal their response by switching a 50-watt light bulb on and off. Listeners who voted with electric stoves and irons would have to be shown the error of their ways!

SIGNAL STRENGTH OR FIELD-INTENSITY SURVEYS

Methods of determining the strength of signal broadcasts by radio stations to any given area measure the efficiency of the station and indicate the potential audience. Signal-strength surveys are not a substitute for tests of actual listening, although there is a more or less close relation between the two (*see* Note 87).

FACTORS AFFECTING TRANSMISSION

There are a number of factors which affect transmission of the broadcast signal. Naturally, the initial power of radiation is one of these. But while antenna power is important, it is not so important as is generally assumed. Two factors which play a significant rôle in modifying transmission effectiveness are the characteristic of the earth surface over which the ground wave passes and the frequency of the broadcast signal. Jansky has published two maps showing field-strength measurements for two stations of equivalent power and frequency located in different parts of the country. The Grade A day coverage of one station was only 31 per cent of that of the other (279). This serves to illustrate strikingly the influence of the ground over which transmission takes place. Byrne, in giving field-intensity measurements for a number of stations, showed how vital a factor the frequency of the transmitted signal is in determining the range of good reception. Two stations of equivalent power were compared with reference to signal-strength measurements in Ohio. The first station operated on 550 kilocycles, the second on 1,390 kilocycles. The average radius of the one millivolt per meter service area was sixty-four miles for the low frequency station and twenty-eight miles for the one with the high frequency assignment (19).

Conditions are different for day and night. Due to characteristics in the transmission of the sky wave, reception is possible at points outside the limit of the receivable ground-wave radiation. But the presence of this complicating sky wave may actually limit the effective range of the station by interfering with ground-wave transmission at certain distances from the station. Interference from other stations, especially at night, may also curtail the region which a daytime signal-strength survey shows as good coverage for a station. This interference is especially noted for stations with regional assignments broadcasting on lower frequencies.

Good reception depends, not primarily upon the level of the signal received, but upon the difference between the station signal level and the general noise level. In other words, the music or speech received must be loud enough to stand out above the background noise. Now the noise level varies with business, urban, suburban, and rural districts. It also varies with the frequency on which the station operates. Engineers have tried to solve this problem by setting up certain standards of reception for business,

residential, and rural sections. These take account of the amount of general background noise which should be expected in these different places.⁸ This means that when signal-strength results as certified by the engineer are obtained for a given area, they must be interpreted in terms of interference and noise level in order to determine the potential audience which may be reached by a given station. As stated before, any determination of the actual audience depends upon further types of measurement.

COVERAGE AND AUDIENCE LOCATION

In the maze of conflicting classifications with regard to grades of coverage, there is need for adherence to one suitable standard. The engineering division of the Federal Radio Commission has unofficially adopted standards which distinguish between city residential service and rural service.

	Residential Districts in Cities	Rural Areas
Excellent.....	2,500 microvolts per meter	500 microvolts per meter
Fair.....	1,250 microvolts per meter	250 microvolts per meter
Poor.....	625 microvolts per meter	125 microvolts per meter

The relation between coverage and audience response has been given considerable study by Felix. He has compared the results obtained from surveys of audience reaction with measures of the signal strength of the station concerned. Felix cites the case of the Yankee Network which made out a coverage map based on measurements of the engineering department in the field and then tabulated the mail returns for a period of three months. The resulting service-area claims showed excellent conformity (404).

Felix believes that it has been quite definitely proved that the listener prefers to tune to the loudest station which serves him regularly day and night (408). To verify this point he compared the popularity ratings from the third Price-Waterhouse survey (39) with the different field intensities in the various boroughs of New York (*see* Note 88). A significant relation between the two was found to hold for the relative ranking of Stations WJZ, WEAJ, and WABC in each of the five boroughs of New York (247).

⁸Jansky first determines the area receiving 500 (excellent rural coverage) or more microvolts per meter; the population of this area is then calculated. Next he determines the noise level in certain special districts and the minimum strength of signal needed to override this noise level. Where actual local signal strengths are lower than this minimum, the population of the district is subtracted from the total (61).

Similar relationships for inferred signal strength have been shown for the Columbia Broadcasting System network as a whole, as well as for independent stations when the listening area and city response for stations of different power and frequency assignment are compared (*see* Note 89).

This relationship between audience response and signal strength is significant since it indicates clearly how much the station can increase its audience by improving the level of the signal strength delivered. The relationship also shows that by determining audience response, the station can directly measure that which is its primary interest, and indirectly measure coverage (signal strength).

It is interesting to observe what relation there is between the amount of listening and the judgment of the listener regarding the signal received. In areas where heterodyning or other factors limit evening reception, the ratio of evening programs heard to day programs heard may be computed and compared with similar ratios for regions where no evening interference is present. This was done in the case of WOSU where listeners had made judgments on day and evening reception and had marked all of the programs which they had listened to during a week. Two groups of listeners were taken. Group I reported good daytime reception but poor evening reception. Group II reported good daytime and good evening reception. For the sake of fair comparisons the medians of the ratios were used. For Group I the median ratio of evening to daytime programs was .32; for Group II the median ratio was .50. This means that the group with poor evening reception listened to about one-third as many evening programs as daytime programs, while the group with good evening reception listened to about half as many evening programs as daytime programs.⁹ Similar results were obtained from another type of questionnaire (71).

Field-strength surveys are obviously necessary in evaluating the efficiency of the physical broadcasting plant and in determining where the station may be heard. They are also useful in indicating the actual location of the listening audience, but do not measure it directly. In a reverse sense, properly conducted audience surveys give an indication of coverage as well as a measure of the listening habits of the audience. It is probable, therefore, that the audience type of survey is to be preferred if both cannot be made.

⁹WOSU did not broadcast as many hours in the evening as during the day.

Author's Summary of Chapter IX

THE average radio listener tunes in to local stations of loudest signal strength, tending to emphasize selection of programs rather than continuous listening to one station. The average listener likes music, comedy, dramatic programs, sports, news reports in the order mentioned. He prefers semiclassical and dance music to classical music. His radio set is turned on from four to five hours a day; mostly in the evening, between seven and nine, much less in the morning, and least in the early afternoon. The average listener has little preference for any particular day of the week and listens almost as much in summer as at other times of the year. He listens with one or two other persons in the evening, but alone during the day. He looks over the newspaper program listing less than half the time, knows the station to which he is listening 70 per cent of the time, identifies the sponsor about 35 per cent of the time.

CHAPTER IX

RESULTS OF SURVEYS

RADIO OWNERSHIP

Figures on total number of radio sets in the United States have been furnished by the 1930 census and revised on the basis of information from various sources. The Columbia Broadcasting System estimated the number of radio homes for January, 1933, at sixteen million, eight hundred thousand; 56.2 per cent of all homes had radios according to this Columbia Broadcasting System projection of the census figures. Figures for state groups showed the Southeast to have 21.5 per cent; Southwest, 30.5 per cent; Northwest, 52.6 per cent; Middle West, 57.8 per cent; Pacific, 64.2 per cent; and Northeast, 67.7 per cent (30). The figures for 1934 were eighteen million and 60 per cent (122).

Radio ownership by income groups has been charted in another Columbia Broadcasting System publication. According to this report the percentage of homes with incomes over \$10,000 owning radios was 87.8 per cent as of 1933. Other percentages were: \$5,000 to \$10,000, 85.7 per cent; \$3,000 to \$5,000, 80.7 per cent; \$2,000 to \$3,000, 72 per cent; \$1,000 to \$2,000, 57.8 per cent; under \$1,000, 36 per cent. These figures did not include urban homes not classifiable by income groups or farm homes (40).

POPULARITY OF STATIONS

Naturally, the popularity of a station depends upon the programs which it broadcasts. For any particular station these programs tend to be of a certain type, so that the station has an individuality which appeals to certain listeners more than to others.

ECONOMIC CLASSES

Some studies have shown that there is a relation between the popularity of the station and the economic status of the listener.¹

¹Shown by Hammond (264), as well as in other studies mentioned hereafter.

Others have not shown this to be true. Evidence for the first conclusion comes from results of a personal-interview survey conducted by Elder which showed that one station distinctly dominated the Boston upper economic level, and was not listened to by any large percentage in the lower-income group. Another station definitely attracted the lower level, but had some following in the upper economic group (709). A survey of Philadelphia revealed that there were three types of stations: stations which were liked by everybody, quality stations which appealed more strongly to the cultured elements in the community, and stations which drew the residue of the public (56).

Some rankings obtained by Hettinger for Philadelphia are given in Table I (57). The figures show the percentage of persons inter-

TABLE I
STATION LISTENING BY ECONOMIC LEVELS AT PHILADELPHIA

INCOME	NEW YORK STATIONS		PHILADELPHIA STATIONS		
	WEAF	WJZ	WCAU	B	C
(1)	(2)	(3)	(4)	(5)	(6)
High.....	54	96	67	15	9
Average.....	19	74	74	21	17
Low.....	5	67	72	27	26

viewed, listing the stations in their first three choices. Contrary to the studies just mentioned, in a survey made at Chicago, it was found that each leading station appealed to all classes of listeners (310).

The relation of results of popularity surveys to field strength has already been taken up in the preceding chapter. In general, stations furnishing high-level and consistent signals have attracted listeners, although special programs have modified this relationship.²

PROGRAM VERSUS STATION TUNING

While many people still tune in to particular stations without special regard for the program, this audience habit seems to be gradually changing in favor of program tuning. *Broadcast Adver-*

²Even as early as 1928, the Pennsylvania Department of Agriculture found that the preference of farmers for stations depended largely upon nearness to high-powered ones and the length of time of the station on the air (93). Returns in a questionnaire survey made by Nix showed that station preferences were for the station combining power and quality of entertainment (87).

tising has quoted surveys to show that about half of the radio audience has the habit of tuning in to certain stations and belongs to the first of the three classes of radio listeners: those who habitually listen to one or two stations; those who seek out the programs they know are on the air at definite times; and the chance listeners who turn on their radios and shop around until they find a type of program they happen to fancy (494). Bearing out the first point, a Minneapolis survey showed a notable decrease in the proportion of the audience tuned to WRHM immediately following periods in which it was off the air (78).

In a Chicago study, more than one third of the listeners (women) reported that they tuned in only one station during the morning; others adjusted the dials from time to time in order to receive preferred programs (552). Listeners at Milwaukee were asked, "What station do you listen to most of the time? (a) Between 7:00 and 9:00 A.M.?" In spite of the invitation to name a station, many listeners stated that they tuned in for specific programs. The proportion of such listeners for different periods of the day was: seven to nine in the morning, 27 per cent; eleven in the morning to one in the afternoon, 28 per cent; six to seven in the evening, 40 per cent; seven to eleven in the evening, 55 per cent (120).

Results of listener studies show that certain individual programs have attracted a considerable proportion of the audience. Surveys by telephone brought out, according to Columbia, that a single station may command as much as 80 to 90 per cent of the total listening audience in its area at a given time. In an Evanston survey (13), an Omaha survey (288), and a Boston survey (98), definite indications of the shift of the audience from one station to another with changes of programs were obtained. In several instances programs have been transferred from one network to another, and carrying the audience with them in at least one case (329).

The surveys by Starch, Hettinger, Forker, and Columbia have shed further light upon the problem of local versus distance tuning. Several years ago Starch found that only 19 per cent of the audience generally sought distant stations (101). Hettinger's report gave data for Philadelphia which seemed to show in summer a shift of the audience to more local stations. The audience shifted in part from a chain key station in New York to the chain outlet station at Philadelphia (57). Forker's surveys showed that in some cities, at least, less than .5 per cent still listened to outside stations (252).

NUMBER OF STATIONS HEARD REGULARLY

Further results given by Hettinger showed that 94 per cent of the persons interviewed used at least two stations regularly; 74 per cent, three stations; 41 per cent, four stations; and 16 per cent, five stations (57). Hettinger summed this up in another report, stating that the listener used from two to four stations regularly with three as a safe average (56). From the results given in the Columbia surveys, there is no evidence that listeners are becoming more familiar with station letters, and accordingly putting down more stations as being regularly listened to. The average number of stations mentioned on the return cards was 3.7 (39). The Crossley survey showed that many set owners, especially in the larger cities, listened to several stations in the course of a day. For each station there was a normal average audience, but a particularly good program could upset this division of the audience (74).

PREFERENCE FOR TYPES OF PROGRAMS AND PRESENTATIONS

In this section the results of several surveys on the relative popularity of programs and program types have been gathered together. Since most of these surveys were made in various specific localities, the results are naturally influenced by the types of programs heard by the persons interviewed. The results can be evaluated best in terms of the agency conducting the survey and the conditions under which the survey was made. At any event, these rankings and listings may serve as a guide to the person who is interested in knowing something of the tastes of the audience. It is needless to repeat, of course, that tastes change from time to time, and that conclusions drawn in 1930 would not necessarily be true in 1934. Fundamentally, however, a marked stability is noted in the audience response to program types.³ Music has been and probably still will be the most acceptable type of program to offer,⁴ although a musical program may not attract the largest single following.

³The results from four WOSU questionnaires revealed that the relative ranking of the programs in public preference was quite similar for a period of several years. The correlation by the rank method between the results for the years 1929 and 1931 was 93 (72). Several successive *New York World-Telegram* polls showed little variation in choice of specific programs as the best of their type (456).

⁴Of those persons replying to a questionnaire sent out by Cantril and Allport, 80 per cent preferred music to speech. The reasons for discrimination against the spoken word were that it was usually uninteresting and required too much effort to listen (732).

TYPES OF PROGRAMS PREFERRED

In order to enable the reader to gain a comprehensive picture of audience preference as determined by various surveys, the results have been prepared in comparative tabular form (*see* Note 90) and combined here to give the following general ranking from most preferred to least preferred type: popular music, comedy, dramatic programs, sport broadcasts, classical music, news talks and talks in general, religious programs, educational programs, children's programs, special features such as international broadcasts, and women's programs. According to some experience in the Crossley survey, there are no preferred types of programs; execution of the program determines its appeal (239).

So far, program preferences have been given without regard to various considerations such as age, sex, and economic status. Although on the whole these factors play less of a rôle in program choice than one might anticipate, they are important enough to warrant further study.

Differences with economic and occupational status.—The Crossley investigation has shown no decided differences in program preferences between economic groups (74).^b A survey of Philadelphia listeners, however, showed that those in the highest-income groups liked special features, news and education, and classical and instrumental music. Children's programs and drama were favorites among the poorer classes. There was little increase in desire for educational subjects shown in going from low to high income levels (57).

Special groups, such as farmers, naturally want some programs in keeping with their type of life. Farmers made a special effort to tune in on farm talks and special farm programs, according to the Pennsylvania Department of Agriculture. Commercial programs, church services, political features, sport broadcasts, barn dances, lectures, and band music were features frequently mentioned as having been heard (93). Starch found that semiclassical and classical music and grand opera were preferred less by farm and small-town families than by city families, whereas religious services, crops and market reports, and children's programs were preferred by more farm families than city families (101). Results from two experiments conducted by the United States Office of Education in installing sets in mountain homes showed that sermons were ex-

^bIt has been suggested that this may be due to the method of selecting the persons to be interviewed rather than to actual lack of preference difference.

trremely popular. Business talks, news flashes, and the National Farm and Home Hour were also listened to (714). Farmers of the New England area stated what information they wanted most from the radio on questionnaires distributed by Rowell. Information most desired about any one product concerned price and the market conditions. Subjects for talks were, in order of their choice, poultry, which was far in the lead, followed by fruits, dairying, marketing, vegetables, and practical experiences of farmers (725). In a survey of Ohio farmers in 1926 it was found that farm families preferred "old-time music" and abhorred "jazz." Seventy-five per cent of them favored educational radio courses, with poultry leading as first choice. As a group they placed the benefits derived from their radios ahead of those from the Extension Service, Farm Bureau, papers, institutes, and other agencies long established for the farmer's special advantage (28). Kellogg and Walters determined by questionnaire that the radio services most appreciated by housewives were menus and recipes, child care, health, and educational help (282).

Sex, age, and seasonal differences.—Sex differences in listening preferences have been investigated in several surveys. The Minneapolis study revealed that mothers of school children gave first place to comic characters, whereas fathers gave first place to athletic contests (316). A Philadelphia survey also demonstrated the predilection of men for sport broadcasts and found that they showed an interest in news broadcasts, market and weather reports. The preferences of men and women were remarkably similar on most matters, especially music. Further analysis made of the data for this same survey showed that change in musical taste with age was marked. Classical, semiclassical, sacred music, and old-fashioned melodies became regularly more popular with age, whereas the appeal of dance music diminished. Increasing years also brought a greater partiality for special features and educational broadcasts (57).

In a questionnaire sent out by the United States Office of Education an attempt was made to determine preferences of children for school broadcast programs directly and through their teachers (*see* Note 91). Pupils were asked to check the type of program which they most enjoyed and to tell what they liked best about the radio program. Of the programs offered, principally by the American School of the Air, pupils liked history best. As methods of presentation, they liked dramatization and story-telling. The rankings of the methods were: dramatization, 97; story-telling, 82; debate, 60;

interview, 41; and lecture method, 25—the figures referred to the percentage of pupils in favor of the method. Teachers thought that dramatization, music, dialogue, story-telling, and debate were most suitable in order of rank (51). In a survey made by the Ohio School of the Air, pupils were requested to say whether they would like to listen to certain suggested types of programs. The combined ranking from most preferred to least preferred was: plays from books, biographical dramalogues, international broadcasts, historical reports, talks by famous persons, songs to sing (67).⁶

Since surveys were made at Philadelphia, both in winter and in summer, interesting comparisons could be made with regard to program preferences for the two times of the year. There was apparently little appreciable difference in listeners' program tastes at different seasons of the year. Perhaps the chief characteristic of the summer preferences was a desire for slightly lighter types of programs with consequent interest in comedy and similar offerings. Interest in sport broadcasts naturally increased, and with it came greater attention to news flashes containing sport scores (57).

A questionnaire study on "How to reach housewives most effectively," determined that housewives preferred morning programs which featured music or which were devoted to menus and recipes, while in the afternoon and evening their preferences were for music and entertainment. In cities, the housewives accepted a variety of programs, but in small communities they desired more entertainment. City business women were interested in educational and general talks (282).

Music preferred.—Fairly complete analyses of audience preferences have been made in music (see Note 92). Philadelphia preferences for music were as follows: dance music, 74 per cent; semiclassical music, 48 per cent; old-fashioned melodies, 38 per cent; sacred music, 31 per cent; and classical music, 34 per cent. Instrumental music was desired by 46 per cent, voice by 12 per cent, and both types by 42 per cent of those interviewed (57).

SPECIFIC PROGRAMS PREFERRED

Aside from surveys in which audience preference for general types of programs has been determined, other investigations have secured specific mention of the names of programs to which listeners like to listen and have listened. Although data of this kind are

*These short titles are abbreviations of longer descriptions given.

fleeting in the sense that programs are discontinued and changed, nevertheless, certain general conclusions may be drawn. The ten most frequently mentioned programs for March, 1934, according to the Co-operative Analysis of Broadcasting were: Chase and Sanborn, Captain Henry's Maxwell House Show, Fleischmann, Gulf Headliners, Texaco Fire Chief, Bakers' Broadcast, Ben Bernie, Amos 'n' Andy, Sinclair Greater Minstrels, Cities Service Concert.

Factors affecting the ranking of specific programs are frequency of performance of the radio program, length of time it has been on the air, publicity given to it outside of the radio, number of stations carrying it, and the power of the stations (*see* Note 93).

Broadcasters still need to learn more about children's preferences and their reactions to programs, although at present several investigations have given some indication of children's radio tastes (*see* Note 94). Children liked many of the programs to which their parents listened, which was to be expected since listening is often a family habit. Programs appearing on different lists were: Eddie Cantor, Amos 'n' Andy, Orphan Annie, Lucky Strike, Death Valley Days, Chandu, Buck Rogers, Myrt and Marge. Asked in one survey why certain programs appealed to them, children said that the programs were "funny," "exciting," "full of adventure," "interesting" (67).

METHODS OF PRESENTATION

As yet, not much has been done in testing the value of different methods of presentation.⁷ Perhaps the most significant attempt was made by the United States Department of Agriculture in putting on experimental broadcasts over Station WGY, in which the standard Farm Flash broadcast was compared with a number of different types of presentation using the same material. Farmers listened to first one and then the other presentation in two consecutive five-minute periods. In all, they rendered verdicts on eight different styles in comparison with the standard Farm Flash. The summary report of this experiment stated that farmers preferred "educational details on specific operations" over the regular narrative style which was used as a standard. This was the most pronounced opinion for any of the eight different styles of presentation offered. In the comments on every experimental program, from the first to the

⁷Allport and Cantril have studied the effectiveness of general and specific presentations, long and short sentences, different speeds of broadcasting, repetition, and various lengths for different types of broadcasts (732).

last, a distinct demand for more details and more information was clearly indicated. Running all through the series, discriminations were made between programs on the basis of ease of understanding and plainness of statements, which seemed to indicate that improvements along this line are most vital to the effective presentation of educational material by radio. Concrete terms, active verbs, and picture language were preferred. As a suggestion in evolving new methods of interesting the audience, the report mentioned the enthusiastic comments on programs where listeners were required to make pencil notes, draw rough sketches, and construct simple charts. Listeners found that they needed memory aids in properly applying information given over the radio.

In order of popularity, the different styles of presentation ranked as follows: details, and pencil and note talks; questions and answers; examples from farmers' experiences; Farm Flash narratives and straight news talks; programs which stimulated the farmers to secure more information; humorous anecdotes; and fables. These ratings were determined as a result of two comparisons of each style with the standard Farm Flash presentation (58). Unfortunately, the number of persons judging the programs was small, and this experiment should certainly be tried with more reporters.⁸

In the United States, men announcers seem to be preferred to women, although in Italy many women have achieved positions of distinction in this field. Perhaps the basis for the continued employment in the United States of male announcers may be found in the survey conducted by the Radio Corporation of America in 1926. Canvassing five thousand listeners of WJZ, a vote of 100 to 1 in favor of the masculine voice was obtained (52). The Hygrade Sylvania survey also showed a preference for men's voices (405). Tests have also been carried out at Harvard (224, 732).

Objections to present broadcasting practices were gathered in one survey of five hundred New York families. Aside from criticisms concerning advertising, the following were directed toward the programs: jazz and crooners, 21 per cent; low standard, 18 per cent; lack of variety, 11 per cent; sketches growing stale, 11 per cent; women's voices, 9 per cent; talk, 8 per cent; vulgarity, 8 per cent; religion, 8 per cent; and announcers, 6 per cent (264).

⁸Master farmers were asked, "What style of presentation of farm programs do you prefer?" Forty per cent voted for questions and answers; 34 per cent voted for lectures; 14 per cent voted for dramatizations; and 13 per cent voted for interviews (303).

LISTENING HABITS WITH REGARD TO TIME

As has become evident through the experience of broadcasters, not all hours of the day are of equal value for the presentation of programs. In order to utilize radio at its maximum efficiency, the types of programs desired at different hours should be carefully considered as well as the groups of persons who will be able to listen at the different times. This section discusses radio habits with regard to time of day, day of week, and season.

HOURS OF THE DAY

There have been a great many studies made to find out when radio owners do listen, when they can listen, and when they want to listen to radio programs. In general, evening hours from six o'clock on are more popular than any other hours, with the audience at a peak between seven and nine.⁹ The preferred hours of the day are noon (twelve to one) and five to six in the afternoon. Other good daytime hours are nine to twelve in the morning, although this has been disputed in favor of the afternoon hours from three on (*see* Note 95).¹⁰

Income, sex, age, and occupational differences.—The relations between listening habits and such factors as income, sex, age, occupation, and social class have been thoroughly studied by Riegel and Hettinger. Although Riegel found that the listening curves for four different economic groups were quite similar, there were some differences worthy of note.¹¹ He found a tendency for the highest-income group to listen less than the others at all hours of the day except between six to nine in the evening. This difference was especially noticeable in the morning and afternoon hours (96).

⁹The actual rankings of the hours as combined from Table VI in the Appendix are: first and second, 7 to 9 P.M.; third, 9 to 10 P.M.; fourth, 6 to 7 P.M.; fifth, 10 to 11 P.M.; sixth, 12 to 1 at noon; seventh, 5 to 6 P.M.; eighth, 11 P.M. to midnight; ninth and tenth, 10 A.M. to noon; eleventh to fourteenth, 8 to 10 A.M. and 3 to 5 P.M.

¹⁰Surveys in Milwaukee, Buffalo, and Philadelphia have shown larger audiences in the afternoon than during the morning hours.

¹¹The proportion of listeners in the group with incomes under \$2,000 was in the afternoon almost 32 per cent of what it was in the most popular hours in the evening. Women contributed markedly to this result, which was not the case for the other income groups. The hour from four to five o'clock in the afternoon was found unusually popular with members of the highest-income group. Riegel points out further that the proportion of listeners in the highest-income group tended to fall off more rapidly in the later hours in the evening. The hours from nine to ten o'clock proved to be almost as popular with the lower-income groups as the hours preferred by all, seven to eight, but the diminution in attractiveness for the higher-income group of the later evening hours was quite evident (321).

Hettinger and Mead's results also showed that the high-income groups listened considerably less in the daytime (57). Kirkpatrick noted a relation between occupation and number of hours of listening per week. He concludes that radio listening is essentially a middle-class habit (64). Starch states that no noteworthy differences for occupation and income groups became evident in his survey (101).

In a few cases listening habits have been broken down according to age and sex differences. Hettinger and Mead report that women listened more in the daytime hours from Monday to Friday and on Saturday morning, while at other hours the male and female audience was about equal in size (57). Similar conclusions were reached in a Buffalo study (96). In another study, age and sex breakdowns showed roughly that women predominated in the morning and afternoon, children in the late afternoon, with men and women listening almost equally during the evening hours (252). Age differences were studied by Hettinger, and he observed that the high-school group and the level immediately older tended to listen later than their elders (56).

The times at which rural listeners may best be reached have been determined by Starch. He says that farmers listen more throughout the day, especially between noon and two o'clock (101). Station KGBX reports that the hour reaching most farm homes is 12:15 to 1:00 P.M. (543). Station KFNF at Shenandoah, Iowa, gives 6:00 to 7:00 A.M.; 12:00 M. to 12:15 P.M.; and 6:15 to 7:15 P.M. as the best listening times for farmers (45). In a survey made by Rowell, of the Bureau of Agricultural Economics, it was found that more farmers listened to the 6:20 broadcast in the evening than to the 12:50 broadcast; 65 per cent of those replying listened regularly to the agricultural broadcasts (725). Confirming the usefulness of the early evening broadcast for rural and small-town listeners, Dana suggests 5:30 to 8:30 (236). A 1931 survey by the Extension Department of the Colorado Agricultural College casts doubt on the value of the very early evening broadcasts. Asked to check preferred hours—only 6 were given, five of which were after noon—the percentages were as follows: noon, 8; five o'clock in the afternoon, 6; six, 9; seven, 34; eight, 40; nine, 3 (601). Mullen's survey also emphasized the later hours (303).

Many statements about the hours best suited to gain the housewife's attention have been given (*see* Note 96). Kellogg and Walters

attacked this problem by means of questionnaires. They believed, on the basis of results obtained in their study, that the evening hours were the best time to make an appeal to housewives, since 95 per cent of all the housewives replying listened to something during the various evenings. The hours of seven to ten in the evening were especially popular. In the afternoon, the hours during which the majority of housewives listened were from two to four; during the morning hours the greatest number of housewives listened between nine to eleven o'clock. For housewives, the divisions of the day in order of the number of listeners ranked evening first, morning second, and afternoon third. Similar trends were found for a large city and small town (282).

NUMBER OF HOURS A DAY SETS ARE OPERATED

How many hours a day do listeners operate their radio sets on the average? This question has been answered in numerous surveys, among which the questionnaire surveys by Elder have furnished us with the most information. The 1931 survey, in which fourteen thousand replies were received from ten different cities, showed that the average listening time was 4.04 hours daily (29). The 1932 survey showed an average listening time of 4.17 hours (32). In a survey by Hettinger and Mead it was found that the average radio was used 6 hours daily with no significant differences on the basis of either sex, age, income, or occupation (57). Riegel in Buffalo found that the average number of hours which radio-set owners listened was nearly 5 (96), and in the Minneapolis survey it was noted that almost 50 per cent of those replying listened 3 or more hours a day (316). The average Sunday operation in a Pennsylvania district was 5.5 hours (335). Figures have also been given to show that the average set has been operated as little as 2.5 hours per day. It seems safe to assume, however, that the average set is operated about 4 or 5 hours daily. These listeners' judgments should be checked against records of actual set operation.

PREFERRED DAYS OF THE WEEK

Results with regard to the relative number of listeners for different days of the week are not in entire agreement, although there is some unanimity of opinion to the effect that Saturday-evening broadcasting does not reach as many listeners as that of other nights (96), (*see* Note 97). Riegel states that the results of similar

studies and the indications of his own study justify the conclusion that there is probably little difference in listening habits from Monday to Friday (96). Starch found, however, that although three-quarters of the persons interviewed listened about equally on all evenings, there was a tendency among the rest to listen more on Sunday, Saturday, and Friday nights (101). From this and other contradictory evidence it appears that the choice of the days of the week, with certain exceptions, is not very important at present.¹²

SEASONAL LISTENING

The evidence from mail-response studies with regard to listening at different times of the year has already been cited in Chapter III. The Crossley report for the spring, summer, and fall of 1930 showed that the July and August audience was approximately 90 per cent as large as the audience for other months in this period (55). More recent Crossley figures (1932) showed that the percentage of radio sets in daily use in the summer months fell at its lowest to only 7.8 per cent below the yearly average (82).¹³ In the Starch interview survey, a question was included concerning the use of the radio in the summer time. Fifteen per cent of the families replied that they did not use their radio then. This survey was made in 1928. In a 1930 survey, Starch found in the Pacific-coast area that 90 per cent of the persons listened to radio during the summer time (101).

Broadcasting to farmers in summer still faces certain handicaps. The agricultural-extension service of the state of Arkansas several years ago stated that farmers were too busy and reception conditions too poor from May to September to make the broadcasting of programs during that period worth while.

FREQUENCY OF THE PROGRAM

Experiments on the frequency of presentation are by no means complete. It has been suggested that programs given six times a week are most firmly entrenched in the consciousness of the daytime listeners. Next to those are the ones which come three or four

¹²If a guess were to be hazarded, Monday evening might be considered the best evening to reach the largest number of listeners. However, the WTMJ simultaneous survey for Milwaukee shows that Monday evening is low and Saturday evening high for week-day listening (120).

¹³For week days the following percentage variations from the yearly average occurred in the daily use of sets: March (1932), 5; April, 4; May, 1; June, -2; July, -6, August, -4; September, -1; October, 1; November, 2; December, -2; January (1933), 1; February, 2 (82).

times a week, and least known of all are the programs broadcast once a week. Although this has been consistent for the daytime programs, the evening programs, by and large, have caught and held their audiences more by the size, length, and importance of their features than by their frequency (232).

