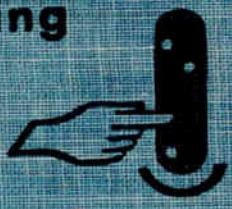
WILLIS

Foundations in Broadcasting

RADIO AND TELEVISION



Foundations in Broadcasting

RADIO AND TELEVISION

EDGAR E. WILLIS

Co-ordinator of Radio
Department of Speech and Drama
San Jose State College

NEW YORK **Oxford University Press**

1951

TO MY WIFE

The one who helped the most

PRINTED IN THE UNITED STATES OF AMERICA

PREFACE

This book has been designed with two purposes in mind: (1) to provide a foundation on which advanced courses in specific phases of radio and television can be based; and (2) to serve as a general introduction to broadcasting for those students who will take no other courses in the field. The first part—dealing with the history, background, and structure of broadcasting—considers radio and television together as two facets of the same general industry. The term 'broadcasting' is used in this book in reference to both radio and television or to either of them individually.

The two media are treated separately, however, as far as the techniques of speaking, writing, and production are concerned. The techniques of radio are covered in considerably more detail than those of television, since now and for some time to come students are likely to have more opportunity to practice the radio arts. The principles of television production, moreover, are still in the process of crystallization; the chapters on this subject merely summarize the practices now in existence, so as to highlight the major problems.

The suggestions for class assignments following each chapter are not intended to provide a basis for a review of the text, but are designed to extend its scope by pointing the way for further study and practice. The assignments are divided into three general types: (1) research papers to be written after library study, radio or television listening with a purpose, or field trips to broadcasting stations and other community enterprises; (2) exercises to develop skill in the various techniques of broadcasting; (3) questions for class discussion. Many other problems and projects will be suggested by those listed. Space has not permitted the inclusion of actual drill material.

Although this book has been designed for study in the order in which it is written, some advantage may be gained by proceeding through Part I and Part II concurrently in order to permit variation

between lecture-discussion sessions and practice periods. In any given part, however, the chapters should be assigned as they appear; it is assumed, for example, that the student studying the chapter on writing has previously read the chapter on sound effects, in which the writer's problems in connection with sound have already been covered. Chapter IX, dealing with the nature of broadcasting, also contains generalizations that are repeated with specific application in the following chapters on techniques. One note regarding the arrangement of the chapters in Part II should be made. The various techniques of radio are considered not in the order in which they are met in preparing a program, but as a student is likely to meet them. Thus, the chapter on speaking opens the section because it is the first broadcasting activity engaged in by the average person.

A number of people have been of assistance to me in the preparation of this book. For counsel on the scope and organization of the text I am indebted to Dr. Hugh Gillis, Chairman of the Department of Speech and Drama, San Jose State College. Dr. Dorothy Kaucher, my department colleague, and Dr. Virgil Anderson of Stanford University also studied the original outline and made valuable recommendations. The following people in the radio and television industry helped by providing special material and information: Mr. Frank Telford, Producer-Director for Young and Rubicam, Inc.; Mr. David Crandall, Director of Studio Productions for KGO-TV; Mr. Floyd Farr, General Manager, and Mr. George Snell, Program Director, of station KEEN. Mrs. Inez Richardson of Stanford University, Mr. Harry Engwicht of the Science Department, San Jose State College, and Mrs. Rupert L. Cortright of Wayne University were helpful in the assembling and checking of material. My thanks are due also to the broadcasting companies and manufacturers of equipment who furnished me with pictures and information.

I express my particular appreciation to several people who offered suggestions based on a reading of the entire manuscript: my department colleagues, Dr. Lawrence Mouat and Mr. Wallace Murray of San Jose State College; Dr. Charles Siepmann of New York University; Dr. Norman Woelfel of Ohio State University; and Dr. Stanley Donner of Stanford University. To the many others, unnamed here, who helped me with their counsel and encouragement, I express my deepest gratitude.

E. E. W.

December 1950

CONTENTS

ILLUSTRATIONS AND DIAGRAMS

PART I

The Pattern of Radio and Television Broadcasting

ONE

The Beginnings of Broadcasting

Radio broadcasting for the public began in this country in 1920. In the years since, it has grown from a mere curiosity to a position of tremendous influence, reflecting our society while at the same time helping to mold it. A few statistics will indicate the important place that radio has assumed in our lives. Over 94 per cent of American homes are now equipped with receiving sets. That is twice the number of homes equipped with such modern conveniences as the bathtub and the telephone. Including home, portable, and automobile receivers, the number of radios has reached the impressive total of 79,000,000, and this figure is constantly increasing despite the competition of television. Each day more than 2500 stations pour 20,000,000 words into the atmosphere, an activity supported by an annual advertising expenditure of $500,000,000.

A recent survey, reported by Mark Woods, President of the American Broadcasting Company, shows that radios are turned on in the average home for more than five hours a day. The programs supply Americans with much of their entertainment, bring information and education, influence buying habits, and may even decide the way a person votes. It is safe to say that, with the exception of working and sleeping, the average American spends more time in listening to the radio than he does in doing anything else.

But although radio is most important as a medium for public broadcasting, its contribution to mankind is not limited to this function. As a sender of messages, it calls policemen to the scene of a crime, assembles fire fighters, maintains contact between land

bases and ships on the high seas, even summons a taxicab to rush a maternity case to the hospital. As radar, it peers through the densest fog to reveal danger to ship or aircraft. As a radio beam, it points an unerring finger home for the wandering aviator. As loran, it gives a ship's navigator an accurate check on his position.

Now radio's near relative, television, has entered the scene. With the number of home television sets expected to rise to 20,000,000 in the next five years, we can assume that people will spend even more time sitting before receiving sets. Broadcasting will have a more vital influence on our lives than ever before.

In this book our main concern is the basic pattern assumed by the radio and television industries and the techniques employed by broadcasters. Before undertaking that study, however, let us make a brief journey into history to trace the events that ushered in the age of radio and television.

The Invention of Radio

As is the case with so many scientific discoveries, no one person can claim complete credit for the invention of radio. One man built on the work of another until the equipment that made modern broadcasting possible was evolved. Its discovery was not even confined to one country. The invention of radio was an international achievement in which the native sons of Scotland, Germany, Italy, Canada, and the United States played an indispensable part.

The Scotchman was a young physics professor named James Clerk Maxwell. He spent much of his life contemplating the mysteries of electricity, magnetism, light, and color. The result of his study was a body of laws, fundamental to the science of radio, which he announced to the world between 1865 and 1873. Maxwell theorized that a mysterious substance called 'ether' fills all of space, even the solid objects of the earth, through which electricity travels in waves at the speed of light, 186,000 miles per second. He speculated, further, that electricity, like light, can be reflected. These theories were made precise and concrete through expression in mathematical formulas, but death came before Maxwell had a chance to test them by actual experiment. Though some of Maxwell's ideas, notably his ether theory, have now been discounted by scientists, his brilliant thinking provided the foundation for further investigation.

A native son of Germany, another physics professor named Hein-

rich Hertz, took the next important step by carrying on a series of experiments based on Maxwell's hypotheses. Between 1885 and 1887 he demonstrated that electricity could be reflected, and he developed what was, in a sense, a primitive radio transmitter and receiver when he caused an electric spark to jump through space a distance of 40 feet. He proved that the speed of this jump was 186,000 miles per second. Hertz might have gone on to invent radio had he not

Fig. 1. Guglielmo Marconi with his wireless apparatus in 1897. (The Bettmann Archive)

died in 1894 at the age of thirty-six. The supreme achievement of developing an electrical instrument that could carry intelligence through space without wires was to come from another.

To Guglielmo Marconi, the son of an Italian father and an Irish mother, goes the honor of making the world's first practicable radio transmitter and receiver, a discovery that crystallized the theories and experiments of Maxwell and Hertz. Marconi became interested in radio when he read about Hertz's experiments in a scientific magazine. From then on, he thought of little else but wireless. In 1894 he accomplished the feat, without the aid of connecting wires, of ringing a bell on the first floor of his home by pushing a button on the third floor. But Marconi was not content to be a mere bell ringer. In 1895, at the age of twenty-one, he connected an antenna and a ground wire to the elementary transmitter of Hertz, and suc-

ceeded in sending an electrical impulse more than a mile through space (see Fig. 1). By adding to his equipment the telegraph key invented by Samuel B. Morse, he controlled the length of the electrical impulses, making them either short or long. Messages in the form of Morse code could now be carried through space without the aid of wires. Radio was born!