ACTIVITIES PREVENTING LISTENING AT CERTAIN TIMES

If we knew with some degree of accuracy what types of work listeners have to do, we could judge whether they would be free to hear programs. According to the results of one survey, there are very few if any hours during the day when it is impossible for housewives to listen. In the morning, housework was the outstanding reason for inability to listen, while business activities also prevented many women from hearing the radio. Church was the primary ground for not listening on Sunday. Conditions which kept the housewife from listening in the afternoon were miscellaneous activities, housework, and business pursuits. Social activities hindered listening in the evening (282). Macy's made a survey of activities of housewives in the morning to find out when they were at home and when they were preparing breakfast. On this basis, Macy's was enabled to determine the best time for its program (45).

HABITS OF THE AUDIENCE

There are a great many facts which need to be known about habits of the audience. We need to know habits of daily listening, habits of tuning, and habits of obtaining information about programs.

NUMBER OF SETS OPERATED DAILY¹⁴

The number of sets in operation each day is of interest to all broadcasters. Figures may be given for the number of sets turned on some time during the daytime and evening or for the number of sets turned on at a certain time.

Various surveys have shown averages running from about 60 to 90 per cent for the number of sets tuned in some time during the whole day. A 1932 Pittsburgh survey in July showed 84 per cent; a national survey showed 73 per cent (490). The figures for the Philadelphia surveys were 62 per cent (1928), (56), and 90 per cent

¹⁴In a recent Starch survey of fourteen thousand persons in 68 cities, reports showed 97 per cent of all radios to be in working condition. Similar results (96 per cent) were obtained in a 1932 Psychological Corporation survey (455).

(1931), (57). In answer to the question, "Do you listen daily?" 81 per cent of the listeners questioned in a national survey said they did (101). Similar figures for England were 90 per cent (66).

Figures for the percentage of sets turned on some time during certain hours have been given in the preceding section. Additional information from simultaneous telephone surveys reveals the number of persons listening at any given minute.¹⁵ In general, it may be said that when telephone calls are made in the evening, about 50 per cent of those persons possessing radios and answering the telephone will be found to have them turned on.

According to one report, the most use of the radio set is made by persons in the middle financial class. The low class is second, and the high financial class is last in the ratio of set owners to set users in the average day. With reference to density of population, cities between one hundred thousand and five hundred thousand seem to lead in the percentage of set owners using their sets. Next come cities of over five hundred thousand population, closely followed by villages and rural areas. Small cities and towns are last, although none of the actual differences in listening is great (48).

LISTENERS PER SET

Various figures have been issued as to the number of listeners using one radio set. The Crossley figures are usually given, which showed an evening audience of 3.1 listeners per set and a daytime audience of between 1 and 2 listeners.¹⁶ The survey conducted by Major Markets in five cities showed an average number of 2.3 persons (including 0.4 children) listening to each set at the time of the telephone interview. The averages for the different cities were 2.8, 2.3, 2.5, 3.2, and 1.2 (715).

It is evident that figures to show the number of persons who can use a radio set, that is, who live in the house or have access to it, may be confused with figures to show the number of people who are actually listening to the set at any one time. The figures given

¹⁵In the survey of the American Newspaper Publishers Association, 58 per cent of radio-set owners at home were listening to some program (2); Gallup, 50 per cent (2); Bay City survey, 64 per cent (12); Gannett Newspaper survey, 39 per cent (712); Forker, 49 per cent (252); surveys at Omaha, 50 per cent; at Minneapolis, 24 per cent; at New Orleans, 53 per cent; at Columbus, 53 per cent; and at Birmingham, 48 per cent (715, 43); Arnold (corrected) figures, 38 per cent (9); Minneapolis-St. Paul, 32 per cent (78). Most of these telephone surveys were made in the evening.

¹⁶In a Chicago survey the average number of listeners in the evening exceeded three while at other times it was slightly over one (1927), (310).

by the Department of Commerce for the number of persons per home show the limit of the audience and not the number listening to a particular program. The Department of Commerce figures are given as 4.1 persons per radio home.¹⁷ In general, the Department of Commerce figures of 4.1 for the number of persons having access to the set or the number of persons in a radio home may be accepted. Major Markets figures of 2.3 for the number of listeners to the radio set in the evening and the Crossley figures of slightly over one for daytime listening seem reasonable.

PUBLICITY FOR PROGRAMS

How do listeners know what programs they should hear? Since the newspaper has been the most important source of program information, various surveys have included questions designed to find out to what extent newspaper listings are used. In the Major Markets survey it was found that of those who owned radios 45 per cent at Omaha had looked in the paper; 25 per cent, at Minneapolis; 31 per cent, at New Orleans; and 34 per cent, at Birmingham (715). Bevis and Amos, who devoted a part of their survey to this problem (*see* Note 98), found that 30 per cent had looked at a newspaper page on the day of the interview. They state that this figure agreed with that obtained by Gallup in another survey (13). Similar figures for three general surveys were 70, 69, and 52 per cent (64, 87, 617), and for a survey of farmers 52 per cent (303).

Directly asking the persons interviewed how they selected their programs revealed the following interesting information concerning four different economic classes. Newspaper listings were consulted by 73 per cent of Class A (highest class), 64 per cent of Class B, 44 per cent of Class C, and 34 per cent of Class D. The method of going around the dial was used by slightly over 40 per cent of each class, and showed no relation to economic status. Some persons used more than one method of selecting programs (264).

AUDIENCE HANG-OVER

One problem of great practical importance to the broadcaster concerns inertia in tuning or audience hang-over from one program

¹⁷Station KGGM, at Albuquerque, found a similar figure of 4.2 for the average number of persons in homes equipped with radios, while Nix in a questionnaire survey found the average number of persons per set to be 3.6 (87). The Tanki Agency at Pittsburgh found out in a questionnaire survey how many grown people and children listened to the same set. The total was 4.7 listeners of which 3.4 were adults and 1.3 children (102).

to another. It is quite obvious that certain programs, because of their appeal, draw a large proportion of the available listeners. Two characteristics of listening habits should be known in this connection. First, does the audience assemble before the program actually comes on the air, and, if so, how far in advance of the scheduled time? Second, after the conclusion of the popular program, do listeners immediately turn off their sets, or do they tune to another station in search of another program, or is there a tendency to stay with the same station? Sponsors of commercial programs have believed that there is a definite increase in the audience for programs preceding and following a very popular one. They have, therefore, tried to place their programs before and after the attractive programs and to avoid positions next to programs not considered of general interest (215, 248, 257). But evidence for these conclusions has been derived by logic rather than from actual records of listening (*see* Note 99). A Minneapolis-St. Paul survey is reported to have shown that "radio listeners switch in large numbers from one program to another" (409).

KNOWLEDGE OF PROGRAMS BEING HEARD

The simultaneous type of telephone survey has given us information concerning the listener's consciousness of the program to which he has his radio set tuned. It has been found, as might have been expected, that certain listeners do not know the name of the program to which they are listening or even the call letters of the station carrying it. The results of the average survey show that about 70 per cent of the listeners can name the station which is broadcasting the program to which they are listening.¹⁸ Fewer listeners know the name of the program than know the name of the station. The approximate average for several surveys showed that 35 per cent of those persons with sets turned on could name the advertiser, sponsor, or the product advertised.¹⁹ Many of the

¹⁸Gannett survey, 70 per cent (712); Columbus, 75 per cent (43); Major Markets survey for four cities, 58 per cent, 79 per cent, 71 per cent, and 24 per cent (715); Bevis and Amos, 65 per cent (13). From Arnold's data the percentage would seem to be about 90 (10).

¹⁹Gallup reports that 38 per cent could identify sponsor or product advertised (2); Major Markets for four cities, 37 per cent, 29 per cent, 35 per cent, and 39 per cent (715); Bevis and Amos, 34 per cent were able to name advertiser, while 9.5 per cent were only able to give name of artist (13). In an Arnold survey the percentage was about 33 for listeners who recognized chain sponsors. Only a little more than half the programs offered, however, were sponsored chain programs so the real percentage of recognition was 58 (10). Probably the other figures should be interpreted in this light.

names of programs are synonymous with the names of the sponsor. In comparing the relative memory possibilities for advertising and sustaining programs, Bevis and Amos emphasize that the sustaining programs offer only the name of the artist, whereas advertising programs may be remembered by the name of the artist and the advertiser. Since 7.5 per cent of those listening to advertising programs were able to name only the sponsor, this is a measure of the advantage of memory impressions which the advertising program has over the sustaining program. Figures for men and women showed that men were more conscious of radio advertising while more women named the program artist (13).

ATTENTION TO RADIO PROGRAMS

One may well ask what it is that listeners do while they have the radio set turned on. It is certain that they are often engaged in occupations other than listening (732). Many Chicago housewife listeners were performing one or more household duties while the radio was on during the morning, including cleaning house, cooking, sewing, reading, washing, and child care. Only 23 per cent of the women reported that they were idle part of the time. About 40 per cent of the women said that they had taken notes on the morning broadcasts, usually about recipes (552). The majority of housewives replying to a questionnaire in another survey stated that they listened in the morning while doing work about the house. In the afternoon, sewing and reading competed with the radio program; 79 per cent of the housewives reported that they gave complete attention during the evening (282). Thirteen per cent gave complete attention in the morning, 22 per cent in the afternoon (270). In one study an attempt was made to have the respondents differentiate between hours when they listened and hours when they could have listened by paying attention. The listeners who made this distinction estimated that an average of fifteen hours a week were of the latter type just mentioned (64).

RADIO ADVERTISING

Under present conditions, there is a great deal of interest in the attitude of the public toward advertising on the air. A survey by Houser dealt specifically with this problem, and a series of questions was formulated and scored much after the fashion of an

attitude scale (617). The possibilities of determining audience attitudes by such scales will be discussed in Chapter x.

Houser defines a radio attitude in terms of the value the listener places on broadcasting, his dependence upon radio, and his preference for broadcasting in competition with other demands upon his leisure time. The attitude test was tried out in three cities: New York, Buffalo, and Utica. The test showed that listeners in Utica were most prone to accept radio advertising, New Yorkers least. In the relation of these test results to common-sense conclusions concerning the character of the people in the three cities, Houser sees a validation of the method (617).

Starch included one question in his survey in order to "obtain a direct expression of opinion relating to advertised programs on the air." The question was, "Do you like sponsored programs such as Ever-Ready, Damrosch, General Motors, Collier's, Maxwell, Ipana, and so on?" Of those questioned, 81 per cent said that they did (101). As pointed out previously, direct questions of this kind will not give unchallenged conclusions concerning the public attitude toward advertising.

At least one analysis of criticisms of radio advertising has been made. Too much advertising was the criticism made by 50 per cent of those interviewed in a survey; 13 per cent said advertising was monotonous; 12 per cent decried the poor taste shown; 9 per cent stated that it was unethical in part; and 9 per cent simply tuned out. There were, in addition, other miscellaneous criticisms. The proportion of comments devoted to advertising was 46 per cent as compared with 54 per cent miscellaneous comments on broadcasting in general (264).

Frequently, in making surveys, the investigator gets the impression that persons in the upper economic classes are not very enthusiastic about radio advertising. In a Boston survey considerable distaste for advertising talks in radio programs was observed in Group A (the upper economic class) particularly. From homes in this group, the comment was frequently given that use of the radio was confined to special programs (611). Experience of some interviewers in carrying out the Crossley type of survey has confirmed this response of the upper classes.

At times, program sponsors have made attempts to find out what sort of advertising would be most pleasing to listeners, since obviously, under the present arrangement, advertising is the only

way of paying for the cost of programs. In a "better broadcasting contest" the Hygrade Sylvania Corporation asked the question, "Should advertising announcements in radio programs be limited and why?" An analysis of the replies showed that 76 per cent of the listeners believed such announcements should be limited both in length and content; 27 per cent held that there should be no fixed limit. In criticizing advertising talks, listeners mentioned most frequently that they were monotonous and long-winded (417). It has been claimed, however, that comparison of the length of advertising copy with nation-wide tests of program popularity conclusively proves that popularity of programs has no relation to the length of the commercial copy (219).

Attitudes toward radio advertising may be reflected in resolutions not to purchase radio-advertised goods. Kirkpatrick asked a question to this effect in his study. He found that housewives made the fewest of such resolutions. In general, about one-fourth of the persons questioned had resolved not to purchase certain goods because of objectionable advertising. There was no marked relation between economic status and this practice (64).

WHO SHOULD HEAR ADVERTISING

Surveys seem to show that the housewife is the one to whom radio advertising should be directed. She has the most influence upon family purchases and spends the greatest amount of time in the home. She is the member of the family most easily reached by radio broadcasts (282). In Germany the situation is apparently the same. A German survey showed that housewives were the ones who did most of the family shopping. Broadcast advertising was sent out during the hours from 11:00 A.M. to 2:30 P.M. because the German housewife was at home during these hours preparing the meals. She utilized the buying news given over the radio by making notations with pencil and paper (218).

DIRECT MENTION OF PRODUCTS

On the basis of his 1931 survey, Elder commented on direct selling by radio. The Listerine and Colgate programs, while advertising other Listerine and Colgate products, made no mention of the Listerine and Colgate tooth pastes. No gain was shown for either of these two companies in the tooth-paste field, although radio-advertised tooth pastes of other brands registered gains, and

Colgate and Listerine showed increases for other products which were mentioned on the radio program (29).

Listeners replying to the Hygrade-Sylvania questions indicated that they depended upon radio advertising for suggestions and read magazine and newspaper advertisements for further information (405).

Author's Summary of Chapter X

MEMORY experiments have shown that listeners do not accurately report many things heard over the radio. Whether this inaccuracy is greater than that in reporting what is read remains undecided. Audience attitudes are affected by radio programs, and several means of measuring changes are available. Listeners can judge the temperment, age, occupation, and background of a radio speaker from the voice.

CHAPTER X

PSYCHOLOGICAL FACTORS IN LISTENING

AUDIENCE MEMORY

It has already been suggested that the radio be used sparingly to give exact information, since the listener may easily forget or not hear essential points. If the information were in print he could refer to it again. The United States Department of Agriculture Radio Service is firm in the conviction that it is necessary to supplement radio-given information with printed bulletins. The Radio Service further believes that certain types of information should be given only in printed form. The purpose of the radio program would be confined to arousing interest in obtaining the information.

An examination of certain general and laboratory experiments on audience memory may help us come to conclusions concerning the exact function of radio. We need to know how much information is retained from a radio presentation, what types of errors in memory are likely to occur, and how memory for words heard compares with memory for words seen.

REPRODUCTION AND RECOGNITION TESTS

Numerous methods are used in testing memory. The results are naturally dependent upon the method used. This makes it highly desirable that the most suitable methods for survey purposes be determined beforehand and adhered to with some degree of constancy. Two common methods already mentioned are known as "reproduction" and "recognition" tests. In reproduction the memorizer is asked to reproduce or give again what he has learned. If he has heard a story he is asked to tell the story. It is obvious that the method of reproduction is particularly adapted to material which was presented to the listener in words. Thus, the listener can give the name of the program, the persons appearing in it, and the product advertised. Memory results are better if in the program the names are stated clearly and the questions on memory are asked in a form which makes it obvious that names are wanted.

The method of reproduction is relatively unsuited to material which cannot easily be given in verbal form without considerable transformation. If only a theme song were played in introduction of a program, the listener might whistle it, but he could scarcely express his knowledge of it in words. In this case recognition as a method of testing memory would be more appropriate. Listeners could easily recognize the theme song and say that they had heard it the day before, whereas they might not be able to describe it. Recognition can also be used for verbal material. A list of the names of programs given during a certain time could be printed and the listener asked to check the ones he had heard. Or the list could be read by the interviewer, and the listener might recognize those programs he had heard from the sound.

MEMORY FOR PROGRAMS

*Accuracy of memory.*¹—Certain facts with regard to memory for programs and stations are already available. In a WOSU survey it was found that when listeners attempted to check all the programs they had heard from one station during a past week the notations made were not very accurate. Listeners checked programs which they could not possibly have heard. Fourteen per cent of the entire list of the programs consisted of fake programs, which were not given over the radio. Ten per cent of the programs marked by listeners as having been heard were these fake programs. The data were analyzed to find out the number of city people marking the fake programs as compared with the number of persons living in rural sections who marked programs they could not have heard. The percentage of fake programs marked was determined for each person, and the averages were computed for rural, town, and city men and women. The address of the listeners was used to classify them. The percentages of fake programs among total programs marked were: RFD men, 5; RFD women, 5; town men, 9; town women (only one case), none; city men, 14; and city women, 17. Should these results hold in further studies it would be shown that rural persons are much more impressed with programs such as WOSU sends out and remember better what they have heard (71).

It is easy to find instances to show that the radio listener does

¹In naming programs and stations there is apparently no tendency for listeners to attribute the programs of the less well-known stations to the call letters of the most listened-to stations. Reports (Crossley type survey) were analyzed for a period of three months in reaching this conclusion.

not remember the details of instructions given over the radio. In one case a sponsor moved his broadcast from the studio to a small neighborhood theater, where a crowd of nine hundred assembled. But at the studios one hundred persons gathered who misunderstood the announcement (201). If 10 per cent of the listeners who are interested enough to come to a performance do not understand the directions, what must be the audience's comprehension of some radio statements? Sometimes telephone numbers are given over the radio, and the expectant tire-repair sponsor awaits the mysterious workings of memory while the autoist is marooned out in the country and only has to think of the sponsor's telephone number. The Dutch Masters Company had an opportunity to observe the relative response of readers and listeners in a contest; four thousand would-be entrants wrote in asking questions about the rules. Most of these questions came from listeners who had heard the rules over the radio, rather than from those persons who read them in print (311).

At the University of Nebraska a rather extensive experiment in determining the accuracy with which listeners report what they hear in radio programs was carried out by Wilcox. The experiment consisted of three parts. In the first part, listeners were asked to write down from dictation a recipe given over the radio. In the second part, listeners were requested to listen without taking notes and write later in their own words what they had heard. In the third part of the study, a description was given and listeners answered 20 questions sent out to them after the broadcast. Dictated recipe replies were received from 1,047 persons in answer to the first part of the experiment. Of the total number of recipes, 8 per cent had one or more errors. There were about twice as many errors on matters of process as on the ingredients. The recipe had been read over the radio twice and called for nine ingredients and five processes. It is interesting to conjecture what kinds of meals have been served by housewives using radio recipes as a basis.²

In the second part of the experiment, a description of a party game was read twice, which consumed three minutes for the explanation and both readings. Of the 149 persons sending in replies, 123, or 83 per cent, had made one or more errors, while 13 per cent had made four or more errors. For the third part, a description of an

²WKY reports, "Fan mail from points as distant as Montana told that recipes received over the air had turned out perfectly" (118). In a Columbia survey, housewives complained that recipes were given too rapidly to enable the listener to copy them.

April Fool party was given once, requiring a little less than six minutes. Among the 85 papers received in answer to the 20 questions asked none was perfect. Errors which changed the idea of the speaker were made by 16 per cent of the persons replying. Besides noting errors in the replies, errors in addressing the letters to the station were counted by the investigators. In the first part, listeners were asked to write down the address, since they were copying the recipes and had pencil and paper, yet 370 of the 1,047 envelopes (38 per cent) had one or more errors (349).

Associations between product and name of program.—There are many typical instances which make the advertiser and educator wonder whether the radio listener can be developed to the point where he remembers accurately what he hears. A tooth-paste company used to have a radio hour in which it issued stern and grave warnings against pink toothbrush. It is reported that three hundred persons entered the drug stores of a certain chain and asked for pink toothbrushes (487). Similarly, the constant association of Amos 'n' Andy and tooth paste has led many customers to ask for Amos 'n' Andy tooth paste (631). In another case a cosmetic company called its radio advertising program, "An Evening in Paris." Druggists were asked for "Evening in Paris" cosmetics. The cosmetic company then created a special "Evening in Paris" line and found that although the old brand was continued, most of the cosmetic sales were in the "Evening in Paris" brand, which outsold all the other products combined (503). As a result of this audience tendency, many advertisers have called the programs by the brand name of the product or given the artists on the program names associated with the advertising.³ Listeners are apt to remember more facts about programs than advertising (*see* Note 100).

A survey by Houser showed that some programs were known by the name of the sponsor almost to the exclusion of the talent (Lucky Strike, Weber and Fields), while for others the reverse was true (Fleischmann, Rudy Vallee). All intervening stages were found, and no general rule could be drawn (617). On a *Variety* poll, however, note was made of the fact that all the leading programs, except the Maxwell House Showboat, were identified by the "headliner" rather than the product name (70). Occasionally, the program is attributed to the wrong sponsor; students in one

³Ipana Troubadors; Paul Oliver and Olive Palmer for Palmolive; Ed Wynn, Texaco Fire Chief.

test thought the W. J. Burns Detective Agency was sponsoring Sherlock Holmes (65).

Correlations have been computed between the number of times programs have been heard and knowledge of the advertising. In one such study at Ohio State University, a rank correlation of .55 was obtained between the number of times the program had been heard and recognition of the particular brand advertised. The rank correlation between the number of times the program had been heard and use of the particular brand was .26 (65), (*see* Note 21).

EXPERIMENTS IN AUDITORY LEARNING AND MEMORY

Amount of information retained and auditory memory span.—In many cases tests have been given to persons listening to the radio to determine the amount of information obtained from a given broadcast. Some of these studies have been made with school children and school broadcasts (*see* Note 101). In one such instance, a test of twenty multiple-choice questions was given after a radio talk on health to about five hundred pupils in the fourth to the eighth grades. Three hundred similar pupils who did not hear the talk took the test for comparison purposes. If the test can be considered a fair sampling of the information contained in the talk, the gain of the radio pupils amounted to one-third of the information presented. After three months, two-thirds of this gained information—two-ninths of the original information—was remembered. Analysis of the items of information showed that those which were of major importance were remembered in more cases than those of minor importance. Repetition of the items showed the expected relation with ability to remember them. The effect of the method of presentation was demonstrated in several cases, one of which concerns memory for two numbers. The first number was given as follows: "We now have about twenty-five thousand of these questions." The presentation of the second number read, "And then one day I read a story about this same acrobat and found out the number of times he had fallen into the net before he learned to do the trick. Tell your teacher now the number of times you think he fell. (Pause) He had fallen into the net two thousand times in learning this trick." The percentage gain for the number of pupils giving the correct number for the question on the first statement was 15. The percentage gain for the question on the second much-emphasized number was 71.

Tests given in connection with a geography series over the Ohio School of the Air showed percentage gains of 16 for the fifth and sixth grades, and 20 for the seventh and eighth grades. The geography tests were more difficult than the health test (290).

Calhoun has determined the memory span for children of different ages with regard to words presented orally to them.⁴ It was originally intended that this experiment duplicate radio conditions by giving the lists of words through a loud-speaker. This did not prove feasible since the recordings available were not of sufficiently high quality. The words were, therefore, given from the back of the room, out of sight of the pupils. The time intervals between successive words, the length of the words, and the length of the lists were varied. The most significant finding in this study concerned the absolute nature of the memory span for words. This means that, within limits, the number of words remembered and written down was independent of the number of words presented in the list.⁵ The number of syllables in the words had little effect upon the number of words remembered. The interpretation of these facts in radio emphasizes the necessity for short presentations of well-organized and grouped ideas. In comparing memory span for words and memory span for digits, it was shown that the latter was greater. Where a pupil remembered 3.5 words from a word list of given length, he remembered 6 digits from a comparable list (291).

*Classroom versus radio presentation.*⁶—Several experimental comparisons of the efficiency of radio teaching with classroom teaching have been undertaken. A few of these will be reported rather fully, others briefly indicated (550). Experiments on memory for radio talks have been conducted by Harrison in rural schools. In one, the immediate gain in information from a half-hour nature-study program without preparation or follow-up was tested. This program and the test dealt with information about common animals. The final scores of 79 pupils distributed in the fourth through eighth grades were, on the average, one-third larger than their initial scores. In another study a comparison was made for an hour

⁴It is important to note that a relationship between memory and seating arrangement was found, in that those seated at a distance from the source of the sound did not remember items as well as those near the speaker.

⁵The memory span varied with the age of the pupils. A combined score for the third-grade span was 2.1 words; fifth-grade, 3.2; seventh-grade, 3.7; ninth-grade, 4.1; twelfth-grade, 4.7.

⁶An English experiment related to effective use of radio in the classroom determined that it was better for the classroom teacher to make notes on the blackboard during the broadcast than for pupils to make their own notes (20).

divided between radio and classroom instruction and a whole hour devoted to classroom instruction. The subject was the Panama Canal, dramatized for radio use. In one case the class listened to the half-hour radio dramatization on one day and on the following day the teacher devoted a half-hour to follow-up work on the program. In the other case the teacher and class spent two half-hour periods on successive days in studying the material contained in the broadcast. Comparison of initial and final test results showed that no especially significant differences were obtained. Harrison has been aware that there are important effects of a program other than the purely informational and has attempted to measure them.

More extensive experiments were carried on by the same investigator in connection with the Damrosch Music Appreciation Series. Data from these experiments were used as the basis for certain revisions made in the lessons, especially regarding the programs for the lower grades. Briefly, the experiment consisted in devising tests on information to be used with Series A of the concerts. These tests were given to experimental and control groups at the first of the school year. The experimental group listened to the 12 concerts in Series A; the control group heard none of the concerts. At the close of the year, the tests were repeated; the teachers in charge of the classes had not known that the test was to be given a second time. With Series A concerts, the simplest of the four series, it was found that Grades V, VI, VII, and VIII in the experimental classes gained more musical information than did the children in the control classes. The differences were reliable according to the probable-error criterion. For the two lower grades, III and IV, the results did not show gains for the radio groups. It must be emphasized that the pupils studied were in rural schools, in which few special music teachers were employed. No figures were obtainable on the exact time spent by the control and experimental groups on music outside of the radio lesson since it was assumed that the experiment was a test of the practical importance of the Damrosch concerts in conveying musical information to pupils in rural schools, rather than a test of radio versus classroom instruction (266).

At Rochester, conditions made it necessary to broadcast a science course to elementary-school pupils who would normally have taken this as a regular subject in junior high school. The pupils did not have trained science teachers or laboratory equipment to supplement the broadcasts. Experiments were performed

at home with homemade equipment. At the end of the semester, a five-part examination prepared by a group of junior high-school science teachers was taken by 498 pupils in the regular junior high-school classes and by 612 pupils listening to the radio lessons. The radio pupils made better scores on four parts of the examination, and consequently their total marks were higher than those for the regular pupils. The highest possible score was 70; median for the radio science group was 45, and for the junior high-school science group was 40. Differences in race, home environment, and other factors were slight (351, 642). The test, of course, may not have shown skills which are learned in the laboratory in the regular junior high-school course. Nevertheless, this experiment, forced by conditions, does illustrate the fact that radio can teach in an effective way if a competent person is behind the microphone.

To illustrate how contradictory can be the evidence gathered at large without exact specification of the conditions, the following results for the National Advisory Council government series are given in contrast to those just quoted. A special test was prepared by two members of the University of Michigan and given to a number of university and college classes which had made use of the government broadcasts. Students were divided into those who had heard and discussed the talks, those who had heard but not discussed the talks, those who had discussed the talks but not heard them, and those who had neither heard nor discussed the talks. The test scores showed no significant differences between the scores for students in these four groups. In general, the attitude of the students was favorable toward the broadcasts (607), (*see* Note 102).

Platform versus radio address.—In a number of cases experiments have sought to bring into relief the differences between the effectiveness of talks personally delivered and radio talks. At the University of Wisconsin students heard speeches, informal and formal, delivered from the platform and from the radio (*see* Note 103). The speeches were eight minutes in length, and the students took completion tests on the content. No significant differences, independent of the style of speaking, were found in the number of facts recalled by one hundred students. When the informal style was used, radio was 8.5 per cent more effective than platform speaking (244, 710). No significant differences between test results for a personal and recorded talk were found in an experiment carried out in England. The tests were given after the presentation and a month later (636).

Gaskill has reported an experiment wherein 130 college students in psychology courses listened once to the speaker in the studio and once to the speaker through a radio set. In all, two talks were given with half the group listening in the studio and half at home. For the second talk, the students listening at home to the first talk were brought to the studio and vice versa. No notes were taken by any of the students. Three days after each of the talks the students were given an objective examination covering the subject-matter of the talk. Scores on the examinations indicated a small but significant superiority for broadcasting. Every individual had a higher score on the examination following a radio presentation than on the examination following a studio lecture. In other words, the group at the studio listening to the first talk consistently raised its examination scores for the second talk received by radio sets. The other group showed scores with a consistent drop for the second talk which was heard at the studio. Other results of this study showed that there was no relationship between frequency of listening to radio programs and excellence in examination scores. To the question, "Where do you think you could have listened better, studio or radio?" there was no consistency of preference with the score obtained in the test (258).

Auditory versus visual presentation.—Comparing the effectiveness of the radio with the printed page is a type of investigation which is especially appealing to broadcaster and publisher, each of whom wants clear and decisive results favoring his particular medium. Unfortunately, it appears that no investigation will ever solve this problem in any such fashion. The most that may be expected is that under certain closely specified conditions memory for heard presentations will be better than memory for seen presentations, and that under equally closely specified but different conditions the converse will be true. Therefore, knowledge of the conditions under which the experimental presentation was made and under which the application will be made is of paramount importance.

Condensed information on the subject of auditory learning is available in a thesis by Wilcox from which the following brief review of the literature on the subject is in part taken (112). Bennett found that auditory presentation gave slightly better results for immediate retention in both disconnected matter and prose (212). This was in comparison with visual presentation. Whitehead, in studying the memorizing of nonsense syllables, also found the audi-

tory method to be slightly superior in retention (346). Meumann came to the conclusion that the auditory method of learning was quicker than the visual method (121). Muensterberg and Bingham concluded as a result of experimenting with colors and numbers that when both auditory and visual memory worked together the auditory method exceeded the visual method (304). Studies by Worcester gave some evidence that auditory directions were remembered better than visual directions (*see* Note 104). DeWick's and Stanton's experiments, which will be described later, indicated the superiority of auditory methods. Carver found that auditory presentation was more effective when materials were given which were easy to comprehend. For unfamiliar and difficult materials, visual presentation was more effective (123), (*see* Note 105).

Calkins studied immediate and delayed recall of concrete and verbal data (223). Here the visual method was found to be better. Gates found that the average memory span of college students for numbers was 8.2 digits when presented visually and 7.7 when presented by the auditory method (259). Kirkpatrick's contribution to this field consisted in presenting words orally and visually. He found that the visual method was slightly superior in immediate recall for the group as a whole, although for women the auditory method was more advantageous (283). In another study, test response to a series of read and heard talks seemed to show that more facts were obtained from the printed version (69).

Two auditory-visual studies which are worthy of description have been carried out by DeWick and Stanton. Although both of these studies deal with advertising copy, it may be assumed that certain of the conclusions hold for similar material, for example, names, when presented for other purposes. In the DeWick study, 15 printed advertisements were shown to students at the rate of one each minute. Fifteen similar advertisements were presented by loud-speaker at an equivalent rate. In each printed advertisement, the name of the product appeared three times in bold-faced capitals. Auditorially presented names were spelled out. Students in one group were given the visual presentation before the auditory; students in another group, vice versa. Recall tests followed the presentation immediately, twenty-four hours later, five days later, and five months later. Each student thus took four recall tests. Results showed that for immediate recall of products and trade names there was little difference between visual and auditory methods

of presentation, but each subsequent recall showed a clearer advantage for the auditory method (36, 708).⁷

Stanton's study is notable for the careful control of many important variables. In this study, eight advertisements were presented visually (printed) and eight auditorially (over the loud-speaker of a public-address system). College students read and heard these advertisements; some groups read first, then heard; others, vice versa. The same copy was given to some groups visually and to other groups auditorially. These procedures removed the effect of the position (first or second) of the advertisements and the effect of the nature of the specific copy. Furthermore, the names used in the advertisements were tested in preliminary trials to determine any unusual associations. The relation of the trade name to the product name was kept the same in all advertisements. In contrast to the DeWick study, the auditorially given names were not spelled. Tests (recall, aided recall, and recognition) were given to one-third of the students one day after presentation; to the second third, seven days after; and to the last third, twenty-one days after. The three types of tests supplemented each other and provided a rather exhaustive check on memory for the association of trade names with products. This study may well serve as a model for controlled experimentation if one or two difficulties are ironed out.⁸ The results of the experiment showed the auditory method of presentation to be superior, which is especially significant

⁷The following criticisms might be made of this study: (1) the presentation of advertising material over a loud-speaker in a college classroom is probably more unusual than the presentation of printed material, (2) the spelling of names turns attention to the individual letters in the trade names, which might aid in written recall of them, (3) the relation between the name of the product and the trade name is not the same for different advertisements, and, on the whole, is different for the visual advertisements than for the auditory advertisements. Using the visual advertisement auditorially with one group and vice versa would have corrected this difficulty.

⁸A minor criticism concerns the fact that students in the same class were asked to take the tests at different times. However, if students first taking the tests had communicated information concerning them, the "visual" scores should have been raised relatively more than the "auditory" scores, since the visual scores were lower and greater improvement was therefore possible. A major criticism deals with the relative sensitivity of college students in a classroom situation to the two forms of presentation, auditory and visual. Students read a great deal and refer to textbooks even in class. Presentation by loud-speaker is a novel experience for them. (In this experiment, special attention was called to the visual presentation in an attempt to offset this difficulty.) Furthermore, the cultural level and training of the persons taking part in the experiment are important. In one study, historical passages were understood better by college groups when presented auditorially, while visual presentation was superior for groups from the average population (732, 123).

since one of the methods of testing might be termed a "visual recognition" method. The difference between auditory and visual scores was most pronounced in test results secured seven days after the presentation, although for the recognition tests the superiority of audition over vision increased regularly with the length of time elapsing between the presentation and the test (100).

The relation between memory for presentation and interval before testing seems to be an important one as the following experiment, in connection with the two just reported, will show. At the University College, Hull, England, one group of students read the beginning of a short talk and heard the rest from a gramophone record. Objective-test results showed a difference in favor of vision (five times the probable error). Retesting after a month showed no difference in the amount remembered from the read and heard passages. Another group of students heard the beginning of the talk and read the remainder. Here, immediate test results were slightly in favor of vision (difference 2.2 times the probable error), but this advantage was likewise reduced on the retest a month later (difference 1.2 times the probable error), (636). All of the evidence thus tends to emphasize the fact that auditorially presented information is better retained over a period of time than visually presented information. How much this is a function of the interference caused by extensive reading in between the presentation and the test remains to be determined.

AUDIENCE ATTITUDES

Although we recognize that the information conveyed in a program is important, and that we must develop methods of testing whether or not the audience remembers this information, yet it is also of consequence to know what attitudes the program induces in the audiences. It does not seem worth while to attempt any finer classification of the general term "attitudes." Therefore, measurements of interests, preferences, and prejudices will be discussed together in this section. The relation of the personality of the speaker to these attitudes will be described later.

AN ATTITUDE SURVEY OF THE GENERAL RADIO AUDIENCE

As mentioned previously, one of the pioneer general surveys of audience attitudes was that made by Houser. The purpose of the

survey, which was carried out by personal interview with a rather long schedule form, was to determine the attitude of the persons interviewed toward radio advertising and toward radio in general. Questions were scored plus and minus according to whether the answer favored radio advertising or not. The attitude of the person was computed in terms of the number of questions answered positively or negatively. This survey by Houser is probably one of the few instances where tests and attitude scales, such as the ones used in the laboratory, have been applied generally to the solution of a practical problem. The attitude questions in the Houser survey were of this type, "If you had to give up the radio or the movies, which would you miss the more?" and "Will you rank these in order of their importance to you as spare-time activities, reading, movies, radio, parties?" (617).

STUDIES WITH SCHOOL CHILDREN

Aside from studying the amount of musical information gained in listening to the Damrosch concerts, Harrison asked children to indicate their preferences for one of two activities. Several of such pairs given rural children included "(1) listen to the radio, (2) sing; (1) listen to the phonograph, (2) listen to the radio; (1) read in the evening, (2) listen to music in the evening." Children who listened to the Damrosch concerts at school and children of the control group who did not listen to the radio in school were asked these paired questions. The majority of all children in both the experimental group and the control group agreed on the following preferences with the exceptions noted: they would rather listen to the radio than sing; they would rather listen to the radio than the phonograph; they would rather listen to music that is played than music sung; they would rather (with exception of Grade VIII, control group) listen to music in the evenings than read in the evenings; they would rather (with exception of Grade III, experimental group) play an instrument than listen to the radio. Other findings not so easy to summarize were as follows: there was a tendency toward an increase in preference for music and a decrease in preference for stories as children progressed from grade to grade in both groups; in the radio group (experimental group) the children on the whole preferred to have more radio music in school, while in the non-radio group more singing was preferred (266).

A more thoroughgoing use of this comparison method for determi-

nation of children's interests in leisure-time activities was made by Weedon and Dale, who evolved a method related to the Thurstone paired-comparison test (*see* Note 106).⁹ The interests of pupils in schools in three different localities, as determined by this method, were roughly similar. Such activities as camping, swimming, and going to picnics were preferred to more passive interests, such as going to the movies, listening to the radio, reading magazines and books. A combined approximation of the rank order for interest in radio and several comparable pursuits was: for boys, movies, 6; radio, 13; books, 16; (playing) musical instruments, 16; magazines, 18; and (going to) concerts, 21; and for girls, movies 5, radio 11; books, 11; musical instruments, 14; magazines, 14; concerts, 16. The range of rankings was from 1 to 24; therefore the movies were preferred to radio, books, and magazines (110).

One type of attitude scale was devised at Ohio State University. Since this scale was to be used with children, it was thought desirable to use single words to express attitudes. Accordingly, before and after listening to a talk dealing with the city of Denver, pupils marked a list of words which might be applied to Denver. These words were: "wealthy," "smoky," "large," "dirty," "modern," "busy," "beautiful," "noisy," and so on. All the words were tested against vocabulary ratings for children in the sixth grade. In the talk none of these words were used; and the children could not have acquired information from the talk which would have permitted them to conclude directly that Denver was wealthy, smoky, or large. All the altered relationships of the children to the words must have been derived from the content of the talk in terms of general prejudices toward Denver. If the pupil formed an unfavorable impression of Denver from the talk and did not like smoky cities, it is conceivable that in the absence of information to the contrary he would have been apt to list Denver as a smoky city. For purposes of evaluating the markings, the pupils were asked at a later date to say whether they would like someone to speak of their own city as "smoky," "large," "dirty," or "wealthy."

⁹A simple percentage system of scoring the interests was used in place of the more complicated Thurstone method. Correlations between the ranking of interests by the percentage scoring and the Thurstone scoring were high, showing that the percentage system of scoring was suitable for ordinary purposes. In the Weedon-Dale test, 24 interests were listed involving 276 comparisons. These comparisons were divided and placed on several different test forms. Certain comparisons, comprising the "anchor" list, were present on all of these test forms (110). In this way a much shorter test may be given to a larger number of pupils.

It was assumed that this rating would show the relative values to be attached to the pupils' judgments. The results for this experiment, in comparison with those for a control group which did not hear the talk, seemed to show that the talk had made the pupils' attitudes toward Denver even more favorable (69).

ADULT OPINION

The experiment with adult groups carried on by Robinson, of Yale University, and the National League of Women Voters attempted to measure changes in public opinion effected by listening to a series of four radio programs on unemployment (*see* Note 107). The attitude test for this experiment was made up in the following fashion, which is illustrative of the preliminary technique in composing attitude scales. A collection was made of every statement on the unemployment problem obtainable from magazine articles, newspapers, pamphlets, and speeches. These statements were gathered to represent the current opinions of people discussing the issue rather than any logical analysis of unemployment. From the more than a thousand statements gathered, 120 which represented about equally the socialistic, individualistic, and noncommittal points of view were selected for use in the test.¹⁰ The persons taking the test were instructed to mark each statement according to one of five classifications: certainly true, probably or mostly true; difficult or impossible to decide upon; probably or mostly false; certainly false (*see* Note 108).

The influence of the radio series plus its accompanying discussions seemed clearly to increase the number of statements found true, to decrease the frequency of doubt, and to have little effect on the number of statements found false. The changes in the control group were less marked. Robinson concluded that the effect of additional (radio) exposure to political ideas was to make listeners surer of what they *did* believe without making them surer of what they did not believe.

The 120 statements were separated into groups which expressed certain attitudes such as "pro status quo" and "criticism of institutions." Of the six classes of ideas accepted with definite consistency by the radio group before the series, all showed an increase in consistency after the series. This indicated again that the average

¹⁰As an example, two statements may be given: "Any one who really *wants* a job can find work." "As unemployment increases, crime thrives."

person grows surer, providing he was in the beginning inclined to believe such statements. There was no instance where a positive attitude was reversed (286, 323).¹¹

One outstanding difficulty which all present attitude scales have to face is that they express the verbal and written opinions of those who take them; we have no assurance that radio listeners who show certain attitudes on an attitude scale will follow these expressed attitudes in their acts. No studies on the relationship between expressed attitude and overt attitude are available.

AUDIENCE INTELLIGENCE

The radio audience is so vast and diversified that the only meaningful figures with regard to intelligence are those which refer to specific groups in the radio audience. Opposing those who counsel radio programs on the thirteen-year-old level, Freeman found indications that the intelligence of radio audiences is probably higher than the intelligence of the whole population. Such a conclusion could be deduced from radio ownership by economic groups in relation to listening habits, but Freeman arrived at it by means of an intelligence test given over a National Broadcasting Company network. The test was based on the army intelligence tests, and twenty-five hundred persons sent in answers. Three-quarters of the entire group made scores representing superior adult ability! There are, of course, two criticisms which might be raised. In the first place, it is difficult to control the taking of such a test with respect to "looked-up" answers. Freeman endeavored to check this by comparing the test results in various ways. In the second place, it is impossible to secure responses from an adequate sampling of the radio audience, since the very fact that taking the test is voluntary militates against response from those who feel they might do poorly. Freeman confirms this criticism by stating that 26 per cent of the test-takers were in some profession whereas the United States census shows only 3.4 per cent for the whole population (703).¹²

In another experiment an attempt was made to find out whether

¹¹Bearing out this conclusion in another way, a questionnaire investigation by Cantril and Allport revealed that the majority of listeners preferred to hear a speaker present a point of view with which they agreed; 30 per cent tuned the speaker out if he did not fulfill this requirement (732).

¹²A sentence completion "intelligence test" given to persons requesting it from WOR showed the average score to be considerably higher than norms for college Freshmen (453). The same criticisms hold.

the intelligence ratings of those high-school pupils listening a great deal to the radio were different from the ratings of those who did not listen so much. Here the tests were taken in controlled manner as a part of a state-wide school testing program, and information on radio listening was derived from the answers to two questions on a rather lengthy personal-history blank which each pupil filled out. For the vast majority of pupils in Cuyahoga County (Cleveland) schools there was no relation between intelligence and estimated number of hours of listening per week (290).¹³

MISCELLANEOUS EXPERIMENTS

There have been many experiments closely allied to those discussed in the preceding sections. Some of the most interesting of these experiments have dealt with the associations existing in the minds of the listeners between certain voice qualities and physical, social, and mental qualities. The problem may be rephrased as, "Can you tell what kind of a person the speaker is from his voice?"

Pear carried out an experiment over the stations of the British Broadcasting Corporation. Listeners heard nine speakers read an identical passage and tried to determine their sex, age, occupation, qualities of leadership, birthplace, and locality affecting their speech from the voice of the speaker. Analysis of the four thousand reports sent in showed rather good appraisal of the age of the speakers and fairly good judgment of the occupation (92). Buehler, a Viennese psychologist, tried out a similar experiment in which he asked listeners to judge the weight, size, age, and position of persons who read the same passage over the radio (220).

Allport, of Harvard, has conducted a study on the voice as an expression of personality. The personalities of three speakers were first studied by means of objective tests. These three speakers then read identical prose passages over an amplifying system to 150 listening judges, who were not acquainted with the speakers. The listeners were asked to match the voices with information which the personality tests had shown. For example, the listeners were told that one speaker was exceedingly introverted, one somewhat introverted, and one moderately extroverted. The listeners

¹³For those pupils who listed the monthly rental value of their homes, there seemed to be low negative correlations between amount of listening and intelligence in the higher rental groups. In Kirkpatrick's Minnesota study, it appeared that persons with more years of schooling listened less (64).

were to indicate which voice belonged to each of the three degrees of introversion-extroversion. The speakers then read other passages, and the audience tried to match them with other traits. The listeners were able to match the voices with traits to a degree significantly greater than that expected by chance. For the traits of extroversion-introversion, ascendance-submission, and summary descriptions of personalities, the results showed 60 to 70 per cent correct matching instead of the 33 per cent expected by chance. Results which were lower but still, in part, significant were obtained from matching voices with personal values, vocational plans, political views, handwriting, and photographs. When voices came from behind a curtain, instead of from a loud-speaker, 8 per cent more correct matchings were obtained. Information on the relation between voice and physique is given by Allport, quoting an experiment by Lazarsfeld, of Vienna, to show that the height of the speaker is determined surprisingly well on the basis of voice alone (203).

In another experiment Allport compared the responses of listeners when the speaker was in front of them and when he was heard over the loud-speaker. The audiences were alternated, and other controls were provided in the experiment. The tests used included those for rote memory, memory for meaningful material, comprehension of difficult prose, resistance to distraction, accuracy of time estimation, ability to count a recurrent word (such as "and") in connected prose read by the broadcaster, skill in mental arithmetic, and suggestibility. The positive results obtained showed that:

1. The basic processes of addition, subtraction, multiplication, and division in mental arithmetic seemed to be more accurately carried on with the speaker in front of the listeners. (This is an interesting result to contrast with the success of the Cleveland public-school system in teaching arithmetic by radio (210).
2. Ability to count the number of "and's" occurring in connected prose read by the broadcaster seemed definitely greater when the speaker was present than when heard over the loud-speaker.
3. Using a test for suggestibility, 65 per cent of those persons face to face with the broadcaster accepted his suggestion, while only 43 per cent hearing the suggestion over the radio accepted it.
4. The natural voice was preferred. Two stories of equal length were read at the same time, one over the amplifying system and the other by a speaker before the listeners. Listeners were free to choose to attend to either story or both. Of the 40 stories written afterwards by the listeners, 35 were the story read by the speaker physically present. The listeners had been asked to write whichever story they felt better able to reproduce (203).

Further studies at Harvard University indicated that informative and factual material is better understood over the radio, whereas abstract, complex, or controversial material is more effectively presented in person (224).

In London, an attempt was made to find out the influence of a broadcast speech course on the spoken English of pupils. From the Southwark Central School, 120 boys were divided into control and experimental classes. The pronunciation of the pupils was recorded on gramophone records before the course began and after it had ended. Half of the group (experimental class) listened to the broadcasts, while the control group did not. Each pupil read from a printed card a short piece of prose devised by Lloyd James, the broadcaster of the speech course. The results of this experiment showed that while there had been a definite improvement in the pronunciation of individual sounds, the lessons had not done much to eradicate what is known as "bad accent." Since the radio lessons dealt with single sounds, this result was as expected (60, 25). A similar experiment was carried out in Ohio to demonstrate the value of French broadcasts in supplementing the ordinary high-school lessons. Results showed more improvement in both pronunciation and intonation for pupils who heard the radio lessons (68).

Author's Summary of Chapter XI

ACCORDING to their accuracy in reporting actual operation of radio sets, measurement methods may be ranked as follows: recording devices, simultaneous telephone surveys, recall interviews, and recognition questionnaires. Personal interviews are usually preferable to mail questionnaires. The listener is better able to answer factual questions on actual listening than questions dealing with habit. In appraising methods of measurement in a practical sense, the relationship between the accuracy of the different methods should be ascertained so that less expensive yet sufficiently exact methods may be substituted for those which are most costly.

CHAPTER XI

SYNOPSIS OF METHODS

In this chapter a few of the more useful methods of measurement are reviewed. For detailed considerations in carrying out these measurements, reference should be made to the appropriate preceding chapters. The suitability of the methods for different purposes is shown in Table II. It must be noted that these methods have been ranked on the basis of their accuracy in reporting individual listening. No consideration has been given to sampling bias, cost, or amount of information obtained per interview.

For practical purposes many of these factors are important, as may be illustrated in the following case. A broadcaster wishes to determine the number of families listening to each of several different programs on a given day. The most accurate methods to determine to what programs any given family is listening are the simultaneous telephone survey and the recording device. The simultaneous telephone survey has the fault that the person interviewed may not be able to name the program or the station to which he and his family are listening. Furthermore, only telephone owners may be interviewed. The recording device notes all programs tuned in irrespective of whether or not the family is actually listening. Both methods are expensive, the first because a large number of persons must be interviewed to obtain an adequate sample for several programs, and the second because the equipment is costly.

The recall method of program identification is less accurate; listeners may forget programs they have heard on the previous day and may add the names of programs they usually hear. Nevertheless, one study has shown a significant relationship between the relative ranking of programs when information is obtained by the simultaneous method and the recall method. In recall interviews, all programs of the preceding day are investigated rather than the programs on at the time of the interview. This procedure lowers the cost per program considerably. Face-to-face recall interviews can be carried out more economically than can the face-to-face

TABLE II
THE SUITABILITY OF DIFFERENT METHODS IN CARRYING OUT SURVEYS

PURPOSE OF THE SURVEY	SUITABILITY OF KNOWN METHODS IN ORDER OF RANK		
	First Method (2)	Second Method (3)	Third Method (4)
Station coverage.....	Signal-strength tests	Station listening, mail questionnaire cards
Number listening to station and preference for station.....	Recording device Simultaneous telephone survey	Station listening, mail questionnaire cards General personal interview	Personal and telephone recall method interviews
Number listening to specific programs.....	Recording device Simultaneous telephone survey	Personal and telephone recall method interviews Personal interview with recognition test	Recognition questionnaire Mail response to free offers
Preference for types of programs.....	General personal interview	General mail questionnaire	Recognition questionnaire
Hours of listening.....	Recording device Simultaneous telephone survey	Personal and telephone recall method interviews	General personal interview General mail questionnaire
Activities resulting from radio (practices adopted, goods purchased).....	Observation of activity Regular reports	General personal interview	General mail questionnaire Special comments in mail response

simultaneous interviews necessary to avoid telephone sampling bias. On the basis of these considerations, the broadcaster may decide that the recall method is a more practical if less accurate method to use in determining the number of families listening to the programs. Finally, the broadcaster may wish to determine, not the number of persons listening to the programs, but the impression which the names of the programs have created in the minds of the listeners after a period of time. In this case, the recall method becomes a more pertinent method than the simultaneous method.

The purpose of this rather lengthy discussion is to stress the fact that these methods have been ranked according to only one criterion. To repeat: three assumptions have been made in placing the methods in Table II. First, it is assumed that the sampling bias inherent in each method is not of great importance. Otherwise, the rating of the methods would be primarily dependent upon the extent of this bias, and telephone interviews could only be admitted where they were shown to correspond with face-to-face interviews. Second, it is assumed that the information desired in surveys concerns actual listening and actual preferences rather than the radio-set owner's judgment of his own listening. Third, it is assumed that cost per unit of information is of secondary importance.

MAIL RESPONSE

Free offers.—Little spontaneous mail response is received; therefore, it is usual to stimulate it in some fashion, such as making free offers. For purposes of measurement, the free offer should be closely related to the content of the broadcast and of little value aside from the program. Offers which fulfill these requirements are photographs of radio performers, copies of talks, bulletins related to the content of the talk, copies of the poems and songs used in the program, and schedules listing time and content of future broadcasts.

Spontaneous comments.—Occasionally, letters are received describing the help which radio programs have given in carrying out certain activities (housekeeping, farming, buying), or letters come in asking for information regarding such activities. The relation of these letters to other letters may be tabulated, and their content studied.

MAIL QUESTIONNAIRE

Station-listening questionnaires.—The mail questionnaire should be short and clearly worded. The Columbia Price-Waterhouse

post-card questionnaire on station listening may be used as a standard. The questions asked are: "What radio station do you listen to most? Its call letters are———. What other station or stations do you listen to regularly?" Double government reply postal cards should be sent to every fiftieth home as listed in the city directory. Return cards should be keyed so that analysis by economic levels is possible.

Recognition questionnaires.—In the recognition questionnaire, a number of programs, preferably not more than fifteen, are listed by full name on a return card, and the listener is asked to mark the ones he has heard. The accuracy of the results is not high, but the markings are at least indicative of what the listener thinks he would like to hear. It has been found that the mail questionnaire cannot be used profitably to have listeners write down the names of the programs they have heard.

General questionnaires.—Mail questionnaires may duplicate questions asked in personal interviews concerning the hours of listening, programs preferred, practices adopted; but they must be brief.

PERSONAL INTERVIEW

General questions.—For fairly lengthy series of questions, the personal interview is the most practical method. Experienced interviewers, equipped with schedule cards, call at one in every fifty homes in specified areas. Introducing himself as a representative of a radio research organization, the interviewer asks:

Do you have a radio?

What stations do you usually listen to?

At what hours do you usually listen during the morning? during the afternoon? during the evening?

What types of programs do you prefer? dramatic programs, educational features (short talks, information), sports, music, women's features, children's programs, comedy, religious programs, news, special features (including talks by famous speakers, international broadcasts)?

Have you obtained useful information from radio programs? If a housewife—to help you in cooking, care of the house, buying at stores, choosing what you read, caring for children?

There are, of course, many other questions which could be included in such interviews. Twenty-five questions are about as many as any interview should contain.

Roster method.—This is the recognition questionnaire presented personally. The complete list of all programs over several stations

for a day can be printed in block form, and the person interviewed asked to identify the ones he has heard on the preceding day.

The personal interview may be employed to carry out both the simultaneous telephone survey and the recall survey described in the following section on telephone interviews.

TELEPHONE INTERVIEWS

Simultaneous telephone interviews.—Telephone interviews recording actual listening are accurate but expensive. The customary form for the interview made at the time the programs are on the air goes:

Good morning. This is the Radio Research Association. Would you mind telling me—

1. Have you a radio?
2. Was it turned on when you answered the telephone?
3. May I ask to what you were listening?
4. (If name of program is mentioned) Do you know what station that program is on?
(If name of station is mentioned) What is the name of the program?

Sometimes the first and even the second questions are omitted to speed the interviewing. At other times, additional questions are asked as needed:

5. What advertiser is putting on the program?
6. What product does the program advertise?

For this sort of survey it is imperative that sampling be carried out by passing completely through the telephone book at frequent intervals to obtain numbers.

Recall interviews.—Telephone interviews regarding past listening are best typified by the Crossley interview. After a suitable approach, questions may be asked as follows:

1. Do you own a radio?
2. Was your radio turned on yesterday evening?
3. At what hours?
4. What programs did you hear?
5. What station carried this program?

The same questions are repeated for the afternoon and morning of the preceding day. The interviewing is best done in the morning between eight-thirty and eleven. By asking about evening programs first, the listener is more likely to be able to answer and thus start the interview properly.

General questions.—In a telephone interview, some of the same questions may be asked that are asked in the personal interview; the number of permissible questions is more limited and they should be more directly related to each other. The Columbia Price-Waterhouse questions on station listening may be asked by telephone.

ENGINEERING AND MECHANICAL MEASUREMENTS

Signal strength.—In determining the physical coverage of stations, measurements of the signal strength and noise level in specified locations are indispensable.

Recording devices.—Devices to record the exact time at which radio sets are operated and name of the stations tuned in have been invented but are not yet in use. They will be useful in checking the results of other types of surveys.

In this summary, no attempt has been made to discuss the use of report forms, tests, or personal observation in measuring the effectiveness of radio. These methods are usually of service in special situations and can only be adequately discussed with reference to the peculiar conditions under which they are to be employed.

APPENDIX



APPENDIX

SUPPLEMENTARY NOTES

CHAPTER I

Note 1.—In a sense such tests are given in reduced form when the listener is asked in some telephone surveys whether he knows the name of the advertiser of the program to which he is listening. But such information is sketchy, piecemeal, and only useful to the particular advertiser for that program. A thoroughgoing study of the relative memory value of different kinds of names and ways of phrasing is needed. In radio advertising such relationships as name of product to name of featured artist should be investigated. This can be done only on a limited scale and by using a laboratory technique.

Aside from experiments in the purely radio or auditory field, comparisons may be made. The relative memory for ear and eye presentations may be determined. Knowledge of this sort will be valuable alike for the educator and the advertiser. In agricultural broadcasting, the United States Department of Agriculture found that it must be extremely careful in giving specific directions over the radio. Ludicrous mistakes can occur when the directions are in part forgotten, and evidence from present studies shows that such forgetting is inevitable with most of the listeners.

Educators are also interested in the loss of effectiveness which a speaker suffers when he is deprived of gestures and facial expression as a means of communication with his audience. Further factors such as rate of speech, variety in voice, and word choice can be investigated with special reference to radio. It is obvious that since radio is only a means of communication, all the studies of the best ways of communicating ideas will find application to radio. In addition, radio will present certain special problems arising from its peculiarities as a medium.

Note 2.—An interesting use made of a listener survey occurred in Cuba. Since no allocations of broadcast wave-lengths had been made to Cuba or Mexico before 1933, these countries chose at will. The Cuban survey determined which American stations were heard best and which programs were most desirable. On the basis of this information the Cuban Department of Communications expected to protect the channels of six American stations and keep them clear of Cuban assignments (419).

Note 3.—Often the type of measurement which seems most needed may not be feasible. The Central Council for School Broadcasting of the British Broadcasting Corporation evidently experienced this difficulty. It felt that the duty of the Central Council was to investigate the present practice of broadcasting to schools. Since it believed that the method of controlled experiment with quantitative comparison of results was almost impossible in

educational broadcasting, the Council decided that the most fruitful method of investigation would be the collection and publication of existing opinion (23).

CHAPTER II

Note 4.—If we know that the percentage of people with incomes over \$5,000 as compared with those having lesser incomes is five per cent, and we find that we only have one per cent in our sample, then we have failed properly to represent this class. In this way data on the make-up of the population as a whole can be used efficiently to determine the correctness of the sampling procedure and actually to chart the number of interviews to be secured from the different groups. In case the data show deviations from the true percentages for different groups the results may be weighted to compensate for this. Kirkpatrick has discussed these points with reference to his Minneapolis survey (64).

Note 5.—From a technical point of view areas bounded by specified signal strengths might be set up, if it is desirable to center the survey on a single station. In other cases, radiating sectors of standard size could be taken with a city as the point of origin. For comparison of the effectiveness of stations located in the same city this type of sampling unit would be suitable. Finally, for state or nation-wide surveys involving stations in different locations an arbitrary square unit of so many square miles might serve to insure proper geographical sampling. This combined with the population of the unit would enable the surveyor to express the results for each station in terms of an area-people unit.

Note 6.—The same type of criticism applies to the survey of the American Newspaper Publishers Association, the report of which considered any measurement made inside a state line as evidence of the proper sampling of that state (2). By openly admitting the fact that eight states were not represented in the study the survey inferred that the rest of the states having 93 per cent of the families were properly sampled. As far as the actual method of the survey is concerned, the Association could as well have said that the whole United States with all the families was represented. The survey was made by asking member newspapers to make one hundred telephone interviews in their respective cities. If the county is taken as a unit, then extension of the sample in the survey from a few counties to the whole state has been a more serious injury to sampling practice than extension from forty states to forty-eight states.

Note 7.—The type of sampling which characterized the study of listening areas holds for the study of station cities as a whole. Columbia states that its sampling for the whole Price-Waterhouse study comprises 80 per cent of all cities with populations of more than one hundred fifty thousand, and that the communities include most of the important trading areas in the United States and make available an analysis of network popularity in those parts of the country which are of vital interest to the advertiser. It would be interesting to find out how many readers of this Price-Waterhouse survey carry away the impression that the survey was national in scope.

What does it mean to say that the most popular programs and stations in

the primary area for Station WWW are———? The true meaning is usually overlooked by the reader. If WWW does not come out ahead, then it is clear either that WWW is a poor station not to win in its own primary area, or that another better station has coverage which overlaps to a large extent. WCLO computes popularity for both programs and stations after carefully determining where the most people listen to WCLO (109). The only significant way to give measures of popularity is to give separate figures for each city or trading area. In other words, an arbitrary outside boundary should be used instead of one which is related to the data to be gathered.

Note 8.—WCLO criticizes the Columbia Price-Waterhouse study, which endeavored to find out the response of "listening areas" or regions outside the metropolitan cities. It claims that Columbia took, on an average, less than five cities per area in sampling the whole region around any one city, such as Cincinnati, and that these representative cities which were to include the reactions of the semirural groups were each over five thousand in population. Here we have a typical difficulty. What shall we define as rural? Shall we include only those living outside cities or in villages? WCLO in its own survey conducted separate surveys on the rural routes of the cities in question. WCLO reports great differences both in station and program preference between city and rural listeners (109).

Note 9.—This is quite a large percentage and, in comparison with other figures given for proper sampling proportions, shows the difficulty in setting up an arbitrary standard of so many interviews. Possibly, in a small city it may be necessary to have a 10-per cent sample. In a large city this percentage may not be needed. Proper proportion in sampling seems to depend upon the number in the total population and also the number and kind of questions asked. It is necessary to note that although there may be considerable disagreement between the five different sections of the sample, there would not necessarily be that much disagreement between the results for the sample and the actual results for the total population if the latter could be obtained. It is customary, when the method of split halves or division of the sample is used, to apply correction measures which will give the agreement of the whole sample with another such sample as greater than that of the two halves with each other. As stated before, the investigator must first determine the use to which the survey results are to be put. Then he can estimate from several small trial surveys, the number needed in his entire sample to indicate the differentiation desired with the required degree of consistency.

Note 10.—KDKA secured one interview for each 150 families with receiving sets, that is, two-thirds of one per cent (62). The Creighton University interviewers called upon five per cent of the homes in Omaha (107). Toops believes that when adequate sampling is possible there is no inherent reason why ten per cent, or two per cent, or even two-tenths of one per cent of a population should not be as representative of a large population as other conventional alternatives of small sample representation (104). For a report on the sampling theory underlying the breakdown of the Crossley data, McElroy's thesis may be consulted (74).

Note 11.—Probably in many cities the results for telephone surveys of audience listening habits are available and may be compared. Just to mention

one instance, the surveys made for WTAM and WGAR in Cleveland are quoted. These surveys both showed that WTAM had the greatest audience, although the percentages were somewhat different. The WTAM survey gave WTAM 71.8 per cent and the next station 14.4 per cent of the audience (731). The WGAR survey (evening) gave WTAM 53.5 per cent and WGAR 27.6 per cent of the audience (728). This illustrates, however, that large differences may exist although the surveys are ostensibly the same, and demonstrates still further the need for standardization and specification in making surveys.