Marconi realized, however, that a sending distance of only a mile severely limited the usefulness of his mechanism. He knew that radio waves, like the waves that bring us light from the sun and stars, could travel millions of miles through space. If he could send a wireless message even a hundred miles, his device would be of supreme value in communication. The problem was to develop a transmitter capable of generating a sufficiently powerful impulse and a receiver keen enough to detect that impulse after it had been weakened by a long journey.

By increasing the height of his antennas, Marconi discovered that he could gain distance. The equipment was expensive, however, and his once ample funds began to run out. When the Italian government showed no interest in supporting his experiments, he traveled to England where the Post Office Department backed his continued struggles for distance. Each time the antenna towers climbed higher into the air, his message leaped a little farther through space, first 2 miles, then 7, then 12, until finally in 1899 he succeeded in linking France and England by wireless across the English Channel.

Marconi's greatest achievement came two years later. So marked had been his progress in attaining distance that he decided he could span the Atlantic Ocean with a wireless impulse. After building transmitting antennas 200 feet high in Poldhu, Cornwall, he sailed late in 1901 for St. John's, Newfoundland, where he sent a receiving antenna 400 feet into the air by means of a kite. On 12 December that antenna intercepted a faint 'dit-dit-dit' sent out by his assistants from the Cornwall transmitter. Radio waves, in this case Morse code for the letter 'S,' had been successfully received across 2000 miles of Atlantic Ocean.

The initiative for the next great development in radio, the sending of voices and music through space, came from the sons of the New World rather than from those of the Old. Marconi was content in the beginning to develop radio as a medium for code messages. The first person to test radio as a vehicle for carrying the human voice through space was a Canadian-born scientist named Reginald

Fessenden, who taught physics courses in the United States at the University of Pittsburgh and worked as an engineer for the Westinghouse Company.

As early as 1900, Fessenden partly succeeded in broadcasting vocal tones from one tower to another a mile away, but the results in general were disappointing. The Marconi spark transmitter, delivering electrical energy as it did in short, intermittent surges, was not suitable for carrying vocal or musical tones, and the equipment in radio sets was not sensitive enough to pick these impulses out of the atmosphere. Fessenden's first problem was solved when Ernst Alexanderson, a young scientist working for him, invented the Alexanderson Alternator, a machine capable of generating a continuous flow of electrical energy steady enough to carry vocal and musical sounds. Fessenden himself improved the means for detecting radio waves and picking them out of space. As a result of these advances, he was successful on Christmas Eve, 1906, in broadcasting the world's first radio program. He talked, sang, and played a violin into a microphone. Wireless operators at sea were astonished to hear a voice and music in their earphones in place of the usual dots and dashes.

One other notable improvement was necessary before the kind of radio we have today was possible. That improvement came when Lee DeForest, a young American scientist, invented the audion tube in 1907, a discovery that opened the door to many technical advances (see Fig. 2). Becoming a vital part of both the transmitter and the receiver, the audion tube served three important functions: it built up the strength of radio energy before transmission and after reception; it generated radio waves of the very high frequency necessary for broadcasting speech and music sounds; it was the best detector of radio waves yet discovered. Without it today's broadcasting would have been impossible.

A final pioneer, a very recent one, deserves mention in this list of the great who invented radio. As a very young man, Edwin Armstrong improved the audion tube and found new uses for it, but his greatest achievement was the development of the frequency-modulation method of broadcasting. This method, described in the chapter on the tools of radio, had been known for many years, but it was not considered practical until Armstrong demonstrated its feasibility in 1932, when he applied for his patents. The first FM

stations went on the air in 1938. Their number has been growing ever since. The employment of the frequency-modulation method for broadcasting the sound part of television programs has increased the significance of Armstrong's invention.

Many of the great figures in the technical development of radio have not been mentioned in this brief survey. There were theorists other than Maxwell, men besides Hertz who tested and organized

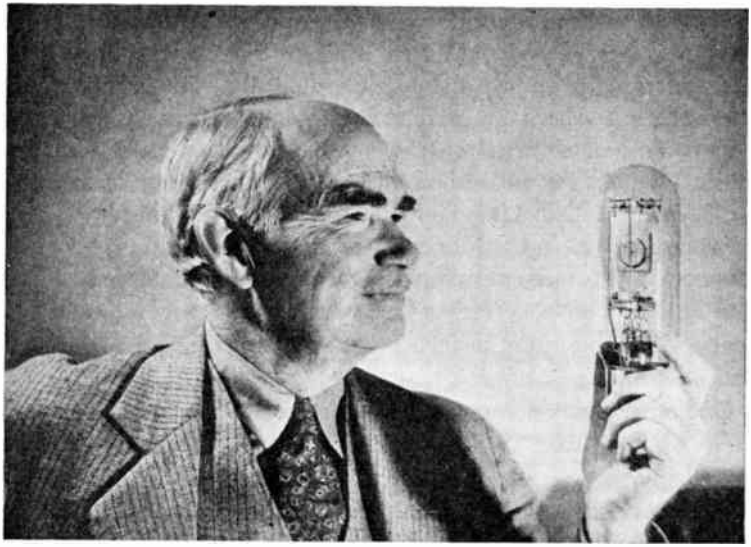


Fig. 2. Dr. Lee DeForest with his audion tube. (The Bettmann Archive)

the physical laws basic to radio. Hundreds, in addition to Marconi, Fessenden, DeForest, and Armstrong, contributed to the development of broadcasting equipment. The men referred to have been singled out because their achievements stand as milestones in the history of radio.

Radio Sends Messages

Radio began playing a role in the sending of messages almost as soon as it was invented, and this has continued to be one of its most important uses right up to the present day. It supplemented existing communication devices by providing a means of contact in those cases where the use of telephone or telegraph wires was impossible. With radio a ship, which previously lost all contact with the world

when it sailed out to sea, could report its progress, keep up with the news, or call for help.

In 1897 two lighthouses seven miles apart on the North Irish Coast engaged in the first radio communication. A famous early use of the new medium came when Queen Victoria's son was injured in a fall while away from home, and she was informed hour by hour of his condition by means of wireless messages. Marconi himself demonstrated the possibilities of his new instrument when he sent reports from sea to shore on the results of the 1899 international yacht races between England and the United States.

The first sea rescue in which radio played a part also occurred in 1899, when a freighter rammed a lightship near Dover, England. A wireless call for help from the sinking lightship brought rescuers from a point 12 miles away, and the entire crew was saved. From then on, the radio distress call helped to save lives that would otherwise have been lost in a long series of sinkings. So conclusively was its value proved that by 1910 the United States Government required that certain passenger ships must be equipped with a receiving and sending set.

Through these years, however, the general public remained largely unaware that radio existed. It required one of the most dramatic sea disasters of all time to focus the attention of the world on the marvelous new communicative device. In 1912 the passenger liner *Titanic,* sailing from England to America on its maiden voyage, rammed an iceberg and began sinking. As the ship went down, the radio operator sent out a desperate call for help. The *Carpathia,* many miles away, heard the call and, steaming to the rescue, reached the scene in time to save 706 lives. Many were lost before its arrival, but without radio it is likely that the *Titanic* and its entire complement would have gone down without a trace.

Radio not only contributed to the rescue, but also helped to inform the world of the tragic events even while they were happening. In New York a young radio operator named David Sarnoff, who was to gain fame later as head of the Radio Corporation of America, heard the S O S of the *Titanic* and relayed the story to the newspapers. Soon everyone was talking about radio's role in saving hundreds of lives. The *Titanic's* disaster advanced the cause of radio by dramatically spotlighting its usefulness in emergency communication.

About this same time the telephone and telegraph companies,

realizing that radio might offer serious competition to the wire methods of sending messages, began investigating it as a possible rival. The knowledge gained could put them in position to take over radio if it threatened to supplant their existing services, or, at least, they might find a way of using it to supplement the telephone and telegraph in point-to-point communication. The American Telephone and Telegraph Company, Westinghouse, and General Electric were leaders in the experimentation to perfect radio as a device for sending a message from one point to another on land.

But by the 1920's these companies decided that, although radio had an important place in communication, it would not supplant the wired services. Events since that time have confirmed this conclusion. Radio plays an indispensable role in contacting points that wires cannot reach: ships at sea, airplanes, or tanks on a battlefield. It has been made a part of the telephone system to provide communication with a moving automobile or a train. But for general point-to-point communication, our main dependence is still on the telephone and telegraph.

Radio's failure to monopolize the communication field was due largely to the lack of secrecy that characterizes radio messages. Anyone can listen to a radio signal. People who desired privacy for their messages continued to use the relatively secret telephone and telegraph. Interestingly enough, it was radio's very lack of privacy that made possible the development of its outstanding function—the broadcasting of programs to the public. The experimentation aimed at establishing radio contact between two people ushered in an era in which one man can speak to millions.

Broadcasting for the Public

Not for 20 years after Marconi's initial success in broadcasting did anyone think of radio as a medium for mass entertainment and education. One of the first persons to do so was David Sarnoff, the radio operator who had listened in to the *Titanic* disaster. In 1916, as an executive of the American Marconi Company, forerunner to the Radio Corporation of America, he sent a memorandum to his superiors suggesting that radio might be used to send music into many homes at once. The company would broadcast the programs and make its profit by selling receiving sets. The First World War arrested any possible development of Sarnoff's ideas, but use of radio by the contending nations accelerated the improvement of

equipment. Moreover, many who came into contact with radio for the first time in military situations carried that new interest back into civilian life. The armistice found a nation ready for broadcasting. Soon after, a new group of 'ham' operators started sending out radio signals and began listening in return for the dots and dashes of other amateur operators.

Outstanding among these pioneers was Dr. Frank Conrad, who operated station 8XK, an experimental radio transmitter owned by the Westinghouse Company in Pittsburgh. In 1919 he began broadcasting signals from the station to his home several miles away in order to check transmitting and receiving equipment. In searching for something to broadcast, he started sending music out into the Pennsylvania air from phonograph records. To his surprise, he began to receive letters from amateurs in the area, saying that they had heard his broadcasts. Some of them even asked for certain musical numbers. Because these letters supplied Dr. Conrad with helpful information about the distance and strength of his broadcast signal, he was glad to comply with the requests. To encourage listening, he added news and baseball scores to the recorded music and began going on the air at regular intervals. In 1920 a department store in Pittsburgh advertised ready-made radio sets for people who wanted to hear the Conrad broadcasts. The public had begun to listen to radio for entertainment and information rather than for a message.

Dr. Conrad's first programs for the public were matched by similar broadcasts in other parts of the country. In Michigan *The Detroit News* became the first newspaper to enter the radio field when it established what is now station WWJ on 20 August 1920, beginning a broadcasting schedule that has continued to the present. About the same time, an experimental station of the University of Wisconsin, WHA, went on the air with the nation's first educational programs.

The Westinghouse Company soon converted its experimental station 8XK into KDKA, which, including the activities under both call letters, is now generally recognized as the country's first broadcasting station (see Fig. 3). On 2 November 1920, KDKA reported returns as they came in from the Harding-Cox presidential election. Only 500 people heard this historic broadcast, but millions read about it the next day in their newspapers. Immediately an intense interest in the potentialities of the new medium swept the

country. People, realizing they could get news, information, music, and other entertainment out of the air, began to build and buy radio sets. Soon KDKA went on the air during a part of each day to serve their needs.

Another milestone in the history of broadcasting occurred in

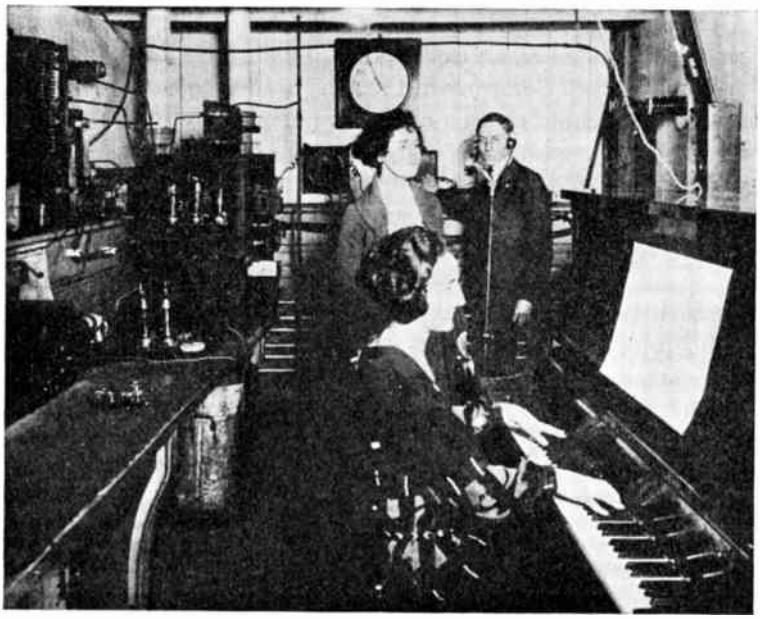


Fig. 3. Studio scene in Station KDKA in 1920. Control equipment was located in the studio instead of in a separate room. Time had already become important in broadcasting, as indicated by the clock on the wall. (The Bettmann Archive)

1921 when the Radio Corporation of America established a station for a single day to broadcast the match for the heavyweight boxing championship of the world between Dempsey and Carpentier. Two hundred thousand heard this broadcast as compared with the 500 who heard the election returns of the previous year—a good indication of broadcasting's tremendous growth. Again intense interest swept the nation, and Major J. Andrew White, who handled the blow-by-blow description, became famous overnight.

Thus it was that the efforts of men who had been interested in inventing only a telegraph or telephone that needed no wires

reached their final culmination in the age of broadcasting. Even as the term 'radio' began in 1920 to supplant the word 'wireless' in the United States, so did we realize that the new instrument would attain its greatest impact as a medium that could reach millions at one time, rather than as a sender of messages from one person to another.

The Invention and Development of Television

As was the case with radio, the underlying principles basic to television were discovered many years before the medium attained its present development. In fact, inasmuch as television employs radio transmission for its sound elements and must depend on the radiation of electrical energy to broadcast its pictures, it is clear that the inventions already discussed are as important to the new medium as they are to the older one. Before television could become a practical reality, however, the discoveries already made in radio had to be supplemented by further discoveries fundamental to the broadcasting of pictures.

One of the first concrete steps in this direction was taken in 1873 when a young Irish telegrapher named Joseph May discovered that a substance called selenium could convert light into electricity. In other words, the substance had what we now call photo-electric properties. A German scientist named Paul Nipkow made further progress in 1884 by inventing a whirling metal disc punched full of holes, which, in conjunction with the selenium, picked up and transmitted pictures. This mechanical process, first called television in 1900, formed the basis for continuing experimentation, and although it was eventually found wanting, the disc method was for many years man's best hope for television.

Until 1920 few people had heard of these experiments in television, but the sudden blooming of the radio age laid the groundwork for the even greater marvel. To the idea of 'seeing-at-a-distance' the reaction of the average person was likely to be, 'Why not? If sound can be sent through space, why not pictures?' So it was that the general public was ready for television long before it was ready for them. In 1923 the successful transmission by radio of President Harding's picture was accepted as the forerunner of television, but the eventual goal was still a long way off. A brilliant English experimenter, John Baird, succeeded in 1926 in transmitting the first moving television images—a forward step that, along with

many other pioneering achievements, helped make Great Britain a world leader in the development of television. The year 1928 saw two significant American events: Governor Alfred E. Smith was televised as he accepted the Democratic nomination for the Presidency; and the first television drama went out on the air waves. By 1931 five experimental stations in various parts of the country were presenting regular programs, a development that prompted the statement that 'television is just around the corner for the average homeowner.'

That prophecy proved to be a little premature. The advance of the new medium, now often called video or TV for short, ran into its first important obstacle when it was discovered that the whirling-disc method was limited to a transmission so poor in quality that it could hold attention only as a novelty. The constant flickering and lack of definition in the broadcast image soon caused viewers to lose interest. Since the equipment was working with the maximum effectiveness inherent in it, the only solution was to go back into the laboratory to develop new methods and instruments. Again, sending pictures through the air for a universal audience became a dream for the future instead of an immediate reality.

For almost ten years television was out of the public spotlight while scientists in the seclusion of the laboratory worked out a new system. In the United States the work of two inventors was particularly instrumental in returning it to the public again—this time a success. Their major contribution was to convert television from a partly mechanical system to a completely electronic process with an unlimited horizon for improvement. These two men were Vladimer Zworykin, inventor of the iconoscope and kinescope, which were, respectively, a television camera and receiver; and Philo Farnsworth, the perfector of the dissector tube. Their discoveries together with those of other scientists, particularly in England, provide the foundation for today's television.

In 1939 the new television, unveiled to the American public at World's Fairs in San Francisco and New York, started people talking excitedly once more about the video age. NBC began a regular telecasting schedule of 15 hours a week. Zenith inaugurated television in Chicago, while Don Lee in Los Angeles continued TV activities that had begun in 1931. In 1940 CBS demonstrated color television, and the following year the first TV advertiser went

on the air as the number of sets owned by the public grew to 10,000. Again the television age seemed to have arrived.