Note 12.—Sometimes, in our desire to find agreement in the survey chaos, we mistake numerical agreement for factual agreement. Bevis and Amos find such a difficulty in the assertion of the American Newspaper Publishers Association that its results agree with those of Crossley for the number of

TABLE III
SURVEYS OF BOSTON

AGENCY	DATE	RANKING OF STATIONS IN ORIGINAL DATA			RELATIVE RANKING OF STATIONS		
		WNAC	WEEI	WBZ-A	WNAC	WEEI	WBZ-A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. WEEI (111)*	1928	25	56	12	2	1	3
2. Emerson Knight (257)*	1930	62	17	17	1	3	2
3. Crossley (257)†	50	59	81	3	2	1
4. Advertising Club, Boston (75)‡	1931	65	70	66	3	1	2
5. Second Price-Waterhouse (37)§	1931	93	89	70	1	2	3
6. Third Price-Waterhouse (39)§	1931	92	91	86	1	2	3
7. Yankee Network (98)	1932	27	25	21	1	2	3
8. Fourth Price-Waterhouse (31)§	1932	93	90	82	1	2	3

*Interview. †Program mention. ‡Questionnaire. §Mail questionnaire. ||Telephone.

radio-set owners with sets on at a particular time. To be sure, the actual numbers are alike, but since the base of 100 per cent for the Crossley figures is the number of sets tuned in on a particular day, and the base for the American Newspaper Publishers Association is the number of sets owned, the results cannot be said to confirm each other (13). Furthermore, the methods are entirely different.

Note 13.—It may be of interest to put down the results obtained in one city by different agencies using different methods. Boston has by now been sufficiently well surveyed to make comparisons. Table III gives the measurements and the date at which they were made.

Surveys numbered 2, 5, 6, 7, and 8 were more or less connected with station WNAC. The Crossley survey was independent, while the WEEI survey speaks for itself. It is interesting to observe that those surveys which were related through financial affiliation with Station WNAC showed it to be in the lead.

The Crossley survey, which is weighted by individual programs and therefore not an extremely good station indicator, showed WBZ (Amos 'n' Andy) as first.

Note 14.—Two professors at Ohio State University were given a questionnaire and asked to make a survey. Their entire interest and responsibility in making the survey centered around supervision of the gathering of the data, which were gathered according to the specifications. The tabulation of the figures and the calculations based upon them were made elsewhere. Unfortunately, sworn statements made by these professors with reference to the gathering of the data seem also to be applicable to the results. This affidavit was used as inferred proof of the reliability and validity of the whole survey (43).

Note 15.—It is interesting to list the programs in order according to the ratio of percentage of listeners remembering them to the percentage of listeners hearing them. In the first ten programs of the Arnold list were three musical programs, three serial sketches, two dramatic shows, and two comedians. In the second ten programs were one serial sketch, four dramatic programs, and five musical programs, while in the third ten were seven musical programs, one dramatic program, and two talks (208).

One could not expect perfect correspondence between the simultaneous survey and the Crossley type of survey. In fact, difficulties in sampling would alone account for certain differences, as can be inferred by comparing the audiences for the first and second halves of a thirty-minute program and for the same program on different days of the week. The rank correlation, for the twenty-five half-hour programs, between the number of listeners in the first half and in the second half was 85 according to the simultaneous survey and, as expected, 100 according to the results of the Crossley type of survey. The difference between the first of these figures and the average figure of 78 for the correlation between the results for the two types of survey gives a measure of the significance of the latter correlation. Similar correlation figures for fifteen-minute programs repeated during the week were 85, 71, and 76—in place of first and second halves of the program here read first and second performances during the week. It is interesting that the correlations for the half-hour and fifteen-minute programs agreed so well. The Crossley type of survey as shown by these comparisons ascertained the relative ranking of the "actually heard" programs with more than a fair degree of accuracy, when half-hour single programs and fifteen-minute repeated programs were considered separately.

The correlations just given have shown that the difference in ranking of programs when the Crossley and simultaneous methods were compared was not much greater than the difference in ranking when the same program was sampled at different times. Arnold has expressed the degree to which programs are remembered on the following day as a percentage of the number of times they are reported at the time of hearing. What is the accuracy of these percentages as determined from observations made on the same program at different times? For half-hour programs the average variation was 14 per cent, and for a few fifteen-minute repeated programs it was 40 per cent (208, 9).

Note 16.—An Australian radio club has a membership fee of one shilling, and each night 18 double tickets for leading theaters are given out to members of the club, being drawn haphazardly from the total membership. Any member

may win any number of tickets, and "this proviso keeps the total number of members tuning in each night to see if their names are called." Other theater seats are given away in larger quantities at different periods. "For the last month none have been left unclaimed, which means that at least eight thousand homes, the membership of the club, are tuned in to the station each night at seven" (461). Here again the broadcasters overlook the ingenuity of the public in devising means of keeping each other informed.

Note 17.—Some program classifications which have been used in surveys are as follows: Riegel used these divisions in asking listeners what kind of programs they preferred: special features, such as talks by government officials; transatlantic programs; sport broadcasts; women's features including talks on household management and cooking; news; children's programs; dramatics, such as plays, stories, historical sketches; religious programs comprising church services and sermons; comedy features, such as minstrels, monologues, and vaudeville acts; educational programs, such as lectures, classes, and health talks; health exercises; and market reports (96). Houser asked listeners which types of programs they preferred, mentioning dance music, classical music, vocal music, other music, comedy, dramatic features, religious programs, sports, news features, business features, women's household programs, educational features, and others (617). Hettinger's list of program classifications, incidentally in the order of audience preference as taken from the results of a survey, was: music, comedy, drama, sports, religious programs, educational features, news and markets, special features, women's features, children's programs (56).

Note 18.—This method sometimes constitutes a "recognition test." Following the procedure of the second method the interviewer may ask a listener what programs he heard "yesterday." The listener will think back over the preceding day and reproduce the names of as many programs as he can remember. If a list of the programs which were on the air the previous day is now given to him, he will be able to remember or recognize still other programs which he heard. The listener's memory is greater, but it is also less accurate as tested by recognition. Gallup devised a reader-interest test of the recognition type. In this test the interviewer shows the person interviewed a copy of a magazine, and they go over it together page by page. The person interviewed points out what he has read or looked at. Whether such a test will be possible in radio remains to be seen. The nearest analogous type of test for radio consists in a complete list of all radio programs for a day. The listener is asked to indicate which ones he has heard.

Naturally, this "suggested answer" type of test or questionnaire is not always easily applicable. Where answers are suggested it is essential that the person tested, interviewed, or sent a questionnaire be able to compare one answer with another so that he may decide which represents his own viewpoint most closely. The type of test which best permits this is a visual questionnaire test. Here the different answers, from which the listener is to select one, are put down in order. The listener can look them over quickly and can go back and refer to any particular one. He can compare any two. But when the questions are asked verbally, the listener must keep each in mind if he is to compare one with another successfully. Therefore, in telephone question-

naires it is quite possible that the procedure can never be developed to the point of suggesting to the listener a complete list of programs.

Note 19.—For exact laboratory study of preferences it is advantageous to use a refinement of the ranking method known as the procedure of paired comparisons. Here every program is compared with every other program, and a judgment is made as to whether the program is better or poorer, better liked or less liked, and so on.

Hettinger believes from experience with other types of surveys that asking the listener to rank programs is unnecessary, and that a significant measure of listener preference can be secured by noting all kinds of programs which are liked, irrespective of relative preference. He claims that the results of his radio surveys have confirmed this belief (56).

Note 20.—In a study of the influence of leading questions, college students were shown a few motion-picture scenes, and were then asked questions about objects which were not actually present in the scenes flashed on the screen. The questions were phrased in several ways as follows: Was there a———? Did you see a———? Did you see the———? The negative form of all three questions was also used, that is, Didn't you see a———? Strangely enough, the results showed that the objective form of the question, such as, Was there a———? brought about a greater number of "yes" answers than the so-called subjective form, Did you see a———? (222).

Note 21.—In a survey made by an advertising class at Washington University, three questions were asked: "Of the recent programs you have heard, which have afforded you the greatest enjoyment?" "Which programs do you consider most effective in advertising the products of their sponsors?" "What products have you purchased in which your favorable action in whole or in part was influenced by radio advertising?" (87). Two factors which might influence the relation between the answers to these different questions and give rise to the halo effect are: the listener may consider enjoyable programs to be good advertising programs, and he may be able to recall the names of only a few programs and therefore use these names in replying to all questions asking for program names.

As a matter of interest, the ranking of the top twenty programs given in the miscellaneous returns for the second question was compared with the ranking for the same twenty programs in the miscellaneous returns for the other questions. The rank correlation between enjoying the program and judging it effective in advertising value was .83. This is fairly high. The rank correlation between judging programs effective in advertising value and stating that products were purchased was .42. The rank correlation between enjoying the program and purchasing products was .50. These results were computed from 103 returns, so they are little more than indicative.

Results which also show the interrelating effect of questions may be obtained from the Major Markets data for immediate telephone and interview surveys in five cities (715). Here the three questions compared were: "Does the listener know the sponsor of the program or the product advertised on the program to which he is listening?" "Has the listener or his family purchased any product as a result of radio advertising?" "What program of the entire week is liked best?" For the purpose of computing a rough rank correlation

between the results for the different questions sixteen leading products or advertisers were taken. The correlation between the purchase of the product and knowledge of the advertising (1 and 2) was .37. The correlation between purchase of the product and liking the program (2 and 3) was .20. And the correlation between liking the program and knowing the sponsor (1 and 3) was .71. This last correlation is not surprising since the program name is sometimes identical with that of the sponsor.

Note 22.—Kesten says:

It has been found that the average listener is unable to recall, on the following day, more than a fraction of the programs he has heard during the time his set is tuned in. Moreover, the programs he does recall are, in many cases, those the names of which have been fixed in his mind by such factors as his general familiarity with the sponsor's name from other advertising and from the length of time the program has been on the air. The average listener, in other words, is only able to mention the names of the programs he *remembers* hearing rather than the total number of programs he actually heard (48).

Hettinger makes a similar criticism (269), as do Bevis and Amos. The latter believe that accuracy in recording program-listening habits can be obtained by asking the person to what program he is listening at the time he is listening (13). This method is more accurate, but it avoids only the time difficulty in memory. It still does not offset the publicity value of some programs as compared with others. Only an automatic recording system on the radio set would do this, but such automatic recording would still not be the answer to the problem confronting radio surveyors, since they are primarily interested in gauging the effectiveness of radio rather than merely determining when the radio set is on.

Note 23.—No date appears on the front page of the third survey to indicate date of publication. The date of making the survey may be learned from reading the text of a letter from Price, Waterhouse to the Columbia Broadcasting System. In addition, reference is made to a special survey of Chicago which was completed some time before the main survey. Only through careful reading is it possible to determine that this survey must have been made in November or before. Finally, the Columbia Broadcasting System refers to the data gathered in several surveys in comparing stations in the Chicago area, and dates these surveys. But it does not give the dates at which the surveys were made; it gives the dates at which the survey results were published (39).

Note 24.—A particularly interesting example is furnished by Columbia's *Where They Listen to Columbia* (41). This study makes use of two previous Columbia surveys; one was the 1931 Price-Waterhouse survey, and the other a survey of coverage made by offering souvenir maps. The Price-Waterhouse survey determined the percentage of listeners listening regularly to Columbia in the intense audience-listening areas for each station as determined by the map survey. The souvenir-map survey partitioned the territory around the stations on the basis of returns according to county population as compared with the returns for the county in which the station was located. Taking the returns for the county in which the station was located as 100 per cent, Columbia called returns from 50 to 100 per cent of this "intense coverage." From 25 to 50 per cent was called "very good coverage." and from 10 to 25 per cent was called "regular coverage." Then Columbia averaged these limits and obtained the

following mean values: intense coverage, 75 per cent; very good coverage, 37.5 per cent; and regular coverage, 18.5 per cent of the returns for the county in which the station was located (34). It is a well-known fact that as you go farther away from a station the signal strength becomes less and also the number of listeners. It is also an axiomatic fact that as you go away from a station the area becomes larger at a rate which increases with the square of the radius. Furthermore, as evidenced from Columbia's own figures, the percentage response from outlying counties diminishes according to a curvilinear function, varying with the distance from the station. The area between responses of 75 per cent and 80 per cent would be much smaller than the area between audience responses of 50 and 55 per cent for two reasons: the radius of the concentric circles is less, and the slope of the curvilinear function is steeper for the 75- to 80-per cent area. We could never say, therefore, that the average for returns between 50 and 100 per cent was 75 per cent. If proper mathematical relationships were followed it would be about 61.4 per cent. In other words, there would be many more counties in which the returns would fall below 75 per cent than above, and therefore the average would be below 75 per cent and not above. In measurements of this kind there are several important factors to be considered if averages are to be obtained. One is the rate of change of the areas over which the average is to be made. Another is the relative population for the different areas. A third is the actual relation of the returns to the distance from the station.

Consideration of the figures published in *Where They Listen* shows that this type of averaging is responsible for larger totals than true averages should show. Calculation shows that the gain might be as much as 10 per cent (41).

Note 25.—In the case of New York the percentage of total listeners tuned regularly to WABC was greater by 1.7 per cent than the percentage of listeners tuned regularly to WEAJ. Yet the seven millions of New York's radio- and non-radio-served populace were credited to the Columbia Broadcasting System. Calculations of the population differential between the Columbia Broadcasting System and the Blue Network show 704,000 in favor of the Columbia Broadcasting System, when the tied cities are not counted (309,000 with tied Detroit and New York included).

Similar calculations have also been made for the 1932 population differentials in the ten cities where all three networks have local outlets (39). The results are: the Columbia Broadcasting System over Blue Network 468,000 in place of 11,300,000, and the Columbia Broadcasting System over Red Network 29,000 in place of 10,600,000.

Note 26.—Here is an example which Frothingham gives in computing the probable audience for a daytime program released from a network station at San Francisco with four hundred fifty thousand radio families inside the 100-mile territory. The available daytime audience requires a 50-per cent deduction from the total number of sets which gives two hundred twenty-five thousand radio families. But at San Francisco there are three major stations, which have 89 per cent of the available listening audience, or approximately 30 per cent each. This reduces the possible daytime audience for a specific station to about sixty-seven thousand, and this audience would be obtained only at a period of maximum daytime preference, twelve to one at noon, accord-

ing to the hour preferences calculated from the seven surveys. For other hours the audience is calculated as a percentage of the audience at the preferred hour. These figures are given in terms of the number of radio sets turned on. The number of listeners per set for daytime audiences is given as between one and two (255).

Note 27.—Unfortunately, this method makes the total audience for KDKA practically constant over the period of the months, although the audience in any trading area may vary a great deal. Since there is no reason to believe that the total audience should not also vary and become less during the summer months, this method is not perfect in application. Furthermore, it is also possible to conclude that if mail response bears a definite relation to the audience as KDKA suggests, and if variations in one area represent a variation in the total audience, the figures published by KDKA for the audience in the

TABLE IV
THE RELATION BETWEEN THE TIME SPENT LISTENING TO "MOST LISTENED TO STATION" AND "NEXT MOST LISTENED TO STATION"

STATION MOST LISTENED TO	STATION NEXT MOST LISTENED TO	TIME OF LISTENING TO SECOND STATION DIVIDED BY TIME OF LISTENING TO FIRST			
		May, '32	Sept., '32	Jan., '33	Average
(1)	(2)	(3)	(4)	(5)	(6)
WLW.....	WCAH.....	54	52	57	54
WCAH.....	WLW.....	72	56	50	59
WLW.....	Any other station than WCAH.....	55	60	62	59
WCAH.....	Any other station than WLW.....	73	79	75	76
WLW.....	Any station or no station.....	26	25	32	28
WCAH.....	Any station or no station.....	51	28	28	36

primary zone should be related in a constant fashion to the total mail response. In other words, the computed audience for KDKA for each month divided by the mail response for each month should be a constant. The figures obtained for the months of January to June are: 3.9, 3.2, 3.8, 3.7, 2.9, 3.9. Whether these ratios are sufficiently constant or not is a matter of opinion.

Note 28.—WCLO in carrying out a similar experiment found that there was little difference in the time spent with the first- and second-choice stations (102). The results obtained from the Crossley reports, for which the listeners are asked the names of the stations and programs heard on the previous day, may be compared with the Columbia ratios. Calculations can be made by computing the total length of time any given individual listens to each station. Then the ratio of the most heard station to the next most heard station can be computed for each listener for one day. At Columbus, Ohio, it was found by this procedure that listeners who listened most to WLW (National chain)

listened about half as much to WCAH (Columbia) when it was the next most listened to station. The figures in the last two rows of Table IV show the total results when either some station or no station is listened to less than the station mentioned in the first column of the table.

CHAPTER III

Note 29.—The National Advisory Council on Radio in Education has broadcast series of talks which would, on the whole, appeal to the upper social levels. Many thousands of teachers and students wrote in, but a heavy majority of the letters came from men and women not professionally engaged in education. Among those heard from were housewives, ministers, dentists, doctors, farmers, and plumbers (418). Talks on chemistry in another series drew letters from professional men, business men, students, and teachers. Letters came from manufacturers when the topic in which they were interested was touched (206). The "March of Time" occasioned letters from bank presidents, lawyers, doctors, industrialists, journalists, and social leaders (538). A considerable percentage of the letters of appreciation to the Davey Tree Company were written on private stationery (237).

Note 30.—Burt hoped to make a more systematic survey of the listening public to see how far the letters received could be relied upon to represent a fair sample of the views of the listening audience. Characterizing its letter-writing listeners, the British Broadcasting Corporation says that they are usually ordinary people who have been carried out of themselves by some particular broadcast and have been moved to write to the British Broadcasting Corporation to say how much they appreciate the program. The British Broadcasting Corporation itself regards this program correspondence as symbolic or symptomatic. The correspondence nearly always confirms the expectations or judgments of the British Broadcasting Corporation, although sometimes unexpected symptoms are manifested (16).

Note 31.—If this information were placed on punched cards so that it could be tabulated quickly, there is a possibility that some scheme might be worked out whereby the information could be used for worth-while purposes. Certainly, it would be interesting merely from the standpoint of determining who listens to specific programs, thereby checking their supposed appeals.

In February, 1933, the National Broadcasting Company inaugurated this practice. Unfortunately, most of the mail is addressed to sponsors in care of the National Broadcasting Company and can only be tabulated unopened. During April, 1933, mail opened by the National Broadcasting Company amounted to only 7.2 per cent of the total response for the Eastern Division. The following tabulation of this opened mail was made: appreciation, 25 per cent; constructive criticism, less than 1 per cent; adverse criticism, 2 per cent; requests for offers, 51 per cent; requests for information, 4 per cent; requests for invitations, 14 per cent; response to contests, 3 per cent. Over 1 per cent of the writers were children, 33 per cent men, 52 per cent women, and 14 per cent unknown (632).

Dunlap reports several analyses of mail. In one study, 76 per cent of the requests for a gift package came from women, 16 per cent from men, and 8 per

cent were unidentified. In another analysis (WENR), 63 per cent of the letters came from women, 33 per cent from men, and 4 per cent from children; 92 per cent of these same letters came from persons of reputed average literacy; 7 per cent, high literacy; and 1 per cent, low literacy (48).

The ratio of letters to post cards has been determined in some studies and also the effect of postal charges (533, 540).

Note 32.—WNAX relied upon the following computations to show that not less than fifty thousand children were regular listeners to a children's program. Certificates were offered to any child who in a given month brought his marks up to an average of 90. A prize was also given. During a past school year, five thousand letters were received from children who had brought their marks up to 90 or better. WNAX figures that if 10 per cent of the children who were regular listeners to the program had an average of 90 or better, it would indicate that not less than fifty thousand children were regular listeners (529). WNAX does not state whether the same children could have written in every month. If so, this would materially reduce the calculated audience.

Note 33.—Hettinger and Mead, in determining the response to summer programs, made an exhaustive analysis of the mail received by the Columbia Broadcasting System. Mail for non-commercial programs was chosen rather than that for commercial programs, since in the former case no special offers or special features distorted the natural curve of the mail response. Analysis was made of several hundred thousand letters for 56 sustaining programs presented during the year 1930. The results of this study revealed that the summer response compared favorably with that received in the winter. The high months were January, February, and November. The low months were March, June, and October. August was above the yearly average. In interpreting the figures given, it will be noted that the major depressions did not occur during the summer months, but rather immediately preceding and following them. Compared with the yearly average, the lowest point reached was 70 per cent in October (55). An analysis made three years later (1933) showed the same general variations from month to month (33).

Hettinger and Mead came to the conclusion that the change in the mail response due to seasonal variation in itself is slight. They believed that the experience of commercial broadcasters who had continuously made uniform public offers during both the summer and winter months confirmed this. One company experienced the following variations from a ten-month average during the summer weeks of July 6 to August 30. The average weekly response based on the previous ten-month average was 112, 92, 100, 88, 76, 90, 77, and 91 (55).

Note 34.—An analysis of the letters received by WOSU during a part of the fall of 1931 showed 16 requests for bulletins, 10 requests for verifications, 1 criticism, 1 commendation, 3 requests for information, and 6 requests for free material. This ratio of commendation to requests is maintained in considering the letters received by commercial broadcasting stations. On one program, the Sisters of the Skillet received 20 letters sending in problems to be solved according to the announcement; 2 requests for photographs were received; 1 request for a song and 1 letter of commendation were sent in.

In a study of one thousand high-school students, it was found that 70 had written for photographs, 48 for free samples, 45 for booklets or pamphlets,

42 to request numbers, 30 for jig-saw puzzles, 27 for information, 26 to enter a contest, and 20 in praise of the broadcast (271).

Note 35.—Aside from the division of the mail to sponsors and to broadcasting stations, it is interesting to compare the mail received by the local stations and by the chain directly. Sixty per cent of all fan mail received by the Columbia Broadcasting System, including the mail received by local stations on network features and forwarded to New York headquarters, is addressed directly to the network at New York and not to the station over which the program is heard. An offer of Kate Smith's picture brought a total of 22,730 requests of which 12,493 were addressed directly to the Columbia Broadcasting System, New York. Excluding the mail addressed to the stations in New York and Chicago, the percentage of mail directly addressed to the Columbia Broadcasting System averages 80 per cent of all received by the network. This is an interesting comment on the question of local station identification. According to the Columbia Broadcasting System, the program source is more important than the actual station outlet (420). For anyone who believes that network programs, and for that matter other programs, will lose their identity by being broadcast through local stations, this is an important fact to consider. Presumably, the same thing might be true where a university broadcasts through a commercial station.

Note 36.—Even the British Broadcasting Corporation has realized the potent factor that club organization can be in obtaining response from listeners. Stobert describes a children's club which had charity as one of its purposes. In London alone, twenty thousand enrolled members were obtained. Each of these members paid ninepence for the privilege of wearing a badge, having his name read during the broadcast on his birthday, and subscribing the balance to charity (338). The Wisconsin School of the Air formed a club for children in the schools which was known as a "Science Explorers' Club." Pupils were asked to experiment under direction during the broadcast and independently between periods. They were to make weekly reports on assigned work. Pupils were further promised an opportunity to come to the studio and broadcast. Names were to be read over the radio, and at the close of the course, regular students were to receive certificates (730). This broadcast club is a good example of how methods of stimulating listeners' responses can be used with school children to check on their activities and the worth of the program.

Note 37.—At Ohio State University, courses in English, government, French, and Spanish were offered in an "Emergency Junior Radio College." During one term more than 1,600 students registered; about one-third of this number desired university credit, which was to be obtained by taking standard examinations. Thirty-two hundred mimeographed texts and pamphlets were sent out to the students or distributed through the local study groups (352). The University of Utah combined the advantages of personal contact through the radio lecturer's voice with careful direction and instruction by the Home Study Department in a radio course on the subject of "teaching." During 1932-33, one hundred fifty students from fifty-eight communities registered for credit; 80 per cent completed the work to the satisfaction of the University administration. In 1932-34, one hundred thirty-three enrolled. Some of the radio periods were devoted to answering questions (353, 545).

Note 38.—Shinnick and Borders believe that although the contest is an excellent way to increase mail response, the general experience of radio advertisers seems to indicate that few contests have produced results worth the cost (330). As a further caution to the broadcaster about to embark on a radio contest, Bell points to the protests from disappointed contest winners which the Federal Radio Commission has received (211). It is easy to see how difficult the task of evaluating some forty thousand essays can be. Judgments are, necessarily, quite hasty, and probably eligible entries are thrown out because of this. All such treatment creates ill will among listeners who have spent a considerable portion of their time in preparing for the contest (54).

The mail received in connection with the Monarch Mystery Tenor program is a peculiar commentary of the listener mind and the 1932 superfluity of radio contests. Mail was not requested, and there was no mention of a premium or prize. However, hundreds of letters were received from listeners who were sure that they had guessed the identity of the mystery tenor. Many of the letters contained such phrases as "I hope this wins," or "Please mail the prize to———" (495).

Note 39.—Likewise, the British Broadcasting Corporation has used the contest method to secure essays on various subjects treated in the broadcast series. These essays were used as the basis for judging the effect of the talks. In a summary report of the International Institute for Intellectual Co-operation the practice of holding a contest to secure reports in the form of tests or written compositions is condemned. When essays are used for measurement purposes, the investigators should obtain papers which can be compared with those furnished on the same material by pupils who have not heard the broadcast lesson. The contest method inevitably selects those better able to participate and does not give a cross section of the whole effect of the broadcast programs (276).

Jackson, who gives nature talks over CKY, holds an interesting contest annually. During the year various items of information concerning animal habits, physics, history, and the like are given in the broadcast talks. At the close of the series a test blank in completion form is sent out to all those requesting it. A total of \$100 in awards is given to the persons filling in the blanks most completely (618). Commercial stations also find that contests using compositions or essays are sometimes successful. WXYZ received fifteen hundred essays on travel in competition for a prize trip to Bermuda (489).

Note 40.—Four different programs were presented by Montgomery-Ward during four successive weeks, and were repeated for four days at the end of this period to afford the listener a better opportunity to compare them. One program consisted of orchestral music, another was a domestic sketch, a third took the form of minstrelsy, and the winning program contained old vocal and instrumental favorites, poems and hymns, and was entitled "Beautiful Thoughts." To make sure that listeners heard all of the different types of programs and were in a position to judge the best one, each program type was given a special identifying key word. The contestant was requested to make a first and second choice and to write a 200-word letter telling why the kinds of program selected as first and second choice were liked. Over fifty thousand votes were received. A \$1,000 grand prize was given (410, 459).

Searching for a cue to audience reaction, a chain of men's furnishing stores in Chicago sponsoring basketball broadcasts over WIBO asked listeners what they wanted to hear when the basketball season ended. Prizes were given for the best suggestions (468).

The DuPont program "Today and Yesterday" polled the audience to find out what songs were favorites (516). Here is the proper place to insert a warning concerning the use of contests and other such means in determining public preference for programs. The previous character of the program has already selected the audience to a large extent, and therefore the results will in general tend to maintain or confirm the program already offered. This was shown on the DuPont program where the old songs received a great many choices. The persons who primarily wanted modern songs probably were not listening to the DuPont program, but were tuned in to one of the great number of dance-orchestra or "blues-singer" programs available.

Note 41.—One problem having acute bearing on the multitudes of free offers now being broadcast is whether the "something for nothing" idea of the audience is really true. We have so many times found that a gift is of no particular value, and may, in fact, be quite useless to the recipient. Price, therefore, has in a certain sense become an indication of value, and it is well known in stores that reduction of price sometimes has no effect on moving goods. The buyer feels that the value of the goods is correspondingly less, and that he is not receiving a bargain. Perhaps it would be advantageous to those persons offering samples, novelties, and booklets of moderate cost to ask the listener to pay some share of this. On this basis the listener might conceivably differentiate such offers from the others which were totally free, and decide that the sample he had to pay for was worth more. Believing that a small charge for the radio offer was worth while, sponsors of a program over KGB offered a two-quart jar of bottled water and asked one penny for the jar. For three months a daily average of fifty calls for bottled water was received. The sponsors believe that more requests were sent in than if the bottled water had been entirely free (319).

Note 42.—A phonograph record was offered to the audience of nine Pacific-coast stations. The record was made by well-known artists, in dialogue, and its theme was interesting from a historical standpoint. Only 150 requests were received. A few weeks later on the same program over the same stations, a free dust mitt was offered, and one station alone produced 1,893 inquiries, bringing the cost of inquiry down from \$3.40 apiece on the first offer to less than 10 cents apiece on the second. Inquiry costs have been calculated to run from 3 cents per inquiry to \$25 (252, 530). It is quite evident that figures for the cost of each inquiry do not mean much unless information is given on the following items: the nature of the offer, the number of announcements, the outside publicity, and the costs included in computing the cost for each inquiry.

Note 43.—A good discussion of the problems involved in using free offers as a method of measurement is given by the Columbia Broadcasting System in its brochure entitled *Listening Areas*. A souvenir radio map of no intrinsic value was offered to radio listeners early in October during a week when atmospheric conditions were average rather than favorable. A 60-second announcement was made by the local announcer of every station on the net-

work for seven days. On each day the announcement was made in the morning, afternoon, or evening, so that the responses would represent the average audience rather than a peak audience. The souvenir of no intrinsic value was used to prevent radio listeners from passing word along to their friends who were not listening or who did not have radios (34).

In the Columbia map offer, no outside publicity was given, and the announcements were made only over the radio. Many radio offers receive outside publicity which annuls their value as a measuring device. In regard to the returns, Columbia states that at the conclusion of the seventh announcement of the map offer, outlying counties from which requests had not been previously received on the six prior announcements were heard from. Columbia believes that had the announcement been continued for another week, more distant places would have sent in requests. This factor must be considered in comparing offers which are made for different lengths of time. Of course, the cumulative effect of any offer is to cover more thoroughly the area. Therefore, if increased responses were shown by the region around the station, it does not signify that the single responses from distant places would vitally influence the result. Columbia believes that, since there was no publicity, no great length to the announcement, and no repetitions of it over a long time, the minimum response was received to its offer (34).

Note 44.—One instance where rigid standardization was attempted is furnished by the Carborundum Company offer. According to the report the same man over exactly the same network hook-up on the same day and hour made exactly the same offer as of a year before. Returns in 1932 were 5,190 requests from 1,281 cities; 1933 returns were 13,408 requests from 1,936 cities (451). This offer of a carborundum penknife sharpener was made on the opening broadcast of each year's series, and this is the fact which destroys its value as effective measurement. Naturally, a "carry-over" from one year to the next would make itself noticeable in the 1933 audience for the first broadcast. Such tests should be made after the audience is presumed to have been built up to a relatively fixed size for each succeeding broadcast.

Note 45.—On a WMAQ program called "Today's Children" it was announced that a picture of the cast would be sent to the radio listeners requesting it. Five such announcements were made during the week of August 1, 1931. Within seven days, a total of 10,609 letters were received asking for the picture (445). The "Golden State" program offered a picture of the artist and another picture. During two months twenty-five thousand pictures were mailed out (274). Even pictures of the characters in a sausage-company skit seemed desirable to the audience. A daily morning program offered a picture of the two leading characters in the sketch if the request for the picture was accompanied by a carton top from a pound package of sausage. The photograph offer was terminated at the end of two weeks, after more than fifteen thousand carton tops had been exchanged for pictures (475).

Note 46.—Requests for bulletins may reveal unexpected interest in certain subjects. Rowell cites the case of a talk on rabbits given by the manager of a large rabbitry who mentioned that a bulletin on rabbits was available upon request. He received about ten times as many letters as would have been expected for such popular industries as poultry or dairy. Since the initial

talk several others were given on rabbits, and the responsiveness of the audience definitely shown (326). Station KSAC of the Kansas State Agricultural College found it more satisfactory to list bulletins over the radio instead of sending them to a special mailing list. Requests for one thousand copies of a poultry bulletin were received within a period of six weeks.

Note 47.—Drueck in answering the question, "How many programs (school broadcasts) are used outside of Chicago?" said, "I can best answer in terms of the bulletins distributed. WMAQ sends out thirty-five hundred bulletins to fourteen hundred schools, of which we have about five hundred in Chicago, so it shows that the schools within the metropolitan area of Chicago and even distant states are listening in" (238). In a questionnaire sent out by the Association of College and University Broadcasting Stations, it was found that member stations distributed bulletins as a method of checking up on the audience. Requests on the part of listeners for booklets and other materials were also used (713). During the year 1931-32 the National Advisory Council on Radio in Education distributed 230,363 pieces of printed materials in connection with the economics and psychology broadcasts. For the series on economics, government, and labor during the following year (1932-33) some 321,000 pieces were sent out.

WMAQ once inferred the size of its audience for an educational program from requests for a booklet. This program was called a radio photologue. Based on a certain state or country the program made use of pictures and maps published in advance in the rotogravure section of the *Chicago Daily News*. The program seemed to occasion hardly any audience response. On one occasion, however, the talk with the accompanying pictures was printed in booklet form. Letters came in from all over the country asking for it (711).

Twenty Mule Team Borax explained its program in booklet form. The program was entitled "Death Valley Days." At the end of six months on the air a souvenir book, *Death Valley Days*, was offered in return for the top from a package of the company's borax. Three broadcasts of the offer brought in requests for more than seventy-five thousand books. KJR broadcast a program in which a budget book was offered. A salesman delivered this book to writers who requested it and offered, if they had time, to show them how to use the book (512).

Note 48.—Every six weeks one manufacturer offered either an exercise chart or a diet chart on his daytime program. These two offers were always sure to bring in returns (231). Plans for Thanksgiving, Halloween, birthday, and other parties given over the National Farm and Home Hour brought in a wide response, and thousands of copies of the plans were mailed to listeners. Also, on the National Farm and Home Hour program a humorist received several thousand requests for copies of his comic dialect stories (302). A utility company broadcast a radio talk on Thanksgiving Day menus over WENR. At the end of the talk menus were offered upon request (465).

Wilcox (*see* page 209) has shown that in copying recipes from the radio women are not altogether accurate, and therefore a printed copy of the recipe is highly desirable (112). WTIC follows this suggestion both from the standpoint of obtaining a measure of the listener's response and of helping the listener preserve the exact recipe. In a cooking series conducted over this

station, one thousand requests were received for one recipe. Menus were also sent out to be bound in a loose-leaf binder provided by the station (301). Singing books were distributed in connection with a program by the "Singing Lady." This program had a large response. Children secured the songbooks and joined in the songs which the singer led over the radio (272). In Michigan, Maddy struck a new note in the teaching of music. He taught children and adults to play band instruments by radio. Requests were received one year for thirty-eight hundred free lesson booklets. Each booklet served 17 pupils (292).

Closely allied to the booklet containing information about the entertainers and the program is the so-called radio newspaper. The programs of "Tompkins' Corners" and the "Stebbins Boys" have both issued these burlesque news sheets. For example, 225,000 requests came in for the fourth edition of the *Tompkins' Corners Enterprise*, January 27, 1930 (6).

Note 49.—Burt asked for criticisms on various points at the end of a series of talks on psychology to the British audience. Would the listeners prefer something more advanced or more elementary? Would they prefer dialogues as distinct from continuous talks? Burt believes that the replies were suggestive, but that they were not typical of the listening audience. Even if the response had been typical of the audience listening to the program in question, this response would not have given a satisfactory measure for any extensive revision of the program. How could such an audience be expected to suggest any radical changes in subject-matter or style since it had been already selected by the fact that the present broadcast appealed to it? This one consideration makes all such appeals to listeners on any major changes in programs of doubtful value.

Note 50.—To show the ordinary results of discontinuing an average program, I give my own analysis of mail received by the National Broadcasting Company after a half-hour program consisting of a Scotch singer and orchestra had been taken from the air. The audience was asked to write in. There were 79 pieces of mail received in the week immediately following the discontinuing of the program. Of those writing, 81 per cent specifically mentioned that they wanted the program continued; 10 per cent requested certain songs; 10 per cent wanted information; 9 per cent specially commended the program; for 2 per cent the program was not long enough; 2 per cent expressed their appreciation of chain broadcasting; and 1 per cent wanted the program given more frequently. The sum of the percentage does not equal 100 per cent because in a few cases one letter was entered under two headings.

Note 51.—In a survey of retail stores, Dartnell found that a few of the stores were broadcasting programs to get inquiries as a basis for mailing lists. Otherwise, most of the stores had only a slight interest in receiving mail (45). James comments on the fact that radio advertisers looking for direct sales results may obtain a list of prospects for follow-ups by offering samples, booklets, and novelties (277). Urist cites cases where the mail response was used for direct mail advertising or leads for dealers. The Libby, McNeil and Libby Company obtained such a list by putting down the names of persons who wrote in for recipe cards (341). The Enna-Jettick Shoe Company obtained lists of names which could be used by the local dealers as leads for solicitation. Purity Bakeries in a children's program gave the product mentioned in the

program as the prize for the best jingle. Names and addresses of contestants were used to open new accounts.

Aside from securing mailing lists of listeners for dealers, the names of dealers may be secured from listeners. The Individual Drinking Cup Company gave toy balloons to all children who wrote and mentioned the name of a dealer where Dixie cups could be secured. New dealers were obtained through pressure of the constant inquiries. Stores have used contests to build up their lists. A St. Louis grocery built up a mailing list of forty-five hundred contest-participating housewives (45). The manufacturers of Twenty Mule Team Borax followed up the radio letters by mailing the writer information on better ways to wash and clean (462).

Note 52.—Columbia found that the total number of requests received by the different stations varied considerably. The offer made a greater appeal to radio owners in the Middle West than in the East, and the degree of response was less on the Pacific coast than in the Middle West, yet more than in the East. Columbia believes that any comparison of coverage of radio stations based loosely on total quantities instead of relative quantities of mail is misleading because of this geographical difference in responsiveness.

When, as in the Columbia survey, the station county is taken as unity it is easily seen that this exerts a tremendous influence on the results for other counties. If the returns for the county in which the station is located are abnormally low, then the whole coverage area will be greatly increased in size. If the station-county results are unusually high, then the total area will be reduced. The size of the station county is an important factor by virtue of this same reasoning. If the size of the station county is large, this will tend to increase the total area. If it is small, the total area will be decreased. Other considerations enter when the population of the station county is large and when it is small. This is especially true since large populations are probably not typical of smaller massed populations found in the listening areas.

Note 53.—Mail-response delineation of audience location by "primary areas" has little significance unless general agreement is reached as to the standard limits of such a zone. KDKA reports:

It we tabulate the mail response to all programs, for all hours of the day and night, for all days of the week, over a period of a month, with reference to the subdivisions, or trading areas served by the station, we will know the location of the audience and ascertain that the bulk of all the mail comes from a well defined area. By repeating the tabulations of all mail for several months, we can verify this area. As a further determining factor, various programs presented at different hours of the day are tabulated. Over a period of months, these auxiliary program tabulations serve as a check (62).

While this method may possibly give consistent returns for the different areas, it is hard to see how it would show a clearly defined primary area from which the bulk of all mail comes. This presupposes that as the mail-response investigator goes away from the station, he comes to a place where the mail response drops abruptly from a high level, thereby defining the area.

Note 54.—The WMAQ school programs were measured by the number of bulletins issued (238). The eight hundred thousand copies of talks distributed by the government Food and Drug Administration in 1930 were taken as proof

of the popularity of this feature (97). That wireless discussion groups in England really met the need which the organizers believed to exist was shown when criticism and praise poured in through the mail (12). Stobert measured the number of listening British schools by requests for time-tables, aids to study, and the sending in of papers (338). Audiences capable of understanding and enjoying Polish programs were found to exist in cities around the Great Lakes, when seventy-five thousand letters from Polish-speaking listeners were received by Father Justin Figas (470). So many instances of this type of the use of the mail response could be given that the ones reported have just been selected at random.

Note 55.—(see also Note 27). The number of listeners for each area was determined during the month of May by personal interview. Then these figures were transformed by means of mail-response data for each month from January to June. Using KDKA's figures the daily average audience of Station KDKA for the month of May in the Wheeling trading area was 31,220 people. During the month of May, 386 pieces of mail were received from this area which was 1.73 per cent of the total mail response from KDKA's primary zone of influence. On the assumption that if the percentage for any one area changed, the audience for that area would also change, KDKA computed figures for the different areas for each month from January to June.

This method of combining mail-response figures with interview data suffers from the following errors: first, there is no relation of a quantitative nature between the people who write letters and those who do not; second, the people in one district may be more attracted by the various offers and write more letters; and third, if they do not listen correspondingly more, the percentage changes will be invalid, since writing, not listening, is measured.

Errors become obvious when the great differences from month to month in the computed audience for some of the areas are noted. It is a significant fact that in the case of many trading areas the computed audience varied over 100 per cent when the May interview figures were taken as a base. In 4 out of the 33 areas the computed figures for the highest month were more than double the May figures. In 6 other trading areas, the May figures were not the lowest, but the figure for the highest month was double that for the lowest. Ordinary evidence, however, would lead us to believe that the monthly audience figures ought to be fairly regular, if there is any regularity in the relation of listening audiences to stations. The same programs were given and, with exception of the distant regions, reception changes varied slightly in the different areas. In the case of one KDKA listening area, the difference between the computed January and May audience was threefold. It does not seem as though the distance from the station and summer reception conditions could explain this.

CHAPTER IV

Note 56.—WGY was selected as the test station, and twenty farmers were induced to listen regularly, make comparisons, and report. The regular "Farm Flash" was given each time as a standard style, and then the same material included in the Farm Flash was presented in another manner. Comparisons were made twice for each of the eight different methods of presentation

and the Farm Flash. News stories, straight speeches, humorous write-ups, questions and answers, detached experiences of farmers around the state, Farm Flash written with more details, programs arousing interest in obtaining more information, programs demanding listeners' participation, and fables were the types of presentation used. The news story and the straight-speech style were each given once. The Farm Flash was always given first, and this may have had some influence on the results obtained, since the material given in the second or experimental mode of presentation would always be familiar. The reports which 20 listeners filled out after hearing each talk included the following questions:

- Which of the two talks, the first or second, did you prefer?
- What are the reasons for your preference?
- Which of the two kinds of talks do you think would be most interesting as a regular thing, not only to yourself, but to farmers generally? Why?
- Which of the two do you remember best?
- Which in your opinion creates the strongest desire to get more information on the subject?
- Which of the two do you think would give farmers in your community the strongest desire to adopt the practice recommended?

The results for this experiment are given in Chapter IX.

Note 57.—The person making a questionnaire survey must satisfy himself that he has determined the best sources from which to gather the data, and that the questionnaire is the best means of tapping these sources. Take such a problem as, "Does radio sell goods?" Elder worked out a method of comparison of non-radio homes and radio homes with respect to the brands of certain products used.

Who is the logical person in the home to tell what brands are used? Let us analyze the Elder list. It includes tooth pastes, shaving soaps, toilet soaps, scouring powders, flours, shortenings, cigars, cigarettes, and collars (29). Under present conditions, it might be expected that women would know toilet soaps, scouring powders, flours, and shortenings used. Men would know cigars, collars, shaving soaps. Men and women would know tooth pastes and cigarettes, although it might be argued that those mentioned by women would be ones with a feminine appeal. Women might also know collars; and the information concerning cigars and shaving soaps might also be known if the women shopped for their husbands. It is clear that Elder has chosen correctly in sending the questionnaire to housewives.

Undoubtedly, the questionnaire, a priori, is not the best method of gathering information concerning the brands used in the home. The collecting of such information could probably be done better by personal interview. The interviewer could insist that the housewife look up the brands which her husband used, and which she did not know herself. He could also judge whether the housewife's answer was valid. Nevertheless, Elder has checked his questionnaire method against actual personal interviews and finds that the results agree. Here, then, is a factual confirmation of the questionnaire as a suitable method for this particular survey.

Note 58.—Through social experience we have for the most part been trained to believe that it is rude to refuse to answer questions asked us by another person. The intelligent interviewer makes the interview seem a pleasant chat.

The Crossley survey, which asks for detailed information concerning memory for programs heard the day before, used mail questionnaires at one time. In five groups, double post cards with return postage paid were mailed to telephone subscribers in the vicinity of Rochester, New York, asking for a listing of hours of listening and all programs and stations heard, together with the date to which the report referred. Recipients were told that this was part of a great nation-wide study to improve radio programs. Despite that stimulus, and despite the offer of a more material incentive to one group, the completed questionnaires returned by no group exceeded 5 per cent, and from all together averaged about 3 per cent. Moreover, while the reports received were in general completely filled out, it was suspected that they came from the more intelligent or more interested portion of the radio population (74).

Note 59.—At the same time this follow-up procedure enables the investigator to make a test of the adequacy of the early versus the late returns. In one case Toops found that the early replies on one question were "not unrepresentative of the late replies and of the whole number of replies" (104). It is interesting to compare this statement with the results of Columbia surveys. In the Price-Waterhouse survey it was found that the returns for the first five days were quite representative of the total returns (37). Furthermore, by comparison of personal-interview (complete) results with the questionnaire (incomplete) results, it was determined that the questionnaire replies received were representative of those not returned (709).

Note 60.—Rating scales, reports, and questionnaires should always be gone over to determine whether improvements can be made if the same type of form is sent out in the future. The first Ohio School of the Air blanks were examined after teachers had filled them in (284). One part of the report form included questions on the delivery of the speaker and value of the talk. These questions were phrased after this fashion: "Subject-matter of the radio lesson [was] . . . closely related to the curriculum, suitable, valuable, proper amount presented, well organized." The classroom teacher was to underline any item on which she judged the radio lesson to be especially good and to inclose in parentheses any item on which she considered the radio lesson to be especially poor. In going over the returned reports it was found that the teachers did not make full use of this section. In fact, only 45 per cent of the returned blanks included underlined words or phrases put in parentheses according to the instructions. In many of these cases where the teacher made some attempt to fill in this section, only a few of the questions were answered.

Note 61.—There are certain cases where it is desirable to conceal the real purpose for which the survey is made. In such instances, blind or balancing questions can be inserted to throw the respondent off the track. Thus, in the Elder survey, it was thought desirable that respondents should not know that the survey dealt specifically with radio. Accordingly, a question on magazines read in the home was included (29). But such reasoning is not always sound. It is better actually to try the questionnaire out on a number of persons and have them guess the purpose of the survey. This may reveal that the relation of the survey to radio is inferred in spite of the foil question, or that the foil question was unnecessary as far as the results were concerned. In one survey among dealers as to the effectiveness of various advertising media,

this question was introduced at various points in the interview, "Can you tell from the questions I have asked you whether we are interested in any particular kind of advertising? Yes—No—. Which of these do you think it is: Magazine—Newspaper—Radio—Billboard—?" Radio was not guessed in any unusual number of cases (721).

Note 62.—In a survey at Washington University listeners were asked how long they listened in the morning, how long in the afternoon, and how long in the evening. It is obvious that results from this tripartite question would be different from those obtained by means of a question such as, "How long do you listen to the radio during the entire day?" As a matter of fact, the results in 1930 showed for the sum of the morning, afternoon, and evening periods an average of 6.8 hours (87). For the entire day, the Elder survey showed an average length of listening time of 4 hours. In all cities the percentage of listeners listening over 6 hours per day was fairly low (29). Similarly, Riegel gives 4.9 hours as the average answer to the question, "How many hours a day do you listen?" He states that the sum of the hours when computed separately by asking the listener to indicate the exact times each day when he usually listened was greater than this (96). My figures based on the graphs given by Riegel show the average computed in this way to be about 6 hours per listener per day. It is a fundamental psychological fact that listeners will name more programs, give more hours of listening, and, in fact, generally give larger summed results when the individual questions concern fractions of the total time. This has been utilized in the Crossley survey to attempt to have listeners remember more programs heard on the previous day. Listeners are asked to concentrate their attention on the programs they heard before nine o'clock in the morning, then after nine o'clock and before noon, then from noon to six o'clock, and so on.

Note 63.—Let us see how the sampling is cared for in a survey like the second Price-Waterhouse survey. Cards to the number of two hundred twenty-eight thousand were sent to cities on the Columbia Broadcasting System network, and one hundred seventy-two thousand more cards were sent to towns near (within the intense listening area) the network cities. Telephone directories were secured for all of these cities and towns, and the recipients were chosen at random, taking only residences. Names in succession under the different letters, A, B, C, and so on, including the entire alphabet, were taken to insure representation in all neighborhoods. The number of cards, within certain limits, was varied with the population of the city, in order to secure adequate sampling. For statistical purposes it would not be necessary to sample as thoroughly in large cities as in small cities, since the reliability of the sample increases as the square of the number in the sample. Reno, with nineteen thousand inhabitants, received one thousand cards, or a 5-per cent sampling, while New York, with seven million persons, received thirty thousand cards, or a sampling of .4 per cent. In order to make sure that the replies were made to cards actually sent out, each questionnaire card was keyed, or given an identification mark which made it possible to determine whether the reply was genuine. The cards carried a blind return address, that is, the identity of the sender was concealed by a return address to a post-office box. Since the programs of any one day might have influenced the results on the

question, "What station do you listen to most?" and the like, one-sixth of the total number of cards to be mailed to any one city was sent out each day (37). This distribution of the sampling over a period of time is as important as geographical distribution for certain types of questions, such as the ones asked in this survey.

If two surveys are made and the samples are alike, then the same percentage returns should be secured. It is interesting to take the returns for the Price-Waterhouse surveys of 1931 and 1932 and compare them (37, 39). The correlation between the returns from the different cities on the two surveys amounted to .78. This means that the responsiveness of persons in different cities is quite characteristic of the city; and since the number of cards sent out to each city was sufficient to measure this, one indication of the adequacy of the Price-Waterhouse sampling is at hand.

Note 64.—The Minneapolis survey, made by distributing the questionnaires through school children, has given some valuable information, but it is not a complete sampling of the adult population of Minneapolis (316). Washington University questioned housewives and mothers who had sent in for booklets offered in magazine advertisements. The return was larger from those persons who had answered advertisements than from persons whose names had been secured from a farm-magazine subscription list (87). An announcement was made over WLW offering a booklet telling about the station to all persons writing in. In mailing out "Behind the Scenes at WLW," a questionnaire was included. The return of these rather lengthy questionnaires was 25 per cent (119). This should be enough to show that WLW had been expeditious in choosing the sample.

The State College of Washington distributed questionnaires to students in a freshman English course before Christmas vacation. The students were asked to take the questionnaire home with them and to report results (628). Similarly, the Department of Agricultural Extension at Ohio State University distributed short questionnaires to farmers attending a Farmers' Week meeting. It is good economy to secure replies from such groups, but it is not permissible to say that a sampling of the radio audience is being obtained. It is not a sampling procedure. It is simply a way of gathering information from a certain specified group, and further checks are necessary before the conclusions can be extended to any larger group.

Note 65.—The Ohio State University station, WOSU, sent out four different forms of questionnaires to random samples of its bulletin mailing list. The less than 10-per cent return was unfortunately rather limited for purposes of evaluating the types of questionnaires.

The first questionnaire consisted of a complete listing of WOSU broadcasts for a week. This listing gave the day, the time, and the title of each program. Opposite each title was a check square. The second questionnaire was similar, except that twenty-one fake programs were inserted with the regular ones. The third questionnaire contained blanks for the listener to name the programs he remembered hearing on the previous day. The fourth questionnaire contained blanks for programs classified under the headings of music, talks, persons, and features.

The four questionnaires fulfilled different purposes. The first was intended

as an actual record of the broadcasts heard. It was sent to the listener at the first of the week, and he was requested to note by a check mark each program heard during the week. The second questionnaire was sent to another group of listeners just after the last program of the week, and each one was asked to check all the programs he remembered hearing during the week. The third questionnaire, as stated, asked for the names of the programs heard on the previous day. This paralleled in a sense the Crossley technique. The fourth questionnaire suggested types of programs and asked the listener to specify the particular names of the programs, persons appearing in them, or subject-matter which he remembered from the preceding week. One of the statements included in this fourth questionnaire read, "I heard the following people talk over WOSU last week."

The usable returns for the various questionnaires were in percentage: first 9, second 8, third 6, fourth 4. Some of the returns were made at too late a date to be valid. Others showed neglect in supplying the pertinent information. It is interesting to note that the third questionnaire, which incorporated the Crossley technique, resulted in a 6-per cent return.

It is quite evident that those questions—the third and fourth questionnaire—which taxed the memory of the listener drew the smallest return. In other words, the recognition method resulted in more response, and also more complete response, than did the completion method. In general, the more suggesting or prompting done, the better the return. More important than completeness, however, is the matter of accuracy. How accurately do listeners check programs which they have heard? Do they respond more accurately when they name the programs themselves, or when they pick out those they have heard from the whole number of programs given? The presence of the fake programs in the second questionnaire gave some information on this point. The fake programs constituted 14 per cent of the entire programs listed for the week. These fake programs were only put in at times when WOSU was silent, so that the listeners could not have been confused by the time at which they listened to WOSU programs. All error was therefore one of program identification. Of the total number of programs marked by listeners on the second questionnaire, fully 10 per cent consisted of these added fake programs. If 14 per cent of the total programs marked by listeners had been fake programs, then the result obtained would have been that expected by chance, and the experiment would have shown that the listener had practically no memory at all for specific program names. The difference between 10 per cent and 14 per cent is a measure of the accuracy of recognition memory, and means that approximately one program in three was correctly checked. This is an illuminating comment on the usefulness of the method of program recognition, if the results are confirmed by further investigation.

The answers to the first questionnaire may be said to represent the factor of publicity and immediate recognition. The answers to the second questionnaire represent delayed recognition of the programs. Those listeners who received the first questionnaire had at the beginning of the week a detailed list of all programs to be heard. Publicity for WOSU programs reaching the listeners receiving the second questionnaire came only through the customary channels. In order to determine the relationships between the first and

MEASUREMENT IN RADIO

Name of Person Filling out Report→			←Name of Program
Name of School→			←Time of Broadcast
Address—Give City and State→			←Date of Broadcast
<p>Draw a circle around the numbers in the middle of the card which correspond with the numbers of the answers selected.</p>	<p>Give the date of the broadcast you heard last in this same series.</p>		<p>Please compare this broadcast with the one you heard last in the same series. Draw a circle around the words in the middle which express your answer.</p>
<p>Preparation for the program was made by:</p> <ol style="list-style-type: none"> 1. class discussion, 2. outside reading, 3. following outline in <i>Courier</i>. 	<p>1 2 3</p> <p><i>more</i> same <i>less</i></p>		<p>Were your pupils more interested or less interested in the program?</p>
<p>The radio reception during the talk was:</p> <ol style="list-style-type: none"> 1. good, 2. fair, 3. weak, 4. noisy. 	<p>1 2 3 4</p> <p><i>more</i> same <i>less</i></p>		<p>Could they understand the material given in the broadcast more easily or less easily?</p>
<p>During the radio lesson the pupils:</p> <ol style="list-style-type: none"> 1. took notes, 2. used books, 3. answered questions over the radio. 	<p>1 2 3</p> <p><i>better</i> same <i>less well</i></p>		<p>Do you think the subject matter of the broadcast was better organized or less well organized?</p>
<p>As a result of the broadcast pupils:</p> <ol style="list-style-type: none"> 1. asked questions, 2. read further on the subject, 3. brought something to class, 4. followed out an idea suggested in the broadcast. 	<p>1 2 3 4</p> <p><i>better</i> same <i>not as good</i></p>		<p>Was the total effect of the lesson better or not as good?</p>
<p>The radio program was followed by:</p> <ol style="list-style-type: none"> 1. class discussion, 2. oral tests, 3. written tests, 4. reports, 5. compositions, 6. a group project. 	<p>1 2 3 4 5 6</p> <p>1 2 3 4</p>		<p>Material covered by the broadcast was taken up in regular classroom work:</p> <ol style="list-style-type: none"> 1. several weeks before the broadcast, 2. a week or so before the broadcast, 3. at the time of the broadcast, 4. not yet taken up in class.

Figure 1. Teachers' report form for Ohio School of the Air broadcasts

second questionnaires, correlations were run for each day of the week and for the total week. In other words, an attempt was made to find out whether the listeners who had the program list before them, and marked the programs as they heard them, tended to check the same programs as those listeners who thought back over the week and marked the programs they remembered hearing. The degree of correlation would measure the effect of publicity and the extent of memory distortion, since it might be assumed that in other respects the two groups of listeners were equal. The correlations between the two questionnaires for the different days were: Monday, .44; Tuesday, .24; Wednesday, .60; Thursday, .43; Friday, .76; Saturday, .89. The rise in correlation may reflect the working of the memory factor, since as the end of the week was reached, the listeners answering the second questionnaire did not have to remember so far back, and therefore the second questionnaire became more like the first questionnaire as far as memory was concerned. Slightly greater accuracy in recall on the second questionnaire was noted as the time of hearing the program became more nearly that of recording having heard it. However, this increase in accuracy was not nearly as great as expected (71).

Note 66.—WHAS, in planning to inaugurate school programs, wrote to school superintendents in Kentucky and Indiana asking whether the schools had radios, whether programs could be worked in at designated hours, and suggestions as to subjects and programs of most value to the schools (502).

In determining the audience to WMAQ school broadcasts, a thousand letters, with return envelopes, were sent to principals and superintendents on the mailing list for the monthly bulletin in Chicago, and in the states of Illinois, Indiana, Michigan, and Wisconsin. The replies were enthusiastic (238).

Note 67.—The report form shown in Figure 1 follows as far as possible the ideas suggested on page 107 of the text. Mr. Reichelderfer and Mr. Darrow co-operated in setting up this report form.

First, the questions are all on one side and have been reduced to the fewest possible number compatible with a full report of the lesson. It was judged better to obtain a more regular and full report from a limited number of reporters than a great number of brief reports.

Second, the questions on the left are almost entirely ones which can be answered by factual observation. This is certainly true for class preparation, pupil activity, and follow-up.

Third, the questions dealing with opinion and judgment have been put on a comparative basis. This was tried out first with the psychology report forms broadcast by the National Advisory Council on Radio in Education. It is evident that the teacher can only with difficulty say whether the subject-matter was well organized or the pupils' interest was held. This is especially true if she has to judge on the basis of an absolute standard. When the teacher can compare one lesson with another on these points, the judgment in three categories, better, same, worse, is much easier to make.

Fourth, the report form is arranged as a return post card completely addressed and stamped. There is nothing more to be done than to tear the sides apart and drop the report in the mail box. The card is perforated to make tearing easy. The report forms are stamped with a separate stamp. Although a business reply form would serve, it is not used, partly because a

high return is expected, and partly because the business reply card does not motivate the person to return it. If the person asked to report sees an unused one-cent stamp on each, the report forms are more carefully preserved.

Fifth, the cost of inclosing report forms in letters is three cents. This cost would be permissible if three or more report forms could be put in one stamped letter. It is much better, however, to have the reports made immediately after each lesson, and not permit them to be accumulated until enough are gathered together to justify the expense of a letter; therefore, some form of a card is desirable. On the ordinary card, little can be either printed or written. By printing the card in this fashion, the questions can be detached from the answers and only the answers mailed. This permits many more questions to be asked, and yet the cost is that of a return post card. In addition to the space for answers to questions, comments may be written on one-third of the reverse, or address, side of the card.

CHAPTER V

Note 68.—A unique instance of this is the following story. In the public service, convenience, and necessity, an all-Lithuanian program was put on over one station. As envisaged by the station, it was a good-will offering to the large number of Lithuanians in the community. One day an official of the station chanced to meet one of the city's leading Lithuanian business men. "You must be making a mint of money out of the Lithuanian Hour," the business man remarked. "How so?" said the broadcaster. Then he learned that the Lithuanian announcer had gone "commercial" and was injecting advertising announcements in between each number on the program and presumably pocketing the proceeds from his own private arrangements (444).

Note 69.—In a booklet, *Wireless Discussion Groups* (22), the British Broadcasting Corporation explains the function of these groups and shows how they may be utilized to secure reports on the talks. Over the discussion groups the British Broadcasting Corporation has erected a rather complicated organization through which the reports are filtered. The vertical organization of the whole Central Council, the body set up for the purpose of advising the British Broadcasting Corporation, consists of a director of talks, an adult-education talks department, the Central Council, the Area Councils, and finally the listener groups. It is claimed that the selection and form of the latest series of talks over the British Broadcasting Corporation were based almost entirely upon the result of contact with listeners. This is an interesting rebuttal to the charge so often made that the British Broadcasting Corporation gives the listeners what it feels the listeners should hear, whereas in the United States the listener is always given what he wants.

The main duties of the Area Council of the British Broadcasting Corporation are to bring the talks to the notice of all listeners and to transmit comments and criticisms from listeners to the Central Council. In each area there is an education officer, who is an official of the British Broadcasting Corporation and who acts as the Area Council's secretary. It is his duty to get in touch with all who may be interested in adult education or in the broadcast talks, to assist in the organization of listening groups, to visit groups, and

generally to act as liaison officer between listeners, the Area Council, and the British Broadcasting Corporation. As a further link between listener and broadcasting organization, registers of all persons interested in broadcast talks are being formed in the west of England.

The report of the Central Council of the British Broadcasting Corporation states that the groups of listeners, spontaneously formed, first proved the real value of talks and provided the most useful criticism for those arranging the programs. The Area Councils have collected a large amount of information from these groups as to the views of listeners. Personal contact has been established with many thousands of people in all positions and occupations, and reports are regularly sent up to the Central Council. The British Broadcasting Corporation thus tries to make it possible for listeners to take a share in the educational policy of the British Broadcasting Corporation. The British Broadcasting Corporation states that, while individual criticisms have often proved helpful, the comments of groups, which are the collective criticisms of people who obviously believe in the importance of wireless, are of even greater value. In many cases such comments have helped a speaker to modify his talks or his way of giving them, and so have enabled him to "get over" in a way he could never have discovered for himself.