The next major obstacle to television's growth came not from the inherent limitations of the medium, as it had before, but from the impact of world events. The coming of World War II in 1941 froze television where it was at that time, just as the First World

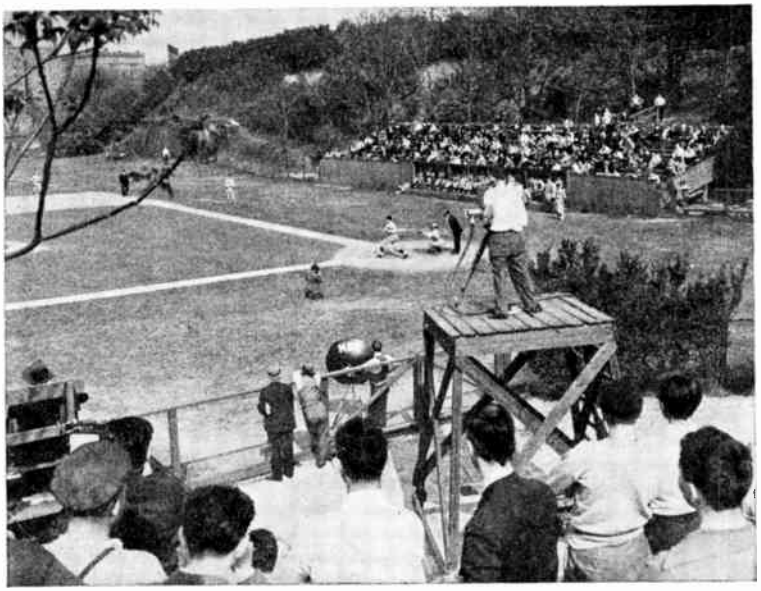


Fig. 4. Television's first baseball game, between Princeton and Columbia universities, broadcast on 17 May 1939. Note the parabolic shield around the microphone to facilitate the sound pickup. (Courtesy NBC)

War had delayed the debut of radio. Once more the public was forced to wait for something it had expected long before.

When VJ day came in 1945, the pent-up years of anticipation caused a blossoming of television activity that has transcended even the most optimistic predictions. That it is growing even faster than radio did can be explained by the fact that while radio was an accomplished fact before most people were aware of its existence, people were eager for television long before it came. Moreover, the electronic progress accomplished in the radar field during the war was immediately applied to the improvement of television. A surge of activity, which began on the East Coast, and is manifested in

both the setting up of TV stations and the buying of receivers, has swept across the country. Without question, the television era has finally arrived.

No one knows yet how television will change our lives, but we do know that the device, which in 1946 was available to only one American in ten, will by 1956 have become a household commonplace across the nation. Whether it will supplant the radio and the movies is as yet an unanswerable question. A few 'televisionaries' see us conducting virtually all our activities from the home in years to come.

In this chapter we have traced the beginnings of radio and television to the point where public broadcasting actually began on a regular basis—for radio in 1920, for television in 1945. We have seen how such men as Maxwell, Hertz, Marconi, Fessenden, Alexanderson, DeForest, and Armstrong discovered the principles and invented the equipment of radio broadcasting. We have learned how their discoveries plus those of such experimenters as Nipkow, Baird, Zworykin, and Farnsworth made the miracle of television possible. Now we are ready to examine in succeeding chapters the structure and practices that make up the pattern of broadcasting as it has evolved in the United States.

Projects and Problems

1. For class discussion: Which is more important today, radio's service as a medium of information and entertainment, or its service as a medium of communication?
2. Write a brief biographical study of a contemporary person who has made a significant contribution to radio and television broadcasting, e.g., David Sarnoff, Edwin Armstrong, Lee DeForest, or Philo Farnsworth.
3. After visiting your local radio stations to gather data on their beginnings, write a radio history of your community.
4. Make a field trip to your local law-enforcement agencies to study their use of radio for communicative purposes. Report your findings to the class.
5. After library research, discuss the role of sports in the development of radio and television broadcasting.

TWO

The Station

The individual station is the basic unit in the American system of broadcasting—the source, as far as the listener is concerned, of all program activity. We begin our consideration of the pattern assumed by American broadcasting, therefore, with a study of the various types of stations, their distinguishing characteristics, and the ways in which they are organized.

The establishment in 1920 of station KDKA in Pittsburgh crystallized the concept that radio facilities, previously limited to the sending of messages, might be used to present programs of education, information, and entertainment for the general public. By 1922, 600 stations had followed KDKA into broadcasting. This growth has continued year after year until now the antennas of more than 2500 radio stations dot our landscape from coast to coast. The rapid development of radio following the First World War has been paralleled in the years since the Second World War by a similar development in television. More than 100 stations are now broadcasting video programs on a regular basis.

For obvious reasons, radio and television stations have tended to cluster in the regions of greatest population, although as far as radio is concerned, it would be difficult to find a spot in which an ordinary receiver could not pick up the signal of some station, at least at night. Television service, on the other hand, is not yet available to large portions of our population, and certain remote areas may never attain satisfactory reception.

Types of Broadcasting Stations

There are three major types of broadcasting stations in the United States: amplitude modulation, or AM; frequency modulation, or FM; and television, or TV. The first two are different types of radio stations; the third broadcasts both sound and pictures through a combination of radio and video techniques.

To understand completely the technical differences in these three methods of broadcasting, an engineering background is necessary. Our discussion of the subject, to be presented in the chapters on the tools of radio and television, will, therefore, be brief and attuned to the needs of the nontechnical student. However, before we reach these chapters, it is necessary that we know some distinguishing characteristics of AM, FM, and TV in order to understand why stations are licensed as they are.

When a station is given a position on the broadcast band by the Federal Communications Commission, that position is identified by the assignment of a specific frequency. Frequency, in simple terms, refers to the number of waves of electrical energy radiated per second from the antenna of a station. When the number of waves or cycles is large, it is stated in thousands, or kilocycles; when the number is even larger, it is stated in millions, or megacycles.

AM stations are located on the dial between 550 and 1600 kilocycles. FM and TV stations broadcast on much higher frequencies; the TV band begins at 54 megacycles, the FM band at 88 megacycles. The low frequency of AM broadcasting as compared with either FM or TV gives rise to a most important difference in the methods. Whereas the AM signal may travel long distances over the earth, both FM and TV signals go only as far as the horizon seen from the top of the transmitting antenna—a distance defined as 'line-of-sight' range. This difference in range means that the chance of interference among AM stations using the same frequency is much greater than that among FM or TV stations using the same frequency.

Another characteristic of AM broadcasting intensifies this tendency toward interference. The AM transmitter not only sends a ground wave relatively long distances along the earth's surface, but it also sends a sky wave out into space. During the day the sun's rays absorb this energy and dissipate it. At night, however, these sky waves are reflected back to the earth by a section of the at-

mosphere known as the ionosphere, an action that gives the station a greater range at night than during the day. Driving after dark, you have probably had a station fade out on your auto radio and, after an interval of silence, come in again stronger than ever; this indicates that you have driven out of the range of the ground wave and have then entered an area where the ionosphere is reflecting the station's sky wave back to the earth.

To summarize, then, we see that the AM station, with its long-range ground wave and its reflected sky wave at night, must be rigidly restricted to prevent interference with other stations, while FM and TV stations, with their line-of-sight range, are much less prone to interference.

AM Stations

In licensing AM radio stations, the Federal Communications Commission has dealt with the problem of interference by placing restrictions on broadcasting power and by limiting the time during which certain stations can be on the air. Some stations are also required to shield their antennas to keep their signals out of areas where conflict with a station on or near the same frequency would result. In view of AM's increased range at night, the FCC must, of course, establish conditions after dark that are different from those permitted during the day. This means that certain stations must leave the air altogether when the sun goes down, while others must shield their antennas or reduce power when darkness comes.

1. *Power Classifications.* The power of a station is expressed in the number of watts or kilowatts at which it is licensed to operate by the federal government. At the present time there are three general categories in which AM stations can be classified according to power.

A. CLEAR CHANNEL. There are two classes of clear-channel stations. Stations in Class I are designed to broadcast long distances without experiencing objectionable interference from other stations. Usually assigned the maximum power now permitted (50,000 watts), this class of clear-channel stations can bring radio programs to parts of the country not sufficiently populated to warrant the establishment of a local station. The Class II type of clear-channel stations is more restricted than the first type in that it often operates with less power and, in some cases, must shield its antenna in order to keep its signal from interfering with other stations. Of the 106 AM channels

now being used by radio stations in the United States, 59 are of the clear-channel variety.