The Central Council specifies rather completely the duties of the secretary of a discussion group. His main work consists in sending in the comments and questions to the lecturer. The leader should find out before a group breaks up for the evening whether there is any point on which further information seems necessary. Urgent matters, when comment seems needed to improve the talks during a series, are to be sent in at once so as to give the lecturer a chance of making changes. The British Broadcasting Corporation feels that such prosaic details as the average age of the members of the group, their occupations, and sex are important to those who have to select speakers and arrange programs. Comments on such points as speed of delivery are very useful. Since there are over a thousand discussion groups within range of the British Broadcasting Corporation, much valuable comment is obtained in this way (22). The whole procedure suggests a fundamental defect in our own system of audience measurement. It is not organized and does not draw impartial critical opinions. Although in a discussion group interest in the subject is presupposed, there are individuals who are critical of the broadcast, and the group leader can secure their comments.

Note 70.—In answering questions on station preference, it is generally assumed that the radio listener will immediately think of some one station. Radio investigators believe that through hearing the call letters, seeing the associated part of the dial, and making the movements in tuning, the listener is ready to name one station as being heard more than others. One survey agency believed that the validity of this view rested upon the quickness with which the response was given. In other words, if no station was named before the end of a certain short interval of time the person had no genuine preference. A survey was accordingly made in Pittsburgh. The question asked was, "Which station do you prefer?" If the person interviewed did not mention any station within five seconds "no answer" was put down (640).

Note 71.—WOSU carried out a survey employing a variation of this tech-

nique. Listeners were first asked to name any WOSU programs which they remembered hearing. After listeners had named two or three they were shown a list of sixteen program names and asked to point out any additional programs which they recognized as having been heard over WOSU. The average listener named about 1.7 programs and recognized 1.2 others. The questions and instructions to interviewers were:

"What are some of the programs you have heard recently over WOSU?" If the person hesitates, you may suggest, "Do you remember hearing any talks?" "any musical programs?" "any special features?" After securing all the information obtainable in this way, show the listener the mimeographed program card. "Here is a list of programs broadcast over WOSU. Perhaps this list may help you remember some of the other programs you have heard" (70).

Note 72.—Elder used the following method in obtaining samplings from four different classes based on a definition by Cherington. Within the city limits of Boston several test areas were selected. Each area was predominantly Class A, Class B, Class C, or Class D. These areas were so chosen as to secure adequate geographical distribution. From the 1930 Boston directory, lists of householders for the test areas were taken. Each name was checked for economic status. Occupation was the major criterion, although distinction between Class A and Class B was made on the basis of income-tax lists or assessment lists. No name was included which could not be positively allocated to one of the four classes, and then only names which were in the predominant class of the neighborhood. As a further precaution the interviewers were made familiar with the definitions of the economic classes, and were instructed to report any cases in which errors in classification had been made (709).

CHAPTER VI

Note 73.—The Yankee Network says:

Since a study of existing methods revealed that most radio-listener-habit surveys have been based on opinions of the past rather than facts of the present, it was felt that any method involving memory or attempting to generalize on a particular fact was only comparatively accurate. Walter Mann and Staff therefore suggested that all interviews be made over the telephone, asking only for the station or program (if any) that was actually turned on at the time the telephone bell rang (98).

Bevis and Amos think that "facts are desired and can only be obtained by some means which makes a direct approach to the individuals concerned at the time that they are engaged in the activity to be studied" (13).

Note 74.—Much criticism has been aimed at questions asked on immediate telephone surveys, such as, "Do you know the name of the program? The sponsor? The advertiser? The featured talent? The product advertised?" The Columbia Broadcasting System stated that ability to identify the program should vary with the time at which the question was asked. Reasons for this were that the "commercial announcement tends overwhelmingly in network programs to be placed in the second half of the program." Therefore, if half of the calls were made during the first part of the program, the true effect of the announcements would not be revealed as far as the replies of listeners were concerned (433). As Columbia stated it, in the simultaneous

survey the listener would often be asked to identify the product before he had heard it mentioned. But criticism derived from logic is not always based on fact. And the statement from Columbia does not stand the test so far as the ability of the person to name either the program or the advertiser is concerned.

Bevis and Amos tested this by dividing the interviews into those for the first part of the program and those for the second part of the program. These results showed that 39.8 per cent of those persons who had their radio sets turned on were able to name the advertiser during the first half of the program, while 40.6 per cent were able to name the advertiser during the second half (13). In a study of Omaha newspaper data, a similar interpretation could be made. Here the results were tabulated specially for the periods when programs were changed, that is, at 7:00, 7:15, 7:30, and so on. An analysis was made to see whether listeners named programs they had just heard or were going to hear. Approximately equal numbers named either the previous program or the one to follow. The figures were 20 per cent for each. This total of 40 per cent (2 x 20 per cent) seems to agree with the results given by Bevis and Amos (288).

Note 75.—The Crossley survey illustrates how many facts may be obtained in interviewing by telephone, when the purpose of the interview is to gain general information on radio without reference to the particular program which the telephone call may have interrupted. The Crossley interviewer asks the listener whether his radio was in use between six and nine in the morning of the preceding day, and if so what programs were heard, over what stations did they come, and what was the exact time they were on the air. In addition, information is obtained as to the number of people who listened during the hours mentioned, classified as to men, women, young people, and small children. The same questions are then asked with reference to the four other divisions of the preceding day; namely, from nine to twelve in the morning, twelve to six in the afternoon, six to nine in the evening, and nine to twelve in the evening. On certain weeks the question on the number of people listening is replaced by a question on preference. This is phrased as follows: "Of the programs heard yesterday which one do you think was liked best by the women—the men—the young people—and the small children—?" Crossley interviews are made in the morning shortly after breakfast in order to keep the time intervening between hearing the programs and the interview as short and constant as possible.

Note 76.—The American Newspaper Publishers Association made its survey between 8:30 and 9:30 in the evening so that the responses would show the most favorable conditions with reference to radio listening (2). In the Omaha survey all the calls were made between 6:30 and 10:00 P.M. (288). WBBM, Chicago, had R. L. Polk Company make the telephone calls between nine in the morning and six in the evening on week days (477). The Gannett survey was conducted from 9:00 to 9:15 P.M. in various cities (712). Bevis and Amos made their telephone calls from 7:30 to 10:00 P.M. for two weeks (13). The *Columbus Dispatch* ordered seven hundred homes interviewed in the mornings, seven hundred in the afternoons, and 2,792 in the evenings (43). The Yankee Network survey was made from 9:00 in the morning until 10:00 at night (98). An Erwin, Wasey and Company survey made calls between 8:00 A.M. and 10:00 P.M. (409).

Note 77.—The Arnold Research Service had figures to show that in the country at large, 85 per cent of telephone owners had radio sets (467), and a more recent survey in certain cities showed 95 per cent ownership (10). This last figure was confirmed in a Minneapolis-St. Paul survey (78). In a San Francisco Bay City telephone survey it was found that 89 per cent had sets (12). In two checks in California by the Shell Oil Company, 88 per cent and 91 per cent of telephone owners possessed radios (329). A Gannett newspaper radio survey showed that 83 per cent of telephone owners had radios (712). In a survey reported by Forker, 90 per cent of telephone subscribers had radios (252). The composite figures for five city surveys made under the direction of Major Markets showed 76 per cent radio ownership (715). One of these cities, Columbus, had radio ownership in telephone homes of 72 per cent (43); another, Omaha, 82 per cent (107). The American Newspaper Publishers Association survey showed 86 per cent (433). In Pittsburgh, telephone owners were 91 per cent supplied with radios (102).

Note 78.—WGY published the number of homes, the number of receiving sets, and the number of telephones for the urban population of its area of one hundred miles (117). According to these figures there were only enough radio sets for 91.8 per cent of the telephone homes. Telephones were found in 66.2 per cent of all the homes. If 85 per cent was taken as the average radio ownership in telephone homes, this would have left over enough sets to give the homes without telephones radio ownership of 13.3 per cent.

Bevis and Amos found that the ratio of telephone homes with radio to the non-telephone homes with radio was about 5.5 to 1. At Evanston, the city they surveyed, 93 per cent of telephone homes owned radios. In securing the percentage of radios in non-telephone homes, Bevis and Amos applied the percentage of radios in telephone homes obtained in their study to the entire number of telephone owners. This total was subtracted from the 1930 census figures for Evanston and the remaining sets were distributed among the non-telephone owners (13). If the 1930 census figures and the radio-set ownership at the time the survey was made can be considered equivalent, then this method gives useful results.

CHAPTER VII

Note 79.—All comparative experiments rely upon the setting up of two equal groups, one of which is exposed to radio advertising and the other of which is not. It is assumed that the two groups are otherwise identical; that is, they represent the same type of people, with the same habits, the same purchasing ability, and the same exposure to other advertising media. Practically, it is never possible to set up an experiment which will fulfill these conditions. The most we can hope to do is approximate them.

The method of studying a single variable has been the foundation for most experimental work, not only in advertising but in the scientific fields as well. In such experiments, all factors are kept constant except the one to be judged. This factor is varied for the experimental group, and the resulting differences between the experimental and control groups are noted. Such experimentation, however, easily gives rise to a fallacy in reasoning. The investigator

may assume that all changes are due to the variable itself. On the contrary, the changes are due to the variable in the presence of all the other unchanged factors. This may be shown clearly by cases in which radio advertising is used on one group of persons in addition to other forms of advertising. The conclusions of such an experiment do not necessarily mean that radio advertising is more effective than newspaper advertising, should it turn out that the experimental group showed a greater sales response. The conclusion is that radio, with the other forms of advertising, is more effective than the other forms without radio. This co-operative effectiveness of factors is extremely important and should never be forgotten.

Note 80.—Elder in making his survey formulated a questionnaire which was sent to radio and non-radio homes with a request that the housewife put down the names of the brands of certain articles used in the home. The articles asked about in the questionnaire were carefully chosen so that they would most readily reveal the effects of radio advertising if any were to be found. The articles selected for the study were articles in common use, of rapid turnover, and common to various economic levels. They were articles of which several leading brands were radio advertised while others were not radio advertised, articles which were heavily advertised in other media, and articles sold largely by advertising with a minimum amount of personal salesmanship. Articles falling into this classification, according to Elder, were: tooth pastes, toilet soaps, flours, shortenings, scouring powders, shaving soaps, collars, cigarettes, and cigars.

Elder considered that it was necessary to obtain a certain amount of homogeneity in the sample, and that this could be done by excluding the lowest income levels and illiterate groups. He believed that these would be excluded if only telephone homes were taken. It was assumed, therefore, that persons owning telephones and not owning radios would be equivalent in all the other respects with persons who did own radios and telephones. There is some question as to whether telephone owners with radio sets are equivalent to telephone owners without radio sets. In the first place, the number of the latter is and was exceedingly small. Results have already been given to show that, at the time of Elder's survey, about 85 per cent of telephone owners owned radios. Surely, there must have been some reason why this 15 per cent delayed the purchase of a radio. Perhaps it was for the reason that advertising was abhorrent to them. If so, these telephone owners would constitute quite a different class from those possessing sets. It is also probable that these non-radio owners were too busy or that their reading interests were different. In fact, the circulation of higher priced magazines was even greater in the non-radio-owning homes than in the radio homes (242).

In an Elder survey where homes were classified according to economic status, it was noted that more Class B homes had radios than Class A homes; 70 per cent of Class A had radios, while 95 per cent of Class B possessed them (709). Since telephone ownership is commonest in Class A and Class B homes, this would suggest that respondents with radios were drawn more from Class B homes, while respondents without radios were drawn more from Class A homes. In the Columbia Broadcasting System census study, however, radio ownership was shown to be directly related to income for all major income

groups (40). To determine the financial status of the two groups an analysis was made by Daniel Starch. Fifteen per cent of the persons returning questionnaires in the 1931 Elder study signed their names and addresses. These signed cards were analyzed for income levels based on occupations. The average income determined in this way for radio homes was \$2,763, and for non-radio homes it was \$2,791 (32). The difference is, of course, too small to be significant. On the other hand, it cannot be assumed that the samples were representative of the entire group since they amounted to only 15 per cent of those returning questionnaires. Comparison of these figures with the imputed incomes for radio (\$2,884) and non-radio (\$1,464) homes in the Columbia Broadcasting System census analysis shows what an effect the use of telephone directories has upon the sampling (40).

It is unfortunate that in the printed reports of Elder's survey no information is given as to the number of questionnaires used in the various breakdowns. The only figures are those available for the total returns. It is therefore impossible to know how many questionnaires were returned from radio homes as compared with non-radio homes.

In the 1932 study Elder has carefully considered all objections to factors affecting the validity and reliability of his method (32). This is an able exposition and may well be studied by anyone planning a survey. As stated before, the most decisive analysis in the study is, in this writer's opinion, that dealing with the use of products in cities where the products are advertised by radio as compared with cities where they are not. In this case the differences between radio and non-radio homes are not vitally important.

Geographically, Elder's sampling was well distributed since in 1931 and 1932 ten cities were used each time, both receiving an adequate number of questionnaires. Besides questions on brands used in the home, the questionnaire card asked the individual whether he owned a radio, how many hours a day it was in use, and what magazines were read in the home. The tabulation of the results was accomplished by separating the cards for the different cities into radio and non-radio groups. Then the number of mentions for each particular brand was noted down. Next, it was ascertained what brands should be listed as advertised by radio and what brands should not. This was separately determined for each particular city. One particular brand might have been so advertised in three cities and not in the other seven, due to peculiarities of network hook-ups or distribution of programs. Deciding whether or not to classify a given brand as advertised by radio was rather difficult, since at the time of the survey certain programs had only recently started and others had been off the air just for a short while. Here Elder encountered the cumulative effect and after effect which radio advertising may be expected to produce. Although a radio advertising program had been off the air for two months, the effect might still be noted. In deference to this fact, Elder treated the programs individually in many cases, and made appropriate notations.

In making the final computations, the percentage of brands used in non-radio homes was considered as 100, and all losses or gains in radio homes were expressed in percentage with this as a base. By the use of this method, figures on sales volume for any particular percentage of gain or loss were con-

cealed, and for this reason any particular percentage of gain or loss had little significance in itself. Perhaps the time will come when actual figures may be printed without fear of reprisal by the companies concerned.

There is one criticism of interpretation of Elder's survey which is outstanding in nature and not as yet answered. The criticism is this: How can it be assured that mention of a brand name signifies use of the brand? Elder's directions to the respondent were quite specific in this respect. His question read, "What brands of the following products are used in your home?" and in the accompanying letter Elder asked those answering to find out what brands were actually used in case they were not familiar with them. This was especially indicated to the respondent where brands used by other members of the family were concerned. It is crucially important to determine whether the brands put down were actually the ones used, and this can only be done by inspection of the actual articles in the home. Perhaps it will be possible some time to do this on a small scale in order to determine the accuracy of the average person's reply. If it is found that brands actually used are not given on the cards, the questionnaire is merely a test of memory in connection with radio programs. It would then not be surprising that those with radios put down radio-advertised brands and that there is a definite relationship between the amount of listening and the extent to which radio-advertised brands are mentioned.

As a partial answer to this question, Elder states that upon analysis it was found that the proportion of families using nationally advertised products was about the same in both non-radio and radio homes. The only significant difference was that radio-advertised products had apparently displaced other nationally advertised products in radio homes. It would be important to discover whether the brands used in non-radio homes were those which had been advertised nationally by means of magazines for some time, whereas those brands used in radio homes were ones which had been advertised recently by radio, newspapers, and magazines. If so, this would mean that the results obtained in the Elder survey might possibly be explained by resistance to new advertising. However many objections one may raise with reference to this type of study, and it is obvious that objections can be made to any type of advertising study which deals with so many variables, it is a pleasure to point out that Elder has conducted the study in a clear-cut way, and given significant attention to many of the minor factors affecting the results. In a preliminary investigation, Elder checked on the accuracy of the mail returns by making a personal house-to-house survey.

Comparison between cities where the radio program was heard and cities where it was not on the air seems to me especially important. With reference to this Elder says:

A brand which is radio advertised in six cities may show a gain of forty per cent in radio homes. In four cities where it was not radio advertised, it may show a loss of twenty per cent. It is a reasonable assumption that the total influence of the radio program is the sum of these two . . . or sixty per cent.

This seems to be a justifiable assumption since it indicates the difference that may be expected in sales. Comparison of homes in cities with and without

radio advertising for the particular brand is important because any differences between radio-set owners and non-radio-set owners should affect the results in a constant way. Since the result is reversed in passing from the city with radio advertising to the city without radio advertising, it shows that this constant factor, whatever it may be, is not important.

The presence of a question on magazines used in the home was intended to disguise the fact that a radio survey was being made. However, Columbia, in reporting the Elder survey, says, "The Velvet programs scored a gain of 70 per cent. . . . No information has been available as to the nature or length of this program, except that radio listeners mentioned the 'Velveteers.'" Listeners mentioned the name of a program when asked to list the brand of a product used in their home. This shows how pervasive the influence of radio advertising can be, but, as stated before, it does not show that the product was actually bought (29, 32).

Note 81.—The conclusions reached by Elder are as follows:

1. A substantially larger proportion of radio homes than non-radio homes purchased radio-advertised brands of merchandise.
2. Conversely, a smaller proportion of radio homes than non-radio homes purchased brands not advertised by radio, where there was competition between radio-advertised and non-radio-advertised brands of the same commodity.
3. The proportion of radio homes using radio-advertised merchandise was distinctly greater as the average listening time increased (242).

Note 82.—In a Chicago personal-interview survey, 26 per cent of the women listeners reported that they had made purchases as a result of advertisements in morning broadcasts (341). In a Pittsburgh survey, 64 per cent answered the question, "Have you purchased products as a direct result of radio programs?" with "yes," while 28 per cent stated definitely that they had not (102). On the Pacific coast, 66 per cent of the women interviewed answered "yes" to the question, "Do you buy radio-advertised products?" (430). As many as 50 per cent of the members of an advertising club in Boston admitted that they had purchased merchandise as a result of radio advertising (75). In a questionnaire survey, 62 per cent of the women who replied stated that they had purchased products because of the influence exerted through broadcasting. The purchases were made to a great extent in the grocery field (282). Hettinger found in a survey conducted in January, 1929, that 28 per cent of the persons interviewed had consciously purchased articles because of hearing programs sponsored by the manufacturer of the goods in question (56). In the Starch survey, 26 per cent of those interviewed stated that they had purchased products mentioned on the radio (101). In the Major Markets survey a question on products purchased because of radio advertising was asked in five cities. For the different cities the following percentages of the persons interviewed had purchased products: 24 per cent, 30 per cent, 19 per cent, 31 per cent, 24 per cent. These results were based on the persons who had radios (715). In a Colorado survey, the percentage answering "yes" was 47 (717), while a Minneapolis survey showed 56 per cent of those questioned had purchased an average of four products each (64).

Note 83.—The program consisted of a Tuesday afternoon talk about a drug product. For a long time the same speaker, the same time, and the

same station had been used, and usually at the end of each talk the same offer, which consisted of a free sample of the product advertised, was made. It was assumed that a well-written talk would pull more replies than a moderately good one. Starting with less than ten replies, the program finally pulled more than one thousand a week. Then the advertiser decided not to test the talks any more, and they ostensibly were kept the same. Sales began to drop off. Then the talks were tested again. Only one hundred six replies were obtained. Certain improvements were made in the talks until the returns had risen above the previous peak. Sales then followed suit (229).

CHAPTER VIII

Note 84.—Results for specific surveys showed that in three South Carolina counties (1930), 36 per cent of the homes exposed to radio were influenced to adopt home garden practices. Radio, however, did not compare favorably with other more direct methods (115). In two Kentucky counties (1930), it was shown that 19 per cent of those exposed to radio were influenced to adopt home kitchen practices. Radio exceeded telephone calls, news service, and circular letters as a means of influencing rural people (114). In two New Jersey counties (1930), 8 per cent of those exposed to radio were persuaded to adopt practices in home management. Radio was better than the following extension devices in influencing people: exhibits, correspondence, and telephone calls (113).

Note 85.—A study of the influence exerted by vocational-guidance talks on Colorado high-school students disclosed that one-fifth had chosen teaching as a life work (729). Of course, other influences outside of the radio programs and prior to them had been operative in modifying the choice of life work. Without doubt, however, the educational talk did have an effect.

A survey of the users of radio sets furnished by the United States Office of Education to illiterate mountain people was made. In the University of Virginia section of this study it was found that "while all enjoy the entertainment provided by the radio, few have apparently gained any ideas of practical value." Radio had, however, increased social contact. In one home visitors came in practically every evening, with the result that there was a marked improvement in the personal appearance of the wife and in the neatness of the home (716). In contrast to the Virginia outcome, reports from the Tennessee section of the experiment stated that definite help had been received in the form of constructive ideas for farm gardens and that poultry yards had been put in profitable operation (714).

Note 86.—Three unusual cases of aid given by radio are those of a bank robbery, a blood transfusion, and an airplane landing. In the case of the bank robbery, a radio station immediately broadcast notice to the entire town. So quickly was the news given out that the robbers were surrounded in a thicket, captured, and the money returned within a period of a few hours (526). In the second case, physicians decided late one day that an immediate blood transfusion was necessary for a patient. An appeal was broadcast over WRVA. During the following several hours the hospital received more than two hundred offers. Some seventy persons visited the hospital, and telephone

calls came from other cities (411). The third instance occurred when 14 planes wished to land on an airplane field with no lights. An announcement over a radio station brought twenty-five hundred cars from a city some distance away to light the field with their headlights (549).

Note 87.—A brief review of opinions regarding the importance of signal-strength surveys follows: Gannon hopes engineering surveys along with uniform measurement of station signals may develop data on the quality of reception; data are of small value unless complemented with standardized surveys showing the degree of listener acceptance for station and program (257). Fox thinks actual audience reached is more important than potential audience available as shown by signal-strength surveys (541). The Columbia Broadcasting System doubts the value of engineering tests because listening habits are more important than where the station can be heard (41). KFNF thinks it is more important that listeners want to hear the station than that they can hear the station (706). Street thinks true coverage should depend entirely upon popularity of the station as determined by mail response or house-to-house surveys (527). Shepard thinks signal strength is not an important factor since the fact that a station can be heard does not mean that it is heard (527). Felix thinks signal-strength measurements are important because the audience follows lines of field strength.

Note 88.—The three key stations, WEAf, WJZ, and WABC, delivered usable signals in all of the five boroughs, no matter what standard was applied. Felix believes, therefore, that their relative popularity should have been the same in each of the boroughs, if it had depended entirely upon program preference; the only substantial variable which the average listener would have been able to discern among these stations would have been the field intensity or signal strength (247). Felix points out that WJZ led in only one borough, Richmond, with 44.5 per cent of first choices to its credit. It delivered from two to three times the field intensity that WABC laid down in the same borough, and Richmond was the only one of the five boroughs in which WJZ came out substantially stronger than its rivals. WJZ was rated as second in Brooklyn with 25.5 per cent first choices, and last in Queen's, Manhattan, and the Bronx, with 23.8 per cent, 20.4 per cent, and 11.7 per cent first choices, respectively. The four to one ratio in first choices as between Richmond and the Bronx, according to Felix, could hardly have been ascribed to differences in listener intelligence or program taste. This is especially so since the ratio of first choices fell off in close ratio to the decrease in field-intensity levels delivered in the various boroughs. As stated by Felix, the field intensities delivered by WABC in the western and central parts of the Bronx were five to eight times those delivered by WJZ, while along the Sound in the eastern part of the same borough, WEAf was from five to six times as strong as WJZ. In many places WJZ delivered less than 2 millivolts, and was below 5 almost everywhere in the Bronx. In Richmond, on the other hand, WJZ delivered 25 to 50 millivolts, averaging two to three times the field intensity laid down by WABC (406).

Note 89.—Relationships between inferred signal strength and the national results of the Price-Waterhouse surveys can be shown. In the 1931 survey the percentage of regular listeners in cities and the percentage in listening

areas was determined for each station. Since signal strength is determined primarily by antenna power, transmission frequency, and ground absorption, it is possible to relate the first two factors on which data are available to listening habits. In transmission experiments it has been definitely shown that low-frequency (long wave-length) transmission is of greater value as far as the ground wave is concerned. Increased power improves the range of transmission, although the relation is not a straight-line function and the effect of increased power at high frequencies is small.

Comparisons between inferred signal strength and audience response were made as follows. First, the difference between the audience response in the station city and in the listening area around the station city was computed for a number of stations. Thirty-four independent stations (not on the Columbia Broadcasting System network) were selected from the largest cities in the country on the Price-Waterhouse list. Each station was in or very close to the city for which the results were tabulated.

Second, the difference between the amount of city and area listening to each station was treated to find the percentage which this difference was of the total change possible. For example, if a station rated 82.2 per cent in the city (WOR) and 83.8 per cent in the listening area the difference was 1.6 per cent. Now, the greatest possible change in this same direction could only have been 17.8 per cent (82.2 and 17.8 equal 100 per cent). Therefore, 1.6 was divided by 17.8 to show the percentage the difference was of the greatest possible change. Two sets of figures were procured for each station, the difference and the difference as a percentage of possible change.

Third, the power and frequency assignments of each station at the time of the Price-Waterhouse survey were obtained. Fourth, each station was ranked according to the four factors already mentioned and according to a combined power-frequency rating. A station might have ranked 8 in frequency, 15 in power, 10 in combined power-frequency, 3 in difference between city and listening-area audience, and 6 in percentage of possible change. Rank correlations between the ratings were as follows:

Station frequency and difference.....	42
Station frequency and difference in percentage.....	39
Station power and difference.....	36
Station power and difference in percentage.....	42
Combined frequency-power with difference.....	42
Combined frequency-and-power with difference in percentage..	44

The combined frequency-power ranking was obtained by adding the separate ranks for frequency and power and dividing by two. The significance of all these correlations is this: as the frequency becomes higher and the power less, the relative audience response in areas distant from the station becomes less. Naturally, there is no account taken in these computations of ground conditions which might attenuate the transmitted signals from some stations more than others. Program popularity is the factor which probably upsets these relationships most.

For 23 Columbia Broadcasting System network stations the rank correlation between combined frequency-power rating and the difference between city and listening-area listening was .36. Here, as with Felix's comparisons,

is clear evidence to show that physical factors of transmission are related to audience response even within areas where all signals are considered adequate.

CHAPTER IX

Note 90.—In spite of the criticisms raised concerning listeners' statements of their program preferences, there is much to be gained from an inspection of the data which have been compiled on this subject. In the lists which follow, the agency making the survey, the date, the place where the data were gathered, and the method employed have been indicated as far as possible. In most of the surveys, listeners were asked what kinds of programs they liked. The data from the Crossley survey (Co-operative Analysis of Broadcasting) was based upon mentions of actual programs. The résumé of these typical program preferences follows:

Starch (101) survey in 1928—

Program types:	Per Cent ¹
Orchestras.....	62
Popular entertainers.....	53
Dance.....	46
Musical.....	43
Semiclassical.....	40
Short talks.....	40
Religious services.....	36
Classical music.....	32
Athletic reports.....	25
Grand opera.....	22
Crops and markets.....	17
Comedy.....	16
Plays.....	13
Educational service.....	12
Children's programs.....	9
Domestic-science service.....	8
Drama.....	6
Physical exercises.....	4

Lord, Thomas and Logan (66) survey in 1930—

Program types:	Per Cent ²
Variety.....	31
Light music.....	21
Dance music.....	11
Classical music.....	7
Operatic music.....	7
Talks.....	4
Plays.....	3

¹Percentage of total families mentioning these program types in the first five preferences.

²Percentage of listeners preferring types of programs to all others.

WFBL (476) survey in 1932—

Program types:	Per Cent ³
Music.....	100
Comedy.....	64
Dramatic.....	53
Sports.....	44
Religious.....	40
Educational.....	38
Children's programs.....	32
News, markets.....	31
Special features.....	31
Women's features.....	20

Riegel (270) survey in 1932—

Program types:	Per Cent ³
Music.....	..
Drama.....	84
Comedy.....	77
Sports.....	63
News.....	53
Children's programs.....	52
Religious.....	47
Educational.....	44
Special features.....	43
Women's features.....	21

Hettinger and Mead (57) survey in 1931—

Program types:	Per Cent ³
Music.....	99
Comedy.....	75

³Percentage of listeners liking each program type.

Hettinger and Mead [*Continued*]

Dramatic.....	66
Sports.....	63
News, market reports.....	58
Children's programs.....	45
Religious programs.....	41
Special features.....	32
Educational.....	23
Women's features.....	17

Hettinger (56) survey in 1930—
Philadelphia

Personal interview

Program types:	Per Cent ³
Music.....	96
Comedy.....	67
Drama.....	58
Sports.....	44
Religious.....	34
Educational.....	33
Special features.....	33
News, market reports.....	32
Women's features.....	26 ⁴
Children's programs.....	25

Kirkpatrick (64) survey in 1932—
Minneapolis

Mail questionnaire	Mean Rank
Program types:	Order
News and information.....	2.7
Classical music.....	3.3
Popular music.....	3.7
Dramatic programs.....	3.8
Sports.....	4.2
Religious talks.....	4.6
Political speeches.....	5.6

Crossley (125, 610) survey in 1932—
National in scope

Interview	Average
Program types:	Rating ⁵
Evening	
Serials.....	16
Rural sketches.....	14
Dance orchestras.....	12
Musical reviews.....	11
Dramatic sketches.....	10
Concert orchestras.....	9
Novelty programs.....	9
Comedy teams.....	9
Popular singers.....	8
Talks.....	4

Crossley [*Continued*]

Daytime	Average
Serials.....	Rating
Concert orchestras.....	7
Dance orchestras.....	4
Popular singers.....	4
Dramatic sketches.....	4
Talks.....	3

Forker (252) survey in 1931—
California

"Own observation"

Program types:	
Dance orchestras	
Semiclassical orchestras	
Comedy entertainers	
Athletic reports	
Classical features, including operas and symphonies	
Talks, including educational, scien- tific, travel, and news talks	
Religious programs	
Children's programs	
Domestic-science programs	
Market reports	
Physical exercises	

Council for Adult Education (316)
survey in 1931—
Minneapolis

Questionnaire

Program types:	Per Cent ⁶
Comic characters.....	53
Popular music.....	40
Athletic contests.....	39
Dance music.....	37
Classical music.....	35
Light drama.....	31
News flashes.....	26
Plays.....	17
Church services.....	15
Church music.....	13

Program types reclassified:⁷

Music.....	26
Entertainment features.....	23
Current topics.....	15
Drama.....	10
Education.....	9
Religious.....	6
International programs.....	6
Domestic affairs.....	5

⁴Percentage of women only.
⁵These rankings were obtained by averaging the number of mentions for programs of the type listed. Types with less than three representatives were omitted in the evening listing. These included minstrel, mystery drama, news topics, concert singer, all of which ranked high.

⁶The first 10 programs in order of rank. The figures give percentages of total adults mentioning these program types among their first five preferences.

⁷Figures give percentage of total mentions in first five preferences classifiable under each program type.

In order to summarize the information contained in the various survey reports, a composite table has been prepared by comparing the rank order of the program types in the different lists. The programs are arranged in this composite table according to the median of their ranks in the original lists. Averaging the ranks resulted in practically the same order as taking the median. Rank orders in the Starch survey were halved because of the length of the list; medians and averages were computed only for those lists including the program type in question.

The composite ranking of programs is as follows:

Program types:	Median Rank Order
Music.....	2.5
Popular music.....	2
Classical music.....	4.5
Comedy.....	2.5
Dramatic programs.....	3.5
Sport broadcasts.....	4
Talks (general).....	6
Religious programs.....	6.5
News and market reports.....	7 ⁸
Educational programs.....	7
Children's programs.....	7.5
Special features.....	8.5
Women's programs.....	10

In Sweden, in 1928, one hundred fifty thousand listeners gave their opinions upon the relative interest attached to various program items; 40 per cent were definitely in favor of series of talks. In fact, only popular songs and old-time dance music were more appreciated (79). In Finland, a questionnaire drew replies from forty-two thousand persons in 1929; 65 per cent expressed the desire that more time be given to educational subjects (613). Palmer's survey at Chicago showed that sport events and musical programs far out-ranked all other types of programs in popularity with all classes of listeners (310). A department store in testing out a program found out that more than three-fourths of its customers preferred musical programs to others (45). An inquiry among more than twenty thousand listeners led to the selection of an all-musical program with a well-balanced orchestra playing concert, dance, march, operatic, and semiclassical selections (535). Sixty-two per cent of broadcasting retail stores included musical numbers in their programs according to the Dartnell report (45).

Note 91.—In other surveys, radio subjects used most in the schools were determined by report forms or questionnaires. The first-semester programs of the Wisconsin School of the Air which had the greatest number of listeners were story time with song, art appreciation, and health and rhythmic. The smallest number of listeners followed the talks by government officials and those on girls' problems in the home and on poetry (626).

In 58 per cent of the cases where schools used radio, it was for music, according to a survey by Arnold in 1930. Social studies accounted for 24 per cent of the use; science, 10 per cent; language, 5 per cent; physical education, 2 per cent; and art, 1 per cent (5). The use of radio by teachers depends

⁸News broadcasts alone would rank higher than general talks.

upon what is available, and these rankings do not mean that the assistance of radio in teaching social studies is intrinsically more desirable than for art appreciation or languages. In an English survey of educational broadcasting, replies showed that subjects in the following order were considered most suitable for radio presentation to schools: music appreciation, geography and travel, literature, health and hygiene. Only a little interest was manifested in safety, spelling and grammar, domestic science, and vocational guidance. Nature study and science, dramatics, civics and citizenship, and current events were all up in the list.

Note 92.—The letters of criticism received by WOL showed much interest in hearing classical music. More semiclassical music, more marches, and more organ selections were asked for in about equal numbers of letters. Letters mentioning crooners or sopranos requested that they be taken off of the air (481). Robinson found a general interest manifested in old-time music. Even those groups which expressed a primary preference for dance and jazz music put old-time music in second place (324).

For those broadcasters who are desirous of appealing to the large audience which enjoys "old-fashioned songs and hymns" the results of two polls may be of interest. A Dupont poll showed that the five most popular standard songs were "Silver Threads among the Gold," "When You and I Were Young, Maggie," "Let Me Call You Sweetheart," "Wild Irish Rose," and "The End of a Perfect Day" (516). In a similar poll, Seth Parker asked listeners to submit their ten favorite hymns. The following hymns were the most frequently mentioned among the more than six hundred different hymns sent in: "The Old Rugged Cross," "Nearer My God to Thee," "Abide with Me," "Lead Kindly Light," "Rock of Ages," "Jesus Lover of My Soul," "In the Garden," "Onward Christian Soldiers," "Church in the Wildwood," and "Let the Lower Lights Be Burning." "The Old Rugged Cross" received almost twenty-seven thousand votes (536).

Note 93.—The ten most frequently mentioned programs for the years 1931 to 1934 according to the Co-operative Analysis of Broadcasting (623) were:

Programs	Date of Starting	Duration in Minutes	Times per Week
April-May, 1931:			
Amos 'n' Andy	June, 1929	15	6
Lucky Strike (Saturday)	Prior to March 1, 1930	60	1
Fleischmann	September, 1929	60	1
Tastyeast Jesters	Prior to August, 1930	15	3
General Electric	Prior to March 1, 1930	60	1
Chase and Sanborn	November, 1930	60	1
Soconyland	Prior to March 1, 1930	30	1
Palmolive	Prior to March 1, 1930	60	1
Coco-Cola	Prior to March 1, 1930	60	1
Camel	July, 1930	60	1
April, 1932:			
Amos 'n' Andy	June, 1929	15	6
Chase and Sanborn	November, 1930	60	1
Eno Crime Club	November, 1931	30	2
Sherlock Holmes	November, 1931	30	2
The Goldbergs (sponsored)	May, 1931	15	6
Myrt and Marge	November, 1931	15	5

Fleischmann.....	September, 1929	60	1
Seth Parker.....	Prior to March 1, 1930	45	1
Voice of Firestone.....	July, 1931	30	1
Sinclair Minstrels.....	March, 1932	30	1
April, 1933:			
Chase and Sanborn.....	November, 1930	60	1
Lucky Strike (Jack Pearl)...	October, 1932	60	1
Texaco Fire Chief.....	May, 1932	30	1
Captain Henry's Maxwell House Show.....	October, 1932	60	1
Fleischmann.....	September, 1929	60	1
Ben Bernie.....	July, 1931	30	1
Robert Burns (Burns and Allen).....	February, 1932	30	1
Amos 'n' Andy.....	June, 1929	15	5
Myrt and Marge.....	November, 1931	15	5
Cities Service Concert.....	Prior to March 1, 1930	60	1
March, 1934:			
Chase and Sanborn.....	November, 1930	60	1
Captain Henry's Maxwell House Show.....	October, 1932	60	1
Fleischmann.....	September, 1929	60	1
Gulf Headliners.....	May, 1933	30	1
Texaco Fire Chief.....	May, 1932	30	1
Bakers' Broadcast.....	October, 1933	30	1
Ben Bernie.....	July, 1931	30	1
Amos 'n' Andy.....	June, 1929	15	5
Sinclair Greater Minstrels...	March, 1932	30	1
Cities Service Concert.....	Prior to March 1, 1930	60	1

In 1931 and in 1933 specific programs were selected for their excellence by radio editors in the *New York World-Telegram* poll, each according to its own classification; they were as follows:

	1931	1933
Symphony orchestra.....	Philadelphia	Philadelphia
Singer:		
Male.....	Morton Downey	Bing Crosby
Female singer.....	Kate Smith	Ruth Etting
Male classical and semiclassical....	James Melton	Lawrence Tibbett
Female classical and semiclassical..	Jessica Dragonette	Jessica Dragonette
Dialogue act.....	Amos 'n' Andy	
	Rise of Goldbergs	
Comedian.....		Jack Benny
		Eddie Cantor
News commentator.....	Lowell Thomas	Edwin C. Hill
	Kaltenborn	Lowell Thomas
Dramatic program.....	"Sherlock Holmes"	"March of Time"
	"March of Time"	"First Nighter"
Three dance orchestras.....	Guy Lombardo	Guy Lombardo
	Paul Whiteman	Wayne King
	Ben Bernie (253)	Fred Waring (456)

The fifth poll by *Variety* (in the fall, 1933) placed the following programs at the top of the list: Fleischmann Yeast with Rudy Vallee; Amos 'n' Andy; Burns and Allen and Guy Lombardo; "Maxwell House Showboat"; Whiteman-Jolson Revue; Jack Benny; Will Rogers; Ben Bernie; Fred Allen; Jack Pearl. Eddie Cantor and Ed Wynn had not returned to broadcasting when the poll

was made (556). Fleischmann Yeast with Rudy Vallee, Amos 'n' Andy, Burns and Allen and Guy Lombardo, and Ben Bernie were in a 1932 (spring) poll (434).

Note 94.—Several surveys on children's preferences for programs have been made. Ryan in a questionnaire survey asked nine hundred seventh- and eighth-grade pupils in the Peoria public schools in December, 1931, to "underline [in a prepared list] the programs to which you like to listen." The programs receiving the most mentions were Amos 'n' Andy, football and baseball broadcasts, True Story, dance music, Little Orphan Annie, Harold Teen, Lucky Strike, Mystery Hour, Rudy Vallee, "Death Valley Days," and so on. The total list contained such children's programs as "Lady Next Door," Skippy, and Air Juniors. The Damrosch program came fiftieth in choice (726).

In *Child Study* for April, 1933, the results of a study in a school at Scarsdale, New York, were published. Children in Grades III to VII listened most to these programs: Chandu, Skippy, Eddie Cantor, Little Orphan Annie, Buck Rogers, Amos 'n' Andy, Goldbergs, Captain Jack, Myrt and Marge, Lone Wolf Tribe. They did not necessarily enjoy them most, however. Eddie Cantor rated first in enjoyment; Amos 'n' Andy rated below the first forty (496). A study of similar children in the Ohio schools (664 pupils in Grades I to VIII in the spring of 1933) showed that the following six programs occurred within the first ten best-liked programs for each grade-level: Chandu, Little Orphan Annie, Gene and Glenn, Amos 'n' Andy, Eddie Cantor, and Crime Clues. Programs rated according to a like-dislike scale showed this order: Eddie Cantor, Gene and Glenn, Crime Clues, Little Orphan Annie, "Death Valley Days," Old Man Sunshine, Chandu, Amos 'n' Andy, and Tarzan (67). Results for one thousand pupils in a New Jersey high school (spring, 1933) showed the eleven favorite programs to be: Chase and Sanborn (Eddie Cantor), Myrt and Marge, Burns and Allen, Lucky Strike, Eno Crime Club, Five-Star Theater (Marx Brothers), Jack Pearl, Lowell Thomas, WOR Minstrels, Buck Rogers, and the "March of Time" (271).

Note 95.—Daylight saving may be looked upon as a complicating factor in judging the value of hours. In the Crossley survey it was found that daylight saving plays havoc with chain programs. Certain programs lose their listeners, while others carry them with them, for example, Amos 'n' Andy (609). Here is a chance to test program popularity against hour popularity.

In 1932 the *National Broadcast Reporter* made inquiry of the directors of radio stations as to the hours which they had found most valuable. They were asked to list hours of first, second, third, and fourth choice and also mention those hours which were of special importance in reaching men, women, children, and rural listeners. In Table V are reproduced the hours mentioned by stations in eastern, central, and Pacific time zones. Hours given in ordinary type are afternoon or evening hours; those in italics are morning hours. Some of the smaller stations felt that they rendered greater service during the daytime than the evening. In other cases stations did not broadcast during all day and evening hours; this restricted their preference. Since the data of the *National Broadcast Reporter* were not gathered on a standard form, stations grouped hours together in giving first-choice periods; thus one station counted one hour as its best time; whereas another station counted three consecutive hours as its first choice.

MEASUREMENT IN RADIO

TABLE V
THE BEST HOURS FOR BROADCASTING
(Data obtained from replies to circular letter sent out by the *National Broadcast Reporter*, 1932)

Station (1)	Power (2)	First Choice (3)	Second Choice (4)	Third Choice (5)	Fourth Choice (6)	Men (7)	Women (8)	Children (9)
Eastern Standard Time*								
Yankee.....	Network	8:00-11:00						
WCAP.....	500	6:30-7:00	7:15-8:15					5:00-7:00
WFBL.....	1,000	8:00-10:00						
WCSH.....	1,000	7:30-10:00	6:30-7:30	10:00-11:00				4:30-6:00
WIS.....	500	7:00-10:00	7:30-8:30 †	9:00-12:00			9:00-12:00	
WGAR.....	500	8:00-9:00	7:30-8:30	7:00-8:00	8:30-9:30		M and A †	
WBEN.....	1,000	7:30-9:30	6:00-7:30					
WHAM.....	5,000	8:30-9:00						
WSPD.....	1,000	7:00-10:00	6:00-7:00	9:00-11:00	Early A †			
WROC.....	100	6:00-10:00	8:00-9:00	10:00-11:00		6:00-10:00	8:00-1:00	6:00-7:30
WDBJ.....	250	7:00-8:00	8:00-8:30	12:00-1:00	10:00-11:00		9:00-10:00	
WKJC.....	100	6:00-8:00	Early A †	9:30-10:00			Late M, Mid-A †	
WLW.....	50,000	7:30-10:00						
WWJ.....	1,000	Early E †				Early M †	9:00-12:00	4:00
WFDV.....	100	12:00-2:00	7:00-9:00	7:00-9:00	12:00-1:00		4:00	
WMBR.....	100	10:00-1:00				6:30-8:00	10:00-12:00	
WSAZ.....	100	6:00-8:30	12:00-2:00	4:00-6:00	6:00-9:00	6:30-8:00	10:00-12:00	
WPRO.....	100	A. §					10:00-12:00	

*Italicized hours are morning hours. Hours in ordinary type are afternoon or evening hours.
 †Time following Sunday lunch. §Sunday.
 ††The following abbreviations are used in this table: M, morning; A, afternoon; E, evening; and N, noon.

TABLE V—[Continued]

Station (1)	Power (2)	First Choice (3)	Second Choice (4)	Third Choice (5)	Fourth Choice (6)	Men (7)	Women (8)	Children (9)
Central Standard Time*								
KOIL.....	1,000	6:30-10:00	5:00-6:00	12:00-1:00				
WHBU.....	100	11:30-12:30	7:30-8:30	5:15-5:45				5:15-5:45
WTMJ.....	1,000	7:00-9:00	Mid A†					
WNAX.....	1,000	7:30-8:30	8:30-9:30				9:00, 3:00-3:30	
KTHS.....	10,000	8:00-10:00	12:00-1:00	7:00-8:00			9:30-12:00	
KFDM.....	500	6:00-7:00	9:00-10:00	7:00-8:00	10:00-11:00			
KMBC.....	1,000	8:00-9:00	7:00-8:00	12:30-1:00§		7:00-10:00	9:00-10:00	7:30-8:00
KWK.....	1,000					6:00-9:00	4:00-5:00 M and A†	5:00-6:00 Late A†
WOWO.....	10,000	Early E†						
KMOX.....	50,000	8:00-11:00	6:00-8:00	11:00-1:00	6:00-8:00			
WIBW.....	1,000	7:00-9:00	9:00-10:00	11:30-12:30	7:00-8:00		9:00-10:00	
KRMD.....	50	Early E†	N†	7:00-12:00	A†			
WLS.....	50,000	7:00-10:00	6:00-7:00	N†			9:00-10:15	7:00-9:00
KFH.....	1,000	7:00-10:00					1:00-3:30	
WACO.....	1,000						A†	
WMAQ.....	5,000	6:00-11:00					10:00-11:30	
KTBS.....	1,000	7:00-10:00	8:00-10:00	12:00-1:00			2:00-5:00	
							8:00-10:00	
Pacific Coast Time*								
KFOX.....	1,000	7:00-8:00	6:00-7:00	11:30-12:30	8:00-9:00		10:00-1:00	
KNX.....	5,000	7:00-10:00						
KXRO.....	100		12:00-1:00	6:00-7:00	7:00-8:00		10:00-11:00	
KGA.....	5,000	6:00-11:00	9:00-6:00	6:00-9:00				

To permit a general résumé, and to equalize comparisons as far as possible, the results for various surveys have been entered in Table VI in rank order. The best hour, that is the preferred hour or the hour during which most people listen, has been given the lowest rank 1, while the poorest hour with the fewest number of listeners has been given the highest rank. In the case of the data of the *National Broadcast Reporter* for eastern-time stations, eight to nine in the evening was the best hour while two to four in the afternoon and eleven to twelve in the evening were the least desirable hours. The three hours were equally poor. In most cases the data have not been complete for eighteen hours. In such cases the hours have been ranked as far as data were available. It is interesting to note how similar the rankings for various surveys are, although some of them were made in widely differing ways. The rank correlation between the data of the *National Broadcast Reporter* from stations on eastern time and central time was .91, which shows good agreement. The product-moment correlation between the original figures for Philadelphia and Milwaukee surveys was .94. The Philadelphia survey was made several years ago by asking listeners when they usually listened. At Milwaukee the simultaneous telephone method was used to find out the actual number of persons listening at specific hours.

It must be borne clearly in mind that the results for different surveys given in this section are not figured on comparable bases. In some cases, specific figures are given for each hour. In others, figures are given for larger periods of time; and in still others, the quarter-hour is used as the basis. Furthermore, some of the results are given in terms of the number of listeners who tuned in once during any portion of the total period of time. Other results are given in terms of the average sets turned on at any particular time during the evening.

In the Minneapolis survey results were broken down for three-hour periods and showed that between six and nine in the morning 19 per cent listened; between nine and twelve, 14 per cent; between twelve and three, 11 per cent; between three and six, 15 per cent; between six and nine, 67 per cent; and between nine and twelve, 45 per cent. This survey was a composite return from both mothers and fathers of school children (316). At Syracuse a survey was carried throughout the day showing that between six and eight in the morning, 9 per cent listened habitually; between eight and ten, 28 per cent; between ten and twelve, 29 per cent; between noon and two, 26 per cent; between two and four, 33 per cent; between four and six, 38 per cent; between six and eight, 86 per cent; between eight and ten, 87 per cent; and between ten and twelve, 48 per cent (476).

Hettinger and Mead's survey at Philadelphia showed that in the evening seven to nine were the best hours with approximately 90 per cent of the total radios on (57). The average hourly load was about 12 per cent for the morning (eight to twelve) audience, and 22 per cent for the afternoon (twelve to six) audience, and 67 per cent or above for the evening (six to twelve) audience (56). A similar study at Buffalo found the highest proportion of listeners tuned in from seven to eight o'clock in the evening. This held true for all four economic classes investigated (321). At the highest point in the morning, 18 per cent of the Buffalo audience was tuned in, and 25 per cent at the

TABLE VI
HOURS OF THE DAY RANKED ACCORDING TO BROADCASTING IMPORTANCE
AS DETERMINED BY VARIOUS SURVEYS

Name of Survey	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Berkeley, Calif., Daytime Hours (84)	Stockton, Calif., Daytime Hours (84)	Minneapolis Three-Hour Periods (316)	Philadelphia Monday to Friday (57)	Buffalo Monday to Friday (96)	National Broadcast Reporter Central-Time Stations	National Broadcast Reporter Eastern-Time Stations	Syracuse Two-Hour Periods (476)	WOSU Selected Hours (73)	Milwaukee Simultaneous Survey (120)
Date of survey	1929	1929	1929	1931	1931	1932	1932	1932	1932	1932	1934
Morning:											
6:00-7:00					18	18	12.5	15			
7:00-8:00	15	14		17	17	17	8	11	17		15
8:00-9:00	9	7	8	16	16	16	12.5	7.5			14
9:00-10:00	10	8		15	15	13	6	9.5	13		13
10:00-11:00	12	10	14	13	11	11	8	6			11.5
11:00-12:00	8	9		14	12	12	10	9.5	11		11.5
Afternoon:											
12:00-1:00											
1:00-2:00	7	11		9	14	14	5	5		3	6
2:00-3:00	17	17	17	11	15	15	16	12	15		10
3:00-4:00	11	13		10	10	10	16	17			
4:00-5:00	13	15		7	7	7	16	17	9		7.5
5:00-6:00	14	16	11	8	8	8	16	13.5	7		7.5
6:00-7:00	16	12		6	6	9	11	13.5		6	5
Evening:											
6:00-7:00											
7:00-8:00				4	4	5	4	4	3	4.5	1.5
8:00-9:00			2	1	2	2	2	2		2	3
9:00-10:00				2	1	1	1	1	1	1	4
10:00-11:00				3	3	3	3	3			
11:00-12:00			5	5	4	4	8	7.5	5	4.5	1.5
				12	6	6	16	17		7	

*To render comparison with other figures easy, the most popular daytime program has been given a rank of 7.

highest point in the afternoon for week days. In the evening the audience was 88 per cent, and after ten o'clock it dropped rapidly (96).

At Boston, according to a survey made by a store some years ago, 26 per cent of the set owners listened in the morning, 61 per cent during the afternoon, and 97 per cent between six o'clock in the evening and midnight (45). A survey made more recently at Pittsburgh showed that 38 per cent of those with radios listened in the morning, 59 per cent in the afternoon, and 71 per cent in the evening (490). According to the Dartnell report, 46 per cent of the retail stores broadcast in the evening, 34 per cent in the morning, 12 per cent in the afternoon, and 8 per cent broadcast in combinations of those periods. The most popular hours noted were 8:30 to 9:30 A.M., 10:30 to 11:30 A.M., 6:30 to 7:30 P.M., and 9:00 to 10:00 P.M. (45).

A survey by Bevis and Amos using the simultaneous telephone method between 7:30 and 10:00 P.M. gave the results by quarter-hour intervals. The percentage of sets turned on at any particular time varied only from 42 to 54 during this entire period, showing that practically any time between 7:30 and 10:00 P.M. is suitable for broadcasting programs to the "largest" audience (13). At Omaha, between 6:30 and 9:30 P.M., the percentage of operating radios varied from 40 to 60 with the greatest number on between 8:30 and 9:30 P.M. (288). Crossley national figures have shown that approximately 20 per cent of the total sets were in use at 6:00, 40 per cent at 8:00, and 50 per cent (the maximum) at 9:00 P.M. The best hours were from eight to ten P.M., and the decline in audience after ten o'clock was rapid (504). Figures given for the San Francisco Bay Cities telephone survey showed 60 per cent listeners for six to seven in the evening; 63 per cent for seven to eight; 73 per cent for eight to nine; and 60 per cent for nine to ten (12). In a 1927 survey of one thousand Chicago residents, Palmer found that the peak hour was eight to nine in the evening, with seven to eight following closely (310). Starch's survey, several years ago, showed that the greatest amount of listening occurred between seven and eleven in the evening, with a maximum between eight and ten (101).

In the Major Markets survey, persons with radio sets in five cities were questioned and it was found that on the average 43 per cent had listened in the morning to some radio program (715). The Pacific-coast survey was made by interviewing radio homes at Berkeley and Stockton, California. At Berkeley it was found that 41 per cent of the families had listened from twelve noon to one, which was the hour at which most listening was done. At Stockton, 36 per cent had listened from eight to ten and from eleven to twelve in the morning, which were the hours when most daytime listening was done in this city (84). When the hours at Berkeley and Stockton were ranked in accordance with the amount of listening, this ranking of the results for the two cities showed a correlation of .70, which is fairly significant. In a university-station survey, listeners were asked to check hours when they preferred to listen to educational talks and programs and when they could best listen to educational talks and programs. The results for both questions were in substantial agreement. Results for the evening hours and noon hour (the only hours included in the survey) were: twelve noon, 14 per cent; five to six, 6 per cent; six to seven, 11 per cent; seven to eight, 26 per cent; eight to nine, 28 per cent; nine to ten, 11 per cent; and ten to eleven, 4 per cent (73).

For Milwaukee a simultaneous telephone survey showed the following six week-day averages for the percentage of radio-set owners at home having their sets turned on: in the morning, seven to eight, 8 per cent; eight to nine, 11; nine to ten, 18; ten to eleven, 21; eleven to twelve, 21; in the afternoon, twelve to one 31; one to two, 24; two to three, 27; three to four, 27; four to five, 26; five to six, 37; six to seven, 51; seven to eight, 50; eight to nine, 46; nine to ten, 51 (120).

Note 96.—Brisacher and staff give the results of a Pacific-coast survey of women showing that in the morning hours from seven to eight the radio was turned on by 11 per cent, from eight to nine by 21 per cent, nine to ten by 16 per cent, ten to eleven by 18 per cent, eleven to twelve by 23 per cent. From twelve to twelve-thirty was mentioned by 25 per cent while twelve-thirty to one was mentioned by 28 per cent. The afternoon hours were mentioned by the following percentages: one to two by 26, two to three by 30, three to four by 46, four to five by 48, five to six by 41 (15). Other information on listening habits of women showed that 46 per cent of all women interviewed used their radio sets regularly every morning (551), while a department store found that 55 per cent of its customers listened to daytime broadcasts (45).

Note 97.—In a survey of the summer radio audience at Philadelphia, Hettinger and Mead found that the amount of listening on Saturday and Sunday was somewhat less than for the other days of the week. When away on weekends, vacationists did not listen much to the radio (57). Bevis and Amos report Wednesday evening as the preferred time (13). Kellogg and Walters determined that Monday, Wednesday, and Friday were the best evenings for housewives, Monday being especially good. Tuesday and Saturday afternoons had a slightly greater number of listeners than the other week-day afternoons, but not as many as Sunday. In the morning Sunday had also the highest percentage of listeners. Saturday was low, while Monday had only a few more morning listeners than Saturday (282). Almost all of the persons interviewed in the survey of KDKA had no choice of days for listening. This was verified by the even number of distributions of the mention of programs for all days (62). In another Pittsburgh survey conducted several years ago, it was found that 48 per cent listened more on some days of the week than on others, while 47 per cent did not. The ranking of the days was Sunday, Saturday, Monday, Friday, Tuesday, Thursday, and Wednesday (102).

Note 98.—Bevis and Amos worked out a relationship between the listener's knowledge of the program and his looking at the radio page. Of those persons who had looked at the radio page on the day of the interview, less than one out of five did not know the program to which he was listening, while almost one out of three of those who had not looked at the newspaper page was unable to name anything. Furthermore, 49.5 per cent of those who had looked in the newspapers were able to name the advertisers of the programs to which they were listening, while only 34.4 per cent of all persons, including those who had looked in the newspaper and those who had not, could name the advertisers of the programs to which they were listening. Any conclusion, however, as to the effectiveness of the newspaper page as a publicity medium for radio must be withheld. A possible explanation for these figures may

be that those persons who were most interested in the radio programs and already knew the most information about them were the ones who were interested enough to look into the newspaper to check the exact times or inspect the general list.

Note 99.—In looking over the results of a survey at Omaha, the author was unable to note any particular after effects which popular programs produced in the audience for a particular station. The deciding factors seemed to hinge more on the popularity of competing programs than hang-over of the audience. Nevertheless, evidence from a Pittsburgh survey may cast light on this point. The question was asked, "Are you in the habit of turning on your favorite station and letting the programs run right along?" Of those who answered, 41 per cent said "yes" and 45 per cent said "no," while the rest of the answers to the question were indefinite (102).

CHAPTER X

Note 100.—Questions on the advertising and program content of five nationally broadcast programs were asked of college students, high-school girls, housewives, and business men in an experiment by Gaskill. Tables VII and VIII show the rankings of these programs as determined from two different tests, each containing 50 questions, taken by about 250 persons in all. The highest program was ranked at 100 and the others in terms of this. In Column 2 of Table VII figures show the memory of the listeners for program content as compared with that for advertising content. The fact that the ratios were all 1 or over indicates that more program content was remembered than advertising content. When the relative amount of time devoted to advertising and program content in the ordinary programs is considered, then it is probable that memory for advertising content was superior to that for program content. The two programs with the greatest and least percentages of time devoted to advertising showed the least advertising effectiveness as determined by the ratios. This tends to confirm statements that the effect of advertising is not determined by the quantity alone.

Two of the programs, Prince Albert and Blackstone, advertised products used presumably by men only. It is, therefore, interesting to compare the ratios of the knowledge of men and women for the five programs with respect to program and advertising content. These ratios are given in Column 3 of Table VII and Column 2 of Table VIII. The memory scores of the men were divided by those for the women. The programs about which men were more informed than women can be listed in order of rank: Prince Albert, Chase and Sanborn, and Blackstone.

In correcting the ratings for factors such as amount of time on the air per week, percentage of time devoted to advertising, and amount of space (magazine and newspaper) advertising, the relative ranking of the programs both as to program content and memory content, as given by Gaskill, was almost completely changed (personal report, also 258).

Note 101.—Worcester analyzed the summaries made by upper-elementary school children of a radio talk on the prevention of disease. The text of the talk was divided into 125 ideas. The average number of ideas reported by

the children was 14, of which about 25 per cent were wrong. The sixth grade reported more ideas and had a greater percentage of ideas wrong than the eighth grade. Of course, it would be impossible for children to remember all the ideas in a 17-minute talk, and classification of ideas is difficult and arbitrary. Nevertheless, such data do go to show that writers of radio talks may well wonder whether it is worth while to include much material or better to give a few points and repeat them with amplification. Worcester states

TABLE VII
THE RANKING OF PROGRAMS ACCORDING TO MEMORY FOR PROGRAM

PROGRAM	MEMORY FOR PROGRAM CONTENT DIVIDED BY MEMORY FOR ADVERTISING CONTENT	PROGRAM CONTENT		
		Men Divided by Women	Uncorrected Figures	Divided by Number of Quarter-Hours per Week
(1)	(2)	(3)	(4)	(5)
Fleischmann.....	1.1	1.0	100	73
Chase and Sanborn.....	1.7	1.4	94	69
Swift.....	1.0	0.7	75	37
Blackstone.....	1.4	1.0	68	100
Prince Albert.....	1.1	1.8	56	28

TABLE VIII
THE RANKING OF PROGRAMS ACCORDING TO MEMORY FOR ADVERTISING CONTENT

Program	Men Divided by Women	Uncorrected Figures	Divided by Number of Quarter-Hours per Week	Divided by Minutes in Hour Devoted to Advertising	Divided by Amount of Space Advertising
(1)	(2)	(3)	(4)	(5)	(6)
Fleischmann.....	1.0	100	75	82	4
Chase and Sanborn.....	1.6	60	45	48	6
Swift.....	1.1	81	41	44	9
Blackstone.....	1.5	56	100*	100	100
Prince Albert.....	2.0	54	38*	18	18

*Men only. All others are men and women.

further that the children did not remember on the average more than one-third of the general points made in the talk, of which there were eleven.

The proper names in the talk caused a great deal of difficulty. Twenty-two proper names were mentioned in the talk. Of these 8 were not mentioned in the children's summaries, and 8 more were mentioned by fewer than 10 of the 92 children. Of the names frequently given, Jenner was misspelled 30 out of 87 times, Schick 23 out of 30 times, and Pasteur 67 out of 78 times. In considering these results it must be remembered that the children had not been

prepared for the broadcast talk, nor had they been warned that they would write summaries after hearing it. The study duplicated to some extent such conditions as one commonly encounters in the home where the radio is merely switched on the program heard (349).

Note 102.—The following figures are the summary figures for 133 students in four institutions. Results for the different institutions were not in agreement. All figures are given in percentages. The broadcasts covered the period from September to December, 1932.

As an aid in my class work in the social studies in comparison to an equal number of class periods, these lectures have been of:.....	More value.....	29
	Same value.....	49
	Less value.....	22
To me, these lectures have been of:.....	Great interest.....	38
	Ordinary interest.....	47
	Little interest.....	15
In making the campaign issues clearer, these lectures have helped me:.....	Very much.....	38
	Moderately.....	41
	But little.....	21
If I could have voted, these lectures would have been of:.....	Great help.....	62
	Little help.....	26
	No help.....	12
In comparison to my class instruction, these lectures have been:.....	More interesting.....	22
	Of same interest.....	38
	Less interesting.....	40

Here a fact becomes evident which was pointed out in Chapters II and IV. All ratings gain in significance in so far as they are comparative. Comparisons represent alternatives which can be acted upon.

Note 103.—Still another experiment, applying memory tests as a measure of the effectiveness of styles of speech comes from the University of Wisconsin Department of Speech. In this study, three speeches—formal, informal, and dialogue in form—were constructed, a paragraph at a time, from each of three separate sets of standardized facts. In their final form the speeches were of approximately the same word length, type of facts, number of facts, position of facts, repetition of facts, distribution of facts, but in three distinct styles. These speeches were given over a public-address system in a speech laboratory to 73 college students, divided into three groups so that each speech might be presented first, second, and third, respectively, thus eliminating the factor of order of presentation. At the end of each speech, completion tests for recall were given. On the basis of this study, the investigators concluded that "any oral style may be used in radio broadcasting, that has as its end instruction, with the assurance that style in itself will not materially affect the recall of facts on the part of the auditors, provided they are college students" (244, 710). As is necessary in all such experiments, the conclusions must be restricted to the type of persons who acted as subjects in the experiment.