B. REGIONAL CHANNEL. A station assigned this type of channel is designed to serve a region of which a metropolitan area is usually an important part, but it lacks the range of the clear-channel station. Since there are only 41 regional channels, no station can be granted the exclusive use of a given frequency, as is the case with some clear channels. However, stations using the same frequency are usually situated far enough apart to eliminate interference with one another's signals. If the distance between them is not sufficient, some of the stations may be required to use shielded antennas or be restricted in their time on the air. Regional stations vary between 500 and 5000 watts in power.

C. LOCAL CHANNEL. Stations in this category are usually situated in large metropolitan areas, although some are located in small cities and towns. Varying between 100 and 250 watts in power, such stations have a broadcasting range generally restricted to the area of the city. There are only six local channels, and these, of course, are used by many different stations throughout the country, but distance or some other safeguard prevents objectionable interference.

2. *Time Classifications.* As has been indicated previously, the AM channels available to radio stations in the United States do not permit all stations to broadcast continuously. Stations fall into five categories when classified according to the amount of time they are permitted to be on the air.

A. UNLIMITED LICENSE. A station in this class is permitted to broadcast 24 hours a day, although few actually do so. However, each station must present programs during certain minimum periods in order to hold its license. Some unlimited licensees are given a completely dominant position by the requirement that stations likely to interfere with them at night either retire from the air at sundown, reduce power, or shield their antennas.

B. DAYTIME LICENSE. The daytime station must leave the air at night to avoid interfering with the signal of an unlimited station using the same frequency, the permitted broadcasting period being the time between the average monthly local sunrise and sunset. As a result, sign-off time gets later every month between December and June, and earlier between June and December.

C. LIMITED LICENSE. A station holding a license of this type, assigned only to Class II clear-channel stations, has the same time privileges as a daytime station, except that if it is east of the dominant station, it is not required to leave the air until sunset at the dominant station. This means that its broadcast day is a little longer than it would be if it were merely a daytime licensee.

D. SHARED-TIME LICENSE. This type of license is assigned stations in the same area using the same frequency. Such stations can never be on the air together even during the day because of their nearness to one another. For example, station WLS in Chicago must leave the air before station WENR, on the same frequency, can begin broadcasting. The period each station is to broadcast is worked out by agreement between the two stations.

E. SPECIFIED-HOUR LICENSE. This license is similar to the shared-time license, except that the period the station is permitted on the air is specifically stated when the frequency is allocated by the federal government.

FM Stations

Because the line-of-sight range of FM stations minimizes the possibility of interference, the Federal Communications Commission has found it unnecessary to establish the rigid power and time restrictions that govern AM operation. In general, two classes of stations have been established: Class A of relatively low power for small cities and communities; Class B of higher power for service to large metropolitan and rural areas. There are no maximum-time restrictions, although commercial FM stations, like those in the AM category, must stay on the air a certain minimum period. FM stations are located on the broadcast band between 88 and 108 megacycles.

Since frequency-modulation broadcasting began in 1938, the number of stations has gradually increased, except for the war years when all broadcasting expansion was halted. The growth of FM, however, has not yet fulfilled the confident belief of some enthusiasts that the new method of radio would eventually replace AM as our primary system of broadcasting—a prediction based on FM's superior tone qualities and elimination of static. Three hindrances to this development have arisen: first, FM has failed, in some instances, to live up to the exuberant claims made for it, because of faulty equipment; secondly, those with money invested in AM stations

have resisted a complete switch to the new method; and finally, the relatively small number of FM receivers owned by the public has made advertisers loath to spend money for programs that very few people can hear. Despite these problems, however, FM broadcasting is expanding, and the possibility that it will largely supplant the AM method still exists. This growth has followed two general lines.

1. *Separate FM Stations.* The establishment of FM stations not connected with any existing radio station has been one phase of FM development. Educators have been active in this field for two reasons. The federal government has reserved certain frequencies for their exclusive use and, further, requires that all licenses for educational use be assigned in the FM band, unless an overwhelming need for an AM frequency can be demonstrated. Few separate commercial FM stations have been established, but as the ownership of FM sets increases, and as AM frequencies are exhausted, this type of station may become more common.

2. *Duplicating FM Stations.* This term is used to denote those FM stations established by a company owning an AM station to carry some or all of the programs broadcast on AM. This duplication of existing AM facilities with a new FM channel has been the outstanding FM development in the commercial field. In addition to carrying the same programs, the stations are usually identified together on this order: 'This is station WXYZ, AM and FM.' Some stations that are limited to daytime use for their AM facilities continue broadcasting at night by FM.

TV Stations

Restrictions on TV stations' time and power, like those on FM, are relatively less rigid than AM regulations, because the TV signal travels only to the horizon. As is the case with other types of stations, however, the TV station must be on the air a certain minimum period in order to hold its license. Also, as a general rule, the TV station designed to serve only a small community operates with less power than a station serving both a city and a large rural area. Stations in the first class are called 'community'; stations in the second class are designated 'metropolitan' or 'rural.'

Channels for TV operation are to be assigned from two different broadcast bands: the very high frequency band between 54 and 216 megacycles, and the ultra high frequency band between 475 and 890

megacycles. When telecasting was resumed following the war, only the VHF channels were reserved for television. The channels were numbered from 2 through 13, the first channel being reserved for experimental purposes. In 1949 the FCC announced its intention to open up a whole new group of channels in the UHF range—a decision that added 42 TV frequencies to those already existing, and enormously increased the potentialities for television expansion. With channels 2 through 55 available for allocation, the number of future television stations can eventually rise over the 2000 mark.

Facsimile Stations

A medium related to television, but still distinctly different, is facsimile broadcasting, which transmits graphic material by radio for permanent recording at a home receiver (see Fig. 5). Anything that can be printed, written, photographed, or typed can be sent through the air by this method. The receivers are equipped with rolls of special paper on which a reproduction of the material is made without chemical development. The reproduction, an exact copy of the original material, is ready for use immediately.

Facsimile broadcasting, done in the FM band, involves the use of a 'scanner,' which picks up a picture instead of a sound signal to send out into the air. The home recorder with its roll of paper may be included as part of a regular radio set and occupies no more space than a phonograph turntable.

The first facsimile receiving sets were developed in 1938, but not until 1948, after ten years of experimentation, did the FCC authorize commercial use of the method. Of the 11 stations then on the air, one immediately declared its intention to broadcast four tabloid pages of text and pictures four times daily. Another company announced that facsimile recorders, built to be plugged into ordinary FM receivers, would soon be on the market, equipped to reproduce either in color or in black and white.

Another recent development in this field has been the introduction by RCA of a device called 'ultrafax,' which combines television and facsimile techniques in transmitting graphic material. The recording at the receiving end is done on film. By this method, the entire text of *Gone with the Wind,* after being photographed page by page, was transmitted in 2 minutes and 21 seconds.

The use to which facsimile and ultrafax will be put is now one of the big questions in broadcasting; conceivably, they could replace

magazines and newspapers. Instead of having a paper delivered to the door, the owner of a 'fax' set would tear the morning news from his recorder just before going to breakfast.

Fig. 5. A facsimile receiver. (Courtesy General Electric)

In the fields of military operations, government, business, and police work, facsimile provides a speedy and accurate means of transmitting plans and records. For example, the fingerprints of a wanted criminal can be sent instantly to all parts of the nation by

this method instead of relying on the relatively slow mail service. Even if facsimile broadcasting never becomes an important factor in home life, its potentialities in other fields seem limitless.

Commercial and Noncommercial Stations

Thus far we have classified broadcasting stations as being AM, FM, TV, or facsimile. All of these types, however, are subject to further definition as commercial or noncommercial, depending on whether they are established primarily to make a profit or for some other reason.

Commercial Stations

The commercial station, found only in nations like the United States that permit the use of radio facilities for advertising purposes, exists primarily as a business enterprise whose success is measured by the amount of money it earns. Although most such stations are owned by purely commercial interests, a few are the property of public agencies. The cities of Tampa, Florida, and Dallas, Texas, for example, own radio stations operated entirely by funds obtained from the sale of advertising, and one of the major commercial outlets of the south, station WWL in New Orleans, Louisiana, is owned by Loyola University of that city. Some stations operated by government, educational, or religious institutions are partly commercial in that they supplement public or private sources of income with money gained from the sale of some time periods. Virtually all TV stations and most AM outlets fall in the commercial classification, as do those of commercial FM stations that duplicate an associated AM station's broadcasts. For reasons previously stated, there are relatively few separate FM stations of the commercial type.

Noncommercial Stations

The motivation for a noncommercial station's activity must be found in a reason other than the profit motive. Usually, the purpose becomes clear when we examine the nature of the organization or institution that operates the station.

1. *The United States Government.* Although the national government does no broadcasting directly to the people of the United States, it does present programs to other countries over international short-wave stations. For example, the 'Voice of America' promotes good will by interpreting this country to the world through the

presentation of the truth about national and international events. Friendly nations frequently expand the coverage of these programs by retransmitting them from their own stations. Another type of federal radio activity is the short-waving of standard American programs to military groups serving outside the United States through the facilities of the Armed Forces Radio Service.

2. *Colleges and Universities.* Before station KDKA went on the air, a number of colleges and universities had set up radio stations for laboratory and experimental work in physics and engineering. Even after the advent of broadcasting for the public, colleges continued to establish stations for this purpose until, in the early 1920's, their number exceeded 200.

But when radio suddenly acquired importance as an advertising medium, many of the colleges found themselves in possession of channels that were the envy of interests desiring to use them for commercial purposes. These interests clamored loudly for the college frequencies, pointing out that the caliber of programs presented by commercial stations was far above that of the average college-station offering. Unfortunately, this accusation was true in many cases. The budgets of the college stations were intended primarily to support technical activities and could not be stretched to provide the elaborate and expensive programs that sponsors were willing to produce. In the face of this competition, channel after channel was surrendered to the commercial interests until the number of college stations had dropped to one eighth its former number.

Not only did program responsibilities increase, but the cost of the engineering phases of operation also became higher for many stations when regulation by the federal government required that certain minimum technical standards be met. This was another factor contributing to the decrease of college-radio activity.

Despite the devastation in their ranks, the surviving college stations have played a significant role in the broadcasting world. Most of them have been operated by colleges and universities supported by the various states, although some privately endowed institutions managed to continue their activities. The willingness of the state legislature or college regents to provide a budget large enough to provide programs equal if not superior to those of competing commercial stations was a major factor in keeping these stations on the air. With the resources of educational institutions

to draw on, such stations have performed a notable service for the public by broadcasting programs for schools, educational programs for the general public, and entertainment of a high cultural level. Among such notable AM stations are WHA at the University of Wisconsin, KOAC at Oregon State College, WOSU at Ohio State University, WILL at the University of Illinois, WOI at Iowa State College, WSUI at the University of Iowa, and WKAR at Michigan State College.

Recently the ranks of college and university broadcasters have been expanded by the addition of new stations in the frequency-modulation band. The comparatively small cost of operating a station of this type makes the budget problem less difficult, but the task of providing a constant flow of programs is still a major hurdle. The Federal Communications Commission has lightened the program burden somewhat by permitting the FM educational station to broadcast as much or as little as it desires, instead of requiring, as it does of commercial stations, a specified amount of broadcasting activity. Some interest and even activity in the field of television have been evident at some colleges and universities, although the high cost of equipment is a barrier to actual station ownership. Despite this obstacle, the University of Iowa has operated an experimental station, and Purdue, Western Reserve, Kansas State College, and Johns Hopkins are among the applicants for TV permits. Most colleges will probably engage in television activity in the immediate future, however, by using the facilities of commercial stations.

Another type of college-broadcasting activity is the operation of a 'carrier-current' station. This type of station broadcasts by radiation from a wire rather than from an antenna—a condition that restricts its signal to the campus of the institution owning the station. As a result, listeners are confined to the dormitory population of the college, but even though this audience may not be large by usual standards, the operation of the station can provide valuable experience.

3. *City and School Systems.* A number of cities have established stations that function on a noncommercial basis. Station WNYC, operated by the city of New York, is an outstanding example. In many cases the municipal station is an agency of the school system, which operates it primarily to broadcast programs designed for use in schools. Among others, the boards of education in Detroit,

Cleveland, Chicago, and San Francisco carry on this kind of activity.

4. *Religious Groups.* The noncommercial station owned by a church or religious organization exists usually for the purpose of propagating a particular faith, and is supported by the contributions of members of the group and listeners to the station. An example is station WMBI, operated by the Moody Bible Institute in Chicago. As might be expected, the program fare of such stations usually relates, even if indirectly, to the religious message the organization desires to present. Most of the children's stories broadcast by station WMBI, for instance, either are taken from the Bible or have the primary purpose of teaching a moral lesson.

Network and Independent Stations

One of the outstanding developments in broadcasting has been the formation of national networks through which the same programs can be presented in all parts of the country. Evolving first in radio, the network system is now being extended to television. Although networks as a whole will be discussed in the next chapter, in this section we examine the effects of chain broadcasting on individual stations.

Network Stations

For the purposes of this discussion a network station will be defined as one that belongs to one of the national chains, since membership in a regional network entails a different set of conditions. A few network stations are owned and operated by the networks themselves, but the majority are the property of other companies, which associate with the net on terms set out in an affiliation contract. Stations in the latter category are known as affiliates.

In most communities the network stations gain a major share of the radio or television audience for several reasons. The network is likely to make sure of a large audience to begin with by selecting as its affiliate the most powerful and popular station it can get in a community, and the one most advantageously located from the point of view of geography and accessibility to the major centers of population. Furthermore, as the outlet for programs that cost a great deal of money, the network station can feature outstanding stars, and benefit from the talents of the country's most skilled radio personnel. Network stations can also attract listeners or

viewers by providing a front-row seat for events happening all over the nation.

That the advantages of network affiliation far outweigh the disadvantages is shown by the fact that one of the most sought-after objectives of station owners has been the opportunity to join a network. Even though this affiliation means that the station must relinquish a certain degree of its independence, the benefits gained more than make up for this loss.

Since networks exist for the purpose of presenting programs sponsored by advertisers, it naturally follows that stations which release these programs must be commercial stations. And, as already pointed out, a station of this type is in business to make a profit. As will be seen in the following list, the major advantage of network affiliation is related directly to this essential aim; most stations can make more money as part of a network than they can operating independently.

1. The network helps the station maintain a higher proportion of commercial programs than it could likely gain through its local efforts alone.

2. The high quality of network programs gets people into the habit of tuning in the station carrying them. Since the rates a station charges for its time are controlled almost entirely by the size of the audience it commands, the presence of network shows makes it possible to charge higher rates for the affiliate's own local programs.

3. The station can sell short, commercial announcements for broadcasting between programs from the network. The buyers of these announcements are charged for the tremendous audience that such stars as Jack Benny and Amos 'n Andy have attracted to the station.

4. The flow of programs from the network gives the affiliate an opportunity to rehearse its own local programs. It naturally follows that better, more highly polished programs will result than can be expected from a station without network affiliation, which must originate all of its shows from its own studios all day long. Because the affiliate's local shows are better, they build audiences and profits go up.

5. Affiliates sometimes develop local programs of such high caliber that they are carried by the network. If these programs gain sponsors, as did 'The Lone Ranger' of station WXYZ in Detroit, the

station realizes an additional source of revenue. Even if the program remains on a sustaining basis, the prominence the station earns may make it better known to national advertisers and thus help it to sell time to these advertisers for local commercial announcements.

The major disadvantage entailed by network affiliation is that certain broadcasting hours must be made available for network use exclusively; hence, the station has little time available for use by local groups. This separation from community life is widened further by the fact that so many of an affiliate's programs originate in a distant network center.

Another aspect of network affiliation, which, if not a disadvantage, must be considered at least a deepening of responsibility, is the considerable pressure placed on the affiliate to maintain in its own local operation the high quality characteristic of network programs. For example, the performance of the local announcer should not suffer too much in comparison with that of the network announcer whose voice has just preceded his on the station.

Independent Stations

The emphasis on the advantages of network affiliation is not intended to minimize the importance of the independent station in the pattern of American broadcasting. If all stations in the country were part of networks, the service of the broadcasting industry to the public would be far less complete and flexible than it now is. The independent station can perform some services that would be impossible if it owed allegiance to a broadcasting chain.

For one thing, because its broadcasting hours are not taken up by network commitments, the independent usually has more time available for local groups such as schools, clubs, and civic organizations, whose broadcasts may make it, in a very real sense, a community station. It can also adapt to the special requirements of small groups in its potential audience—a function the network station hesitates to perform for fear of losing a large body of general listeners for its network programs. The independent, in contrast, can cater to the needs of such minority groups as those speaking a foreign language or, like stations WQXR in New York and KSMO in California, can limit its music programs to the classical or semiclassical for that relatively small number in the community that prefers this type of music. This adaptation to the community

and to the special groups in it not only supplies a vital service for the public as a whole, but may be very satisfactory from a profit standpoint as well. Several independent stations earn incomes equaling or surpassing those of their network competitors.

The major disadvantage of independent operation is the burden of producing a constant flow of programs throughout the entire day. This has caused many non-network radio stations to rely on recorded music for many programs. News and information for homemakers, as well as the community public-service broadcasts previously mentioned, are other major ingredients in independent radio-station schedules. As far as television is concerned, both network and independent stations have depended to a great extent on movies, the counterpart of the recording in radio. When TV network facilities have become nationwide, however, it is likely that the independent TV station will use more movies than the TV network affiliate, which can pick up 'live' programs from the chain.

Although limited facilities are not necessarily a condition of independent operation, it is true that the small budget under which most of these stations must get along restricts them to the minimum in studios and equipment. This often means that a radio station is on the air continuously from only one control board, a condition that makes it impossible to rehearse programs on microphone in advance of the broadcast. For that reason, whatever 'live' shows are offered are usually simple enough to permit adequate presentation with little or no rehearsal. Drama programs often come from outside groups such as schools, colleges, and community organizations, which rehearse the programs on their own facilities before coming to the studio.

Station Organization

As we have already seen, broadcasting stations may differ tremendously. First of all, we have two great divisions in radio and television. Even in radio alone, the million-dollar, clear-channel station, operating at 50,000 watts with the best in studios and equipment and carrying programs featuring the greatest stars, contrasts sharply with the small-town 'coffee pot,' which sends out more or less constant programs of recorded music with a power of 100 watts. Despite these great distinctions, however, the business of broadcasting is so much the same for all these enterprises that the pattern

of organization developed in one closely follows that of another. In fact, some radio and television stations are operated together as one organization with some workers performing similar functions in both stations. To illustrate, WWJ—AM and FM and WWJ-TV in Detroit are located in the same building, are managed by the same person, and operate under one program director.

Broadcasting activity naturally divides itself into several distinct functions which can be found in all commercial stations whether they be radio or TV, large or small.

Management

The broadcasting station, like every other enterprise, must have an executive to direct and manage its affairs. This supervision entails such responsibilities as the employment of personnel, control of financial affairs, maintenance of proper relations with the federal government, and the direction of the business end of the activity.

Engineering

The operation of a radio or TV station, unlike some other businesses, requires the services of highly trained technical experts. In fact, the federal government requires that an engineer with a first-class license, or 'ticket,' as it is called, be on duty at all times while the station is on the air. The person responsible for the technical functioning of the station is usually called the chief engineer. In large stations he and the other members of his staff spend their time exclusively in the engineering phases of operation. In smaller stations, however, engineers frequently do announcing too, thus becoming 'combination' men. One of the best ways of breaking into the radio field is to secure a first-class engineering license and at the same time develop sufficient proficiency in announcing to do acceptable microphone work.

Programs

As far as the public is concerned, a broadcasting station exists to present programs—a fact that makes the department responsible for this function the most important from the point of view of the audience. In a radio station the activities of the program department are divided into a number of different phases, including the planning of programs, script writing, acting, announcing, production, directing, sound effects, and music. The person in charge of the

entire department is usually designated as the program director. His chief assistants are likely to be called the script editor, music director, chief announcer, sound-effects supervisor, production chief, and news editor; it is their responsibility to organize and correlate the many kinds of activity necessary to prepare and present programs.

The program department in a television station is, of course, even more elaborate. In addition to the personnel needed in radio, a TV station must employ such workers as carpenters, painters, make-up experts, costumers, film projectionists, and artists to answer the visual demands of the medium.

It is the program director and his staff who are entitled to be called the showmen of radio. However, their consideration for the artistic side of broadcasting must always be adapted to the commercial requirements of the station, a condition calling for continuous and complete co-operation between the program personnel and the people who make their activities possible—the sellers of radio or television time.

Sales

Although nonexistent in the noncommercial station, the sales function is of the greatest importance to the station that depends on the sale of time for its support. This phase of the activity is usually under the direction of a sales manager. He supervises the work of 'time' salesmen, who sell programs and commercial announcements. In addition, contact is maintained with the network sales department and with national sales representatives, who act as agents of the station in selling programs and announcements to national companies desiring to use individual local stations for their advertising. A corollary to the selling of time is the collection of bills from advertisers. Although the preparation of scripts is usually a function of the program division, the writing of the advertising copy may be one of the responsibilities of the sales or commercial department, as it is often called.

Operating either as part of or in close conjunction with the sales department is the promotion department, whose primary function is to sell the station as an advertising medium to prospective clients. A secondary function of this department is to attract an audience for programs already sold to sponsors. The techniques used to accomplish these objectives are similar to those used by all adver-

tisers. Newspaper and magazine advertisements, direct mail, novelty pieces, special presentations, and stunts all figure in the average station's promotional effort. In addition, most stations use their own facilities to build audiences for future programs by announcing them ahead of time.

Traffic

The average day in a broadcasting station finds a multitude of events following one another in rapid succession. The unfaltering execution of a broadcast schedule calls for the finest co-ordination of activities, with studios available, performers present, and material ready at a precise instant. The complexity of the problem is illustrated in the use made of the 30 seconds between programs on a network radio station. This brief period may include station identification, a 20-second spot commercial, and an announcement regarding a future program on the station. It is easy to see why the control of this complex flow of activities is called a traffic function.

The scheduling of a station's activity, with its attendant duty of making certain that the events occur in proper sequence, is complicated enough even in an independent station; but in the case of the affiliate, where the activities of the station must be integrated with those of the network, the problem becomes so complex that the responsibility is often assigned to a special department. This department receives and organizes a great deal of information about program changes, cues, and coming events. The scheduling of programs entails responsibility for the program board, which shows how every program period and every period between programs is being used. Thus, the traffic department can report immediately on the availability of programs for sponsorship and can tell at a glance where between-program announcements can be sold.

In addition to scheduling programs, the traffic department controls the assignment of studios and sees that announcements and transcriptions are in the proper place at the proper time. If traffic responsibilities are not heavy enough to call for the establishment of a separate department, the sales and program departments usually divide the duty between them, each handling those phases that relate directly to their work.

Large and Small Stations Compared

The pattern of organization that develops around the various functions of management, engineering, programs, sales, and traffic can be traced in all commercial stations whether large or small. The primary distinction between the two is that the large station is organized into many separate departments employing a large number of people, while the small station operates almost as one department, with very few employees. For example, KNBC, a large station in San Francisco, which originates some network programs, employs more than 150 people organized into the following divisions: management, program, engineering, traffic, local sales, national spot sales, network sales, sales promotion and advertising, continuity acceptance, home economics, guest relations, agriculture, news and public affairs, stenographic, and financial. A small station, in contrast, may operate with as few as 10 employees—or even fewer.

A direct consequence of this difference in size is that in the large station one individual is likely to specialize in the exercise of only one of these functions; in fact, his work may be restricted to the execution of one small part of a major function. In a small station, on the other hand, a single person may be involved in a number or even all of the various activities we have listed.

To illustrate, the large-station engineer does nothing but technical work; the announcing staff occupies its working time talking into a microphone. A further aspect of the specialization that large-station operation makes possible is that some people must spend their time carrying out primarily supervisory functions. The small station, in contrast, hires 'combination' men who are equipped for both engineering and announcing duties. This tendency to cross over from one area to another is exemplified also by the common arrangement that makes the manager of a small station its chief time salesman.

A story about Thomas Dewey's first campaign for the Presidency illustrates the flexibility of small-station personnel. The candidate was scheduled to make a radio speech from a small station in a Midwestern city. The manager of the station received the following telegram from network headquarters: 'Governor Dewey arrives Monday at 9:22 P.M. Please have on hand at the railroad station your general manager, program director, news director, chief announcer, and chief engineer.' Back came the reply to the New York

office: 'Don't worry. I'll be there.' That the responsibilities of one individual may extend even further than this is indicated by a notice observed on the control-room wall of a small station. 'The announcer-engineer on duty when the station goes off the air is responsible for sweeping out the studio.'

Projects and Problems

1. For class discussion: Should the duplication of an AM station's broadcasts by an associated FM station be permitted by the FCC?
2. Conduct a survey of the status of frequency modulation and television in your community, listing (a) separate commercial FM stations; (b) educational FM stations; (c) commercial FM stations that duplicate the presentations of an associated AM station; and (d) TV stations or channels assigned to your community.
3. Compare the program schedules of a network station and an independent station located in your area.
4. Classify the stations in your area according to the following factors: (a) commercial or noncommercial; (b) network or independent; (c) power; (d) time on the air; (e) AM, FM, or TV.
5. Compare the organizational structure of a network and an independent station located in your area.

THREE

The Network

The national radio network has come to be one of the most important elements in the American broadcasting structure. The essential role it plays is reflected in the fact that over half the country's AM stations are network affiliates; moreover, programs broadcast on a national basis provide one of the principal financial supports of the broadcasting industry. Many affiliates earn up to half their income by carrying network shows. The television industry is following the radio pattern as far as network organization is concerned; in fact, all but one of the TV chains are the direct offspring of radio webs. Most of the TV stations now operating are associated with one or more of the television networks.

As far as a member of the audience is concerned, networks are of prime importance because they take him to the scene of national and world events and provide him with programs featuring the nation's outstanding stars and personalities. The national distribution of a single program permits a network to spend much more per broadcast than any independent station can. While program quality is not necessarily in direct ratio to the amount of money spent, networks do set the pace in programs. It is the caliber of their offerings that establishes the standards for broadcasting as a whole. The network, then, has achieved its important place in American radio and television for two reasons: (1) it is a basic element in the commercial structure of broadcasting, and (2) it is the source of most of the nation's outstanding programs.

The Development of Networks

Network broadcasting came into being as the result of several conditions that arose as broadcasting for the public gained momentum in the first half of the 1920's. One of the most important of these conditions was the realization by broadcasters that linking stations into networks would permit the radio industry to enter the field of national advertising and thus add to the profits gained from selling time on a local level. Companies whose products were sold throughout the nation were eager, in turn, to secure a nationwide audience for programs advertising those products. With this large audience, sponsors could then afford to pay the high fees demanded by such stars as Will Rogers, Eddie Cantor, and Jessica Dragonette, who could, in turn, attract even larger audiences. A second factor contributing to network development was the difficulty experienced by many stations in finding programs to fill the radio day; the distribution of one program to a number of stations helped solve this problem. And, of course, network growth was encouraged by the desire of many people to hear famous stars and have a 'radio seat' at important national events beyond the reach of a purely local station.

The first linking of two stations occurred in 1923 when station WEAF in New York relayed the recital of a saxophone soloist to station WNAC in Boston by means of a telephone wire. Shortly after, the 'Ever Ready Hour,' one of the nation's first commercial shows, began going out each week over a chain of 12 stations organized into a network expressly for this one series. In 1925, 20 stations carried an address by President Coolidge, and in 1926 the first fight between Jack Dempsey and Gene Tunney for the heavyweight championship of the world was described by Graham McNamee over a network of stations organized for that program. All of these chains, however, went out of existence as soon as the program or series was over. Not until the National Broadcasting Company was established did the country see its first permanent network.

The National Broadcasting Company

The key transaction in the series of negotiations leading to the formation of the National Broadcasting Company by the Radio Corporation of America was the purchase in 1926 of the New York station, WEAF. Operated up to that time by the American Tele-

phone and Telegraph Company, WEAF became the center of activity for the new network, particularly in the origination of programs. The outstanding figure in the founding of the new enterprise was David Sarnoff, by that time general manager of RCA. Thus, he continued the leadership he had demonstrated when in 1916 he had foreseen radio as a medium for broadcasting to the public.

With the sale of WEAF, the AT&T discontinued the broadcasting of programs—an act that reflected the realization that radio could not function in general point-to-point communication. The AT&T remained an important factor in both radio and TV network broadcasting, however, by retaining ownership of most of the lines or relay equipment that carry programs from station to station. These facilities are never sold but are merely leased to networks and stations.

The supplying of programs from WEAF to member stations throughout the country was soon followed by the setting up by NBC of another network on a permanent basis, with station WJZ in New York as the principal originator of programs. The first network became known as the Red, the second as the Blue, names that had their origin, so the story goes, in the fact that the lines from WEAF were wrapped in red tape, while those from WJZ were wrapped in blue. Certain NBC stations carried either Red or Blue programs exclusively; other stations, however, carried both Red and Blue programs, thus making the separation between the two networks only partial. As the years went by, the Red Network tended to present the more popular programs, a fact that gave it the advantage from an advertising point of view. The Blue, on the other hand, became the medium for NBC's outstanding cultural programs, but many of these programs were unable to gain sponsors because of the comparatively small audience they attracted. In 1942, the Federal Communications Commission, believing that ownership of more than one network by a single company threatened a monopoly of communication facilities, forced the sale of the Blue Network to another company; since that time NBC has operated only one radio chain.

By appearing on the scene first, the National Broadcasting Company secured radio stations with the most desirable broadcasting facilities as its affiliates. This has given NBC the best radio coverage of all the networks. NBC gained another early advantage when it,

or the advertisers using its facilities, gained control of the greatest stars in the entertainment world.

With the end of World War II in 1945, NBC, a leader in much early television experimentation, set out to form a television network that would rival its radio facilities in coverage. The TV-network recipe had the same principal ingredients as the radio one. Key stations owned and operated by the network were established at five strategic locations throughout the country. To these key stations, which became the principal originators of programs, other stations were joined as affiliates to provide nationwide coverage. In setting up its TV network, however, NBC no longer enjoyed the advantage of being alone in the field but had to compete with three other chains for facilities.

The Columbia Broadcasting System

The forerunner of the present CBS came into existence in 1927. The Columbia Phonograph Company, one of the original investors, gave the network its name. An important figure in the new organization was Major J. Andrew White, who had carved his niche in the broadcasting hall of fame by presenting the first sports broadcast to gain nationwide attention—the description of the Dempsey-Carpentier heavyweight fight. The new company, handicapped by NBC's head start, fought to establish itself, but NBC's control of the best radio outlets and outstanding stars made the struggle exceptionally difficult. Advertisers were reluctant to invest in programs heard over second-best stations and featuring second-line talent. Not until William Paley invested in the company in 1928 and assumed direction of its activities did CBS begin to draw even with its competitor.

Part of this success came from a new relationship worked out with member stations. CBS persuaded its affiliates to promise that certain time periods would always be available for network programs whenever a sponsor was secured. Holding this option on its stations' time, CBS could immediately guarantee certain specific coverage for national advertisers, while NBC could make no guarantee until it had worked out contracts with its affiliates for each individual program. Both networks paid their affiliates for carrying sponsored shows, but NBC charged its stations for carrying network programs that were not sponsored. In return for the option on certain time periods, CBS provided its affiliates with sustaining pro-

grams free of charge. The CBS contract plan, now adopted in substance by all the networks, gave it an advantage in securing business that helped to nullify some of the lead NBC gained by being first on the scene. CBS solved the talent problem by developing its own stars. Bing Crosby and Kate Smith are examples of its success in this field.

Although CBS has never been able to equal its chief rival, NBC, in coverage, it has often been the leader as far as sales volume is concerned. But the competition between the two networks has not been restricted to the area of finance. In 1949 Columbia rocked the entertainment world from end to end when it lured away from NBC such outstanding stars as Amos 'n Andy and Jack Benny. The desire of each network to become known as the source of the nation's best programs has developed one of the keenest and, in some ways, most bitter rivalries in American broadcasting.

Since the end of World War II, Columbia, like NBC, has also devoted many of its resources toward the development of television on a network basis. To the five TV stations owned by the network, Columbia is adding affiliates in all portions of the country to secure nationwide TV coverage.

The Mutual Broadcasting System

The formation of the Mutual Broadcasting System in 1934 marked the first time that the stations which were to become part of the network played the major role in setting up the network organization. Both the older networks were established by companies having no connection with the stations that were to become affiliates. The Mutual Broadcasting System, in contrast, was a co-operative venture of four outstanding stations: WOR, Newark; WXYZ, Detroit; WLW, Cincinnati; and WGN, Chicago. The name Mutual came from the fact that these four stations shared the responsibility for securing network business, took turns in providing programs, and divided the profits.

Expanding the network beyond these four stations was a real problem, because CBS and NBC had already secured the affiliation of the country's choicest stations—those with the highest power situated in the areas of greatest population. In a way, this difficulty reacted to the advantage of American radio as a whole, for Mutual was forced to build up its network by securing affiliates in remote areas. The result was that network programs were brought to areas

considered by the older networks not important or populous enough to warrant coverage.

Mutual also secured affiliates in highly populated areas, but because its outlets were weaker than those of CBS or NBC, it had to have many more stations in a given area to secure the same coverage. The acquisition of two important regional networks, the Colonial in New England and the Don Lee on the West Coast, further expanded the network.

In the number of stations, Mutual has become the largest of the networks, with over 500; yet NBC and CBS, each with only one third as many stations, still have better coverage. This, plus the fact that Mutual had no central organization for getting business, has caused it to lag behind the other networks as far as advertising revenue