Note 104.—One experiment showed that half of those persons participating in the experiment could memorize a hundred words of prose as rapidly by hear-

ing them read as by reading them. Most of the persons remembered what they had heard better, even though they learned more quickly by seeing. In another study, it was found that directions heard once were remembered to a significantly higher degree than those read once. In a third study, memory for news material heard once was compared with memory for the same material read once. Inconclusive results indicated that the visual method was slightly superior to the oral method. It is necessary to note the relation between these results and the way in which we ordinarily obtain the same information. As Worcester points out, we read news accounts more commonly than we hear them, but we are given directions orally more often than in printed form (349).

Note 105.—The discussion in the text has been concerned with memory for material presented visually and auditorially. Of equal importance is the preference of the audience with regard to the two types of presentation. Cantril and Allport obtained students' judgments to the effect that passages were more interesting and comprehensible when heard over the radio than when read in printed form (224). In controlled experiments they and Carver found that individuals preferred to hear funny stories and short literary prose passages over the radio rather than to read them. Individuals were better able to detect grammatical errors in sentences when read than when heard (123). The same investigators sent questionnaires to a cross section of the population; replies indicated that eight times as many people would prefer to hear a person talk over the radio than to read his speech (732).

Note 106.—Thurstone used the method of "paired comparisons" in determining attitudes toward nationalities before and after seeing certain motion pictures. Persons taking the test were told, "This is a study of attitudes toward nationalities. You are asked to underline one nationality of each pair that you would rather associate with. For example, the first pair is: Englishman-Armenian. If, in general, you prefer to associate with Englishmen rather than Armenians, underline *Englishman*. If you prefer, in general, to associate with Armenians, underline *Armenian*." One test included 23 nationalities in the list, making a total of 237 comparisons of the "Englishman-Armenian" type. After statistically treating comparisons of this type it is possible to assign values on a linear scale showing the preference of the persons taking the test for each specific nationality (94). Thurstone's methods of statistical treatment will not be discussed here; they are complicated and time-consuming in execution. For this reason it is important to note that Weedon found close relationships between rankings of paired comparison items treated by the Thurstone technique and her own much simpler method of percentage of preference (110).

Note 107.—There were 419 men and women in the group which listened to the radio, and 45 men and women in the smaller control group which did not hear the radio talks. A test was given before and after the series of radio programs. In the first part of it, suggestions for the relief of unemployment were asked for. The radio group gave on the average 4.5 suggestions per person before hearing the talks and 4.9 afterwards. The average for the control group was the same on both tests, namely, 4.3 suggestions. The radio addresses and discussions therefore added to the number of ideas about unemployment relief possessed by the group of persons studied. This aspect

of the test merely gave the quantitative results in terms of information gathered, and as Robinson pointed out, the kind of ideas obtained is more important than the number. The results of the second part of the experiment seemed to show that popular ideas became more popular as a result of hearing the talks, though this was by no means true in the case of all ideas, and certain popular notions failed to gain appreciably during the talks.

Note 108.—Such a collection of statements does not constitute a scale, but a test. Thurstone has constructed attitude scales from such collections of test statements by having judges rate the attitude expressed by each statement and assigning values to the statements on the basis of a statistical interpretation of the rating. Since the statements in the scale run from one extreme to the other, the problem of the person being measured is to find those statements with which he agrees, rather than saying that this statement is true and this one is not true. Thurstone's scales have been used extensively in measuring the effects of seeing motion pictures and should be of aid in determining the influence of radio (94).

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BIBLIOGRAPHY

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SECTION III

401. *Advertising and Selling*, XVIII (November 25, 1931), p. 32.
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404. *Advertising and Selling*, XVIII (March 16, 1932), pp. 54, 56.
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- *406. *Advertising and Selling*, XVIII (March 31, 1932), p. 49.
407. *Advertising and Selling*, XIX (June 23, 1932), p. 44.
408. *Advertising and Selling*, XIX (August 4, 1932), p. 36.
409. *Advertising and Selling*, XX (April 27, 1933), p. 40.
410. *Broadcasting*, I (October 15, 1931), p. 34.
411. *Broadcasting*, I (October 15, 1931), p. 16.
412. *Broadcasting*, I (November 15, 1931), p. 24.
413. *Broadcasting*, I (December 1, 1931), p. 16.
414. *Broadcasting*, II (January 1, 1932), pp. 16, 38.
415. *Broadcasting*, II (January 15, 1932), p. 14.
416. *Broadcasting*, II (January 15, 1932), p. 7.
417. *Broadcasting*, II (January 15, 1932), p. 10.
418. *Broadcasting*, II (January 15, 1932), p. 24.
419. *Broadcasting*, II (February 1, 1932), p. 8.
420. *Broadcasting*, II (February 15, 1932), p. 15.
421. *Broadcasting*, II (February 15, 1932), p. 8.
422. *Broadcasting*, II (March 1, 1932), p. 15.
423. *Broadcasting*, II (March 1, 1932), p. 14.
424. *Broadcasting*, II (March 1, 1932), p. 8.
425. *Broadcasting*, II (March 15, 1932), p. 19.
426. *Broadcasting*, II (April 1, 1932), p. 10.
427. *Broadcasting*, II (April 1, 1932), p. 11.
428. *Broadcasting*, II (April 15, 1932), p. 2.
429. *Broadcasting*, II (April 15, 1932), p. 30.
430. *Broadcasting*, II (May 1, 1932), p. 6.
431. *Broadcasting*, II (May 1, 1932), p. 25.
432. *Broadcasting*, II (May 1, 1932), p. 34.

433. *Broadcasting*, II (May 1, 1932), p. 9.
 434. *Broadcasting*, II (June 1, 1932), p. 12.
 435. *Broadcasting*, II (June 1, 1932), p. 3.
 436. *Broadcasting*, II (June 1, 1932), p. 4.
 437. *Broadcasting*, III (July 15, 1932), p. 26.
 438. *Broadcasting*, III (August 1, 1932), p. 15.
 439. *Broadcasting*, III (August 1, 1932), p. 14.
 440. *Broadcasting*, III (August 15, 1932), p. 12.
 441. *Broadcasting*, III (September 1, 1932), p. 27.
 442. *Broadcasting*, III (September 15, 1932), p. 19.
 443. *Broadcasting*, III (September 15, 1932), p. 22.
 444. *Broadcasting*, III (October 1, 1932), p. 14.
 445. *Broadcasting*, III (October 1, 1932), p. 19.
 446. *Broadcasting*, III (October 15, 1932), p. 24.
 447. *Broadcasting*, III (November 1, 1932), p. 33.
 448. *Broadcasting*, III (November 15, 1932), p. 16.
 449. *Broadcasting*, IV (January 15, 1933), p. 25.
 450. *Broadcasting*, V (December 15, 1933), p. 11.
 * 451. *Broadcasting*, V (December 15, 1933), p. 12.
 452. *Broadcasting*, V (December 15, 1933), p. 39.
 453. *Broadcasting*, VI (January 1, 1934), p. 14.
 454. *Broadcasting*, VI (January 15, 1934), p. 8.
 * 455. *Broadcasting*, VI (February 1, 1934), p. 32.
 * 456. *Broadcasting*, VI (February 15, 1934), p. 18.
 457. *Broadcast Advertising*, IV (October, 1931), p. 34.
 458. *Broadcast Advertising*, IV (October, 1931), p. 36.
 459. *Broadcast Advertising*, IV (October, 1931), p. 48.
 460. *Broadcast Advertising*, IV (October, 1931), p. 32.
 461. *Broadcast Advertising*, IV (October, 1931), p. 42.
 462. *Broadcast Advertising*, IV (November, 1931), pp. 16, 17, 56.
 * 463. *Broadcast Advertising*, IV (December, 1931), pp. 36, 38, 39.
 464. *Broadcast Advertising*, IV (December, 1931), p. 64.
 465. *Broadcast Advertising*, IV (January, 1932), p. 10.
 466. *Broadcast Advertising*, IV (February, 1932), p. 35.
 * 467. *Broadcast Advertising*, IV (February, 1932), p. 15.
 468. *Broadcast Advertising*, IV (February, 1932), p. 28.
 469. *Broadcast Advertising*, IV (February, 1932), p. 5.
 470. *Broadcast Advertising*, IV (March, 1932), p. 39.
 471. *Broadcast Advertising*, IV (March, 1932), p. 38.
 472. *Broadcast Advertising*, IV (March, 1932), p. 34.
 473. *Broadcast Advertising*, IV (March, 1932), p. 15.
 474. *Broadcast Advertising*, V (April, 1932), p. 9.
 475. *Broadcast Advertising*, V (April, 1932), p. 21.
 476. *Broadcast Advertising*, V (May, 1932), p. 9.
 477. *Broadcast Advertising*, V (May, 1932), p. 33.
 478. *Broadcast Advertising*, V (May, 1932), p. 31.
 479. *Broadcast Advertising*, V (May, 1932), p. 32.
 480. *Broadcast Advertising*, V (June, 1932), p. 16.
 481. *Broadcast Advertising*, V (June, 1932), pp. 8, 9.
 482. *Broadcast Advertising*, V (June, 1932), p. 32.
 483. *Broadcast Advertising*, V (June, 1932), pp. 10, 25.
 484. *Broadcast Advertising*, V (July, 1932), pp. 8, 27.
 485. *Broadcast Advertising*, V (July, 1932), pp. 5, 24.
 486. *Broadcast Advertising*, V (July, 1932), p. 30.
 487. *Broadcast Advertising*, V (August, 1932), p. 4.
 488. *Broadcast Advertising*, V (August, 1932), p. 30.
 489. *Broadcast Advertising*, V (August, 1932), p. 23.
 * 490. *Broadcast Advertising*, V (September, 1932), p. 22.
 491. *Broadcast Advertising*, V (September, 1932), p. 28.
 492. *Broadcast Advertising*, V (September, 1932), p. 30.

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 501. *Education on the Air*. Columbus, Ohio: Ohio State University, 1933. p. 232.
 502. *Education by Radio*, I (September 10, 1931), p. 103.
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 515. *National Broadcast Reporter*, II (May 7, 1932), p. 6.
 516. *National Broadcast Reporter*, II (May 21, 1932), p. 8.
 517. *National Broadcast Reporter*, II (June 4, 1932), p. 6.
 518. *National Broadcast Reporter*, II (June 4, 1932), p. 17.
 519. *National Broadcast Reporter*, II (June 11, 1932), p. 18.
 520. *National Broadcast Reporter*, II (June 11, 1932), p. 17.
 521. *National Broadcast Reporter*, II (June 18, 1932), p. 19.
 *522. *National Broadcast Reporter*, III (July 2, 1932), p. 5.
 523. *National Broadcast Reporter*, III (July 2, 1932), p. 6.
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 *525. *National Broadcast Reporter*, III (July 9, 1932), p. 21.
 526. *National Broadcast Reporter*, III (July 9, 1932), p. 23.
 527. *National Broadcast Reporter*, III (July 16, 1932), pp. 7, 21.
 528. *National Broadcast Reporter*, III (July 16, 1932), p. 22.
 529. *National Broadcast Reporter*, III (July 23, 1932), p. 23.
 *530. *National Broadcast Reporter*, III (July 23, 1932), p. 5.
 531. *National Broadcast Reporter*, III (July 23, 1932), p. 6.
 532. *National Broadcast Reporter*, III (July 30, 1932), p. 20.
 *533. *National Broadcast Reporter*, III (August 20, 1932), pp. 12, 13.
 534. *National Broadcast Reporter*, III (August 20, 1932), p. 18.
 535. *National Broadcast Reporter*, III (August 27, 1932), p. 6.
 536. *National Broadcast Reporter*, III (September 3, 1932), p. 18.
 537. *National Broadcast Reporter*, III (September 3, 1932), p. 24.
 538. *National Broadcast Reporter*, III (September 10, 1932), pp. 8, 14.
 539. *National Broadcast Reporter*, III (September 10, 1932), p. 23.
 540. *National Broadcast Reporter*, III (September 17, 1932), p. 23.
 541. *National Broadcast Reporter*, III (September 17, 1932), p. 20.
 542. *National Broadcast Reporter*, III (September 17, 1932), pp. 6, 22.
 543. *National Broadcast Reporter*, III (September 24, 1932), p. 22.
 544. *National Broadcast Reporter*, III (October 8, 1932), p. 12.
 545. *National Broadcast Reporter*, III (October 17, 1932), p. 18.
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INDEX

INDEX

- Accuracy: memory, 208-10; of survey methods, 227-29
- Activities of listeners: 8, 165-73; attendance, 173-77; children's, 169-70; contributions, 167-68; desire to broadcast, 171; during listening, 202; exhibit materials, 168-69; human-interest stories, 171-72, 271; increased listening, 172; installation of sets, 172-73; mail response, 85; politics, 170-71; practices adopted, 170; preventing listening, 198; protests, 172; reading, 166; scientific studies, 169
- Advantages and disadvantages: mail response, 87, 138; personal interviews, 92-93; questionnaires, 92-93; telephone interviews, 140
- Advertising: 151-63; attitudes toward, 202-204; criticisms, 203-204; direct mention of products, 204-205; goodwill, 152; interest aroused in products, 162-63; knowledge of, 201-202, 286-87; newspapers versus radio, 155-56, 205; products purchased, 161-62, 270; program popularity, 31, 241-42; purpose of, 151; questions on, 141; sales before and after, 152-53; sales compared in territories with and without, 153-54; sales due to, 266-71; similar products in different ways, 155; testimony of clients and advertisers, 162; to whom directed, 204; visual versus auditory, 216-18
- Agricultural extension departments, 116-17
- Agricultural programs: 74, 171; bulletins sent out, 250-51; mail response, 68, 51; presentation, best methods, 192-93; report forms, 255
- American School of the Air, 50-51, 166, 190
- Amos 'n' Andy, 75, 167, 172, 179
- Announcements, advertising, 82, 204-205
- Announcers, men versus women, 193
- Answers: difficult to tabulate, 113; suggested answers, 33-35; unanswered questions, 36
- Arnold, Pauline, 29-30, 41, 140
- Attendance: 173-77; concerts, 174; cooking schools, 177; demonstrations, 176; excursions, 176; football games, 174; libraries, 175; medical treatment, 174; museums, 175-76; public performances of radio stars, 175; schools, 176; stores, 177; studios, 175
- Attention to radio programs, 201-202
- Attitudes: 218-22; adults', 221-22; advertising, 202-204; children's, 219-21; electrical transcriptions, 83; questions, 36, 124; scales, 289-90; sponsored programs, 35
- Audience: available, 10; daily listening, 43-44; location judged by mail response, 76-78; potential, 10, 42-45, 182; program, 10; station, 10
- Available audience, 10, 42-43
- Bevis, Joe, and Amos, J. O., 140-41, 145, 146, 147, 202, 265, 266, 284, 285
- Booklets, 68-69; ratio to listeners, 84-85
- Books, 156-57
- British Broadcasting Corporation, 68-69, 79-80, 81, 84, 108, 109, 110, 119, 120, 158, 174, 223, 245, 247, 262-63
- Calculation: special methods, 42-47; Columbia, 44, 242-43; Frothingham, 42-43, 243-44; KDKA, 43-44, 244; relative audience interest, 45-46, 244-45; WCLO, 44-45, 244-45
- Census: help in making, 171; number of receiving sets, 185
- Character analysis, 72
- Check: questions, 126-27; survey results, 22-25, 148
- Children: activities, 169-70; attitudes, 219-21; clubs, 60, 170, 247; interest, 219-21; letters from, 80, 246; memory span, 212; memory for talks, 286-88; program preferences types, 190-91; program preferences specific programs, 192, 278-79
- Classification: programs, 240; questionnaire, 99; occupations, terms, 32
- Cleveland schools: 121; work sheets, 108

- Clubs: 60, 137; for children, 60, 170
- Coincidental telephone survey, *see* simultaneous telephone survey
- Columbia Broadcasting System: 264-65; discussion of free offers, 249-50; mail tabulations, 58, 246-47; maps requested by mail, 20, 253; Price-Waterhouse surveys, 24, 25, 26, 31, 40, 41, 46, 77, 95, 111, 112, 113, 182-83, 236, 237, 242, 243, 257-58, 272-74; radio-set ownership study, 173, 185; sampling, 20
- Comments: press, 178; solicited, 116-21; spontaneous, 115-16
- Comparison: accuracy of survey methods, 227-29; signal strength and questionnaire results, 272-74; survey results, 19, 24-25, 238; value of survey methods, 47, 227-32
- Concerts, attendance, 174
- Contests: 61-65, 248-49; check-up on results, 62; difficulty of giving rules over radio, 61; essays, 63; improve program, 63-64, 248; Limerick, 63; most distant hearers, 64; prizes, 64-65; ratio of writers to non-writers, 55; stumping radio entertainers, 64; types, 62; uses, 61-62; word lists, 62
- Continuities, judged by mail received, 80-82
- Contributions, 167
- Cooking schools, 176-77, 251-52
- Copies of talks, 67-68
- Cost: 13, 227, 229; per listener, 47; questionnaire compared with interview, 111
- Coverage: definition, 9; factors affecting, 180-82; relation to audience response, 182-83
- Criticisms of: advertising, 203; interviews, 132; mail response, 87; programs, 80-81, 193
- Crossley survey, 5, 25, 29-30, 37, 44, 111, 239, 256, 265, 275, 277-78
- Customers asked: if program heard, 117; reason for their purchase, 156
- Damrosch programs, 84-85, 213, 219
- Data: averaging and grouping, 39-40, 242-43; proper presentation, 38-42, 47
- Dating surveys, 38, 242
- Days of the week, preferred, 196
- Daytime: listening compared with evening, 194-96, 279-85; reception compared with night, 181
- Dealers: questionnaires sent to, 104; reports, 117, 161
- Definition of terms, 9-12
- Dialogue versus straight talks, 81, 82
- Discussion groups: observation in, 133; reports from, 118-19, 136, 262-63
- Division of the sample: reliability test, 22-23; control of interviewers, 23
- Duplication: requests for samples, 53-54; survey results, 24-25
- Economic status: classification of listeners, 32; letter writers, 49-51; persons requesting samples, 52; sampling, 236, 264
- Education: attendance at institutions, 176; attitudes changed by broadcasts, 219-21; booklets distributed, 68-69; discussion groups, 118-19, 136, 262-63; foreign countries, 13; home economics, 209-10; listeners' help in scientific studies, 84, 169; mail analysis for programs, 50-51; objectives, 4; preferences of audience, 189; presentation methods, 211; programs used in schools, 105, 276-77; reading, 166; report forms, 91, 106-109, 119-21; response to programs, 7; schools of the air, 106-10, 119-21; schoolroom learning, 132, 211-14; stations, 13; tests, 109-10; vision versus audition, 215-16, 218
- Elder, R. F., 23, 98, 111, 153, 154, 186, 196, 204, 264, 267-70
- England: appeals for charity, 168; census, 171; number of licenses, 173; programs preferred, 274; programs suitable for schools, 276-77; recording system, 180; scientific information gathered, 169; *see also* British Broadcasting Corporation
- Exhibit materials, 168-69
- Farmers: hours of listening, 195; information obtained, 170; interest in radio, 45; presentation methods desired, 192-93; program preferences, 189-90; seasonal listening, 197; surveys, 21
- Felix, Edgar, 20, 39, 182, 272
- Free offers, *see* offers
- Frequency assignment, relation to signal strength, 181
- Frequency of program, relation to popularity, 192, 197-98
- "Halo" effect, 36-37, 241, 242
- Hang-over of audience from one program to another, 187, 286, 200-201
- Hearing, effect of radio on, 170
- Hettinger, H. S., 24, 123, 128, 131, 186, 188, 240, 241, 246, 274, 282

- Home: observation in, 133; persons at home, 146
- Hours of listening: 194-96, 279-85; activities, 198; age, 195; agreement among surveys, 282, 284; best hours, 194, 279-82; economic groups, 194-95; farmers, 195; number of hours per day, 196; occupations, 195-96; sex, 195
- Houser, D., 32, 52, 124, 203, 210, 218-19, 240
- Housewives: activities preventing listening, 198; advertising, 204; attention to radio programs, 202; hours at home, 12; hours of listening, 195-96; program preferences, 190-91; questions asked of, 36
- Information desired by listeners, 57, 136, 137
- Intelligence of listeners: 222-23; relation to amount of listening, 223
- Interest: relative measurements, 45-46, 244-45; aroused in product advertised, 162-63
- Interests of children, 219-20
- Interview: formal personal interview, 121-32; informal interview, 118; mail response combined with, 43-44, 254; purposes, 122; questionnaire compared with, 93; questions, 122-27; sampling, 127-30; schedule cards, 122-23; telephone interview, 138-49
- Interviewers, 130-32, 146-47
- Interviewing, 147-48
- Installation of radio sets, 172-73
- KDKA, 43-44, 55, 78, 126-27, 244, 253, 254
- Knowledge of programs being heard, 201-202
- Leading questions, 34-35, 96-97, 142, 241
- Letter writers: opinions of broadcasters, 49-50; analysis of mail, 50-51; surveys of the audience, 51-52
- Letters, *see* mail response
- Libraries, 166, 175
- Limerick contests, 55, 63
- Magazines and newspapers, circulation increased, 157-58
- Mail response: 49-87, 245-54; analysis, 49-59, 245-47; appeals for, 70-71; changing programs, 75, 252; clubs and enrollments, 60-61; contests, 61-65; criticism, 87; electrical transcriptions, 83; free offers, 65-70; habits of writing, 52-56; interview combined with, 43-44; location of listeners, 76-78, 253; merchandising, 76, 252-53; names read, 73; number of letters per person, 53-54; number of persons per letter, 54-55, 70; networks, 57-58; opinions on value, 86-87; popularity of stations and programs, 78-80; program building, 80-83; programs specially designed, 71-73; reasons for writing, 56-57; relation to other methods, 84-86, 254; request programs, 73; sales, 85, 163, 271; sampling adequacy, 49-52; seasonal change, 55-56; signal strength, 78; simultaneous telephone survey, 148; sponsors, 58; stimulation of, 59-75; stopping programs, 74-75; telephone calls compared with, 138; uses, 76-84
- Meetings: questionnaires distributed, 101; reports on broadcasts, 120-21
- Memory: 207-18; accuracy, 208, 210, 259, 261; advertising versus program content, 286, classroom versus radio presentation, 212-14; influence on surveys, 29-30, 37, 239, 242; interval before testing, 216-18; platform versus radio speech, 214-15; product association with name of program, 210-11; span, 212; tests used, 207-208; visual versus auditory, 215-18, 288-89
- Mountain homes, 172, 271
- Music: activities, 219; speech compared with, 188; types preferred, 191, 277; validity of preference, 27-29
- Music Appreciation Hour, 108, 213
- National Advisory Council on Radio in Education, 35, 68, 157, 214, 245, 288
- National Broadcasting Company: mail inducements, 59-60, 69; mail response, 55, 56-57, 245, 252; telephone calls, 136
- National League of Women Voters, 68, 104, 119, 221
- Newspaper advertising, 155-56
- Newspaper program listings; percentage of listeners who use them, 200; relation of use to knowledge of program, 285
- New York World-Telegram* poll, 103, 278
- Noise level, relation to signal strength, 181-82
- Novelties, mail response, 69
- Objectives: commercial radio, 3; educational radio, 4; relation to validity, 27

- Observation: by speaker himself, 132; homes, 133; sales counter, 133; schools, 132; studio listeners, 133
- Occupations: classification, 32; letter writers, 49-52, 245; standardization, 16
- Offers: 65-70; booklets, 68-69, 250-51; copies of talks, 67-68; cost, 249; inducement for mail, 59-60, 65-70, 249-52; method of measurement, 65-66; novelties, 69; photographs, 67, 250; response before and after, 70; samples, 69-70; staging the announcement, 66
- Ohio School of the Air: 191, 256; report forms, 107, 260-62
- Ohio State University, 136, 247, *see also* WOSU
- Opinions: collection of, 236; questions on, 96, 97, 124
- Orchestras: attendance at concerts, 174; mail response, 75
- Paired-comparison test, 219-20, 289
- Personal interview, *see* interview
- Personality, judged from voice, 223-24
- Philadelphia, 128, 186, 189, 190, 191, 274, 282, 283
- Photographs, as free offers, 67, 250
- Phrasing, questions, 125-27
- Platform, versus radio speech, 214-15, 224
- Politics, 75, 135, 170-71, 221
- Polls: in magazines and newspapers, 102-104; results, 278
- Popularity, *see* stations and programs
- Potential audience: definition, 10; method of determining, 42-45; signal strength, 182
- Practices adopted, 170, 271
- Preparation of questionnaires, 94-98
- Presentation of data: 38-42; averaging and grouping data, 39-40, 242-43; bases in calculating percentages, 40-41; cost per unit listener, 47; dating surveys, 38, 242; extending the sample, 39; false assumptions, 39; headings, 41
- Presentation of programs: agricultural, 192-93; children's preferences, 190-91; classroom versus radio, 212-14; school programs, 211
- Press comments, 178
- Printed materials: auditory presentation versus, 215-18, 288-89; distributed to listeners, 67-68
- Prizes, for contests, 64-65
- Products, brands used, 154, 267-70
- Program: audience, 10, 46-47; classifications, 32-33, 240; consciousness, 201-202; construction, 63-64, 80-83; criticisms, 193; memory, 29, 208-11; names associated with product, 210-11; presentation methods, 192-93; selection methods, 200-201; tuning habits, 186-87, 201
- Program preferences: 188-92, 274-79; age, 190-91; children in schools, 190-91, 276-77; economic status, 189; farmers, 190; music, 277; occupations, 189-90; sex, 190-91; specific programs, 191-92, 277-79
- Program popularity: advertising and sales, 31, 241-42; judged by mail response, 79
- Pronunciation, affected by radio, 225
- Protests against: changing programs, 75; content of programs, 172; stopping programs, 74-75
- Psychological factors in listening, 207-25
- Publicity: effect on survey results, 31; knowledge influenced by, 285; listeners' use of newspaper listings, 200; memory influenced by, 259
- Purchase of advertised goods, 270; resolutions not to purchase, 204; *see also* sales
- Purposes of surveys, 4-6; concealing real purpose, 256
- Question box, 72
- Questionnaire: 89-113, 255-61; administration, 98; advantages and disadvantages, 92; comment cards, 101-102; cost, 111; defined, 89; distribution, 100-104; follow-ups, 111; interview compared with, 93; mechanical set-up, 97-98; preparing and distributing, 94-98; purpose, 89-92; question content, 95-96; question types, 96-97, 99-100; recipients, 104-105, 255; returns, 111-12, 256; sampling, 98; tabulation, 113; types, 99-106, 258-61
- Questions: attitudes, 36; check (reliability) 97, 126-27; comparison, 35, 219-20; completion, 99-100; content, 95-96, 124-25; difficult, 36; halo effect, 36-37; leading, 34-35, 241; misunderstood, 96, 113; personal interview, 123-27; personal information, 125; phrasing, 125-27, 257; preference versus act, 36; recognition, 99-100; telephone interview, 140-43; types, 33, 96-97, 99-100
- Reading, 156-57, 166
- Recall method: memory influence on, 37; recognition compared with, 263-

- 64; simultaneous telephone survey, 29-30, 239; tests, 207-208
- Receiving sets: income groups, 185; increase in, 173; number in United States, 185; number listeners per set, 199-200; number operated daily, 198-99; percentage ownership, 25; telephone homes, 145-46, 266
- Reception tests, 110
- Recipes, accuracy in hearing, 209
- Recognition method: questionnaire, 259; questions, 99-100; recall compared with, 263-64; roster method, 127; tests, 207-208, 240
- Recording devices, 179-80
- Reliability: questions checked, 97; testing, 22-25, 27; validity contrasted with, 22
- Relative measures, 11: audience, 77; interest, 45-46, 244-45
- Report forms: 105-108; agricultural broadcasts, 255; Ohio School of the Air, 107, 260-62; psychology talks, 35; purpose in using, 90-91; standards, 107
- Reports: dealers, 161; discussion groups, 262-63; impartial survey agencies, 26-27; Ohio School of the Air, 256
- Requests: free offers, 57; information, 57; musical selections, 73, 137
- Returns: questionnaire, 111-12, 256; post cards compared with letters, 112
- Riegel, Robert, 126, 128, 240, 257, 275
- Roster method, 127
- Rural: areas, 77; listeners, 208; surveys, 21; *see also* farmers
- Sales: 151-63; analysis, 6, 266-71; asking listeners, 156, 161-62; automobiles, 159; before and after radio advertising, 152-53; books, 156-57; cemetery lots, 160; dealers' reports, 161; evidences of purchase, 161; examples, 156-160; foodstuffs, 158; houses, 159-60; indirect judgment of, 160-63; magazines, 157-58; mail response relation to, 271; newspapers, 157-58; relation to other measures, 163; territories with and without advertising, 153-54; testimony of clients and advertisers, 162; similar products with and without radio advertising, 155
- Samples (free offers): duplication of requests, 53-54; lack of validity, 30; mail inducement, 60, 69-70
- Sampling: 16-21; age, 129-30; atypical groups, 258; checking on, 236; economic groups, 128, 264; exclusion of certain groups, 17-18; extending the sample, 39, 236; geographical, 19-21, 236; mail response, 49-52; name sources, 21; personal interviews, 127-30; Price-Waterhouse survey, 257-58; questionnaire, 98; rules for, 18-19; sex, 129-30; size of sample, 17, 129, 237; successive, 23; telephone interviews, 18, 143-46; time of year, 130
- Schedule card, for interviews, 122-23
- School pupils: compositions, 109; memory, 211-14, 286-88; questionnaires, 101; *see also* children
- Schools: attendance, 176; classroom versus radio presentation, 212-14; cooking, 176-77; personal observation, 132; programs preferred for, 276-77; reception tests, 110; report forms, 106-108; use of radio, 105
- Scientific studies, help from listeners, 84, 169
- Seasonal variation, 44, 55-56, 197, 246; *see also* summer
- Shift of audience from one program to another, 200-201, 286
- Signal strength: 180-83, 186; daytime and evening, 181, 183; factors affecting transmission, 181-82; location of listeners, 183, 272-74; mail response, 78; opinions of value signal strength surveys, 272; sampling, 20
- Simultaneous telephone survey: 138-43, 264; recall survey relation to, 29-30, 239
- Speakers' personality judged from voice, 223-24
- Special listening groups, sent report forms, 105-108
- Speech: radio lessons on, 120, 225; platform versus radio, 214-15, 224; style effect on audience, 288
- Spelling names, 82
- Stability of audience preferences, 188
- Standardization: coverage, 182; lack of in free offers, 65-66, 250; number in sample, 22-23; surveys, 16
- Starch, Daniel, 35, 129, 189, 197, 203, 274
- Station popularity: coverage and signal strength, 182-83, 186; distance from station, 187; economic classes, 185-86; mail response as basis of judgment, 78-79; versus program popularity, 186-87
- Stations: audience defined, 10; consciousness of call letters, 201; number tuned in, 187, 188; questions on, 126-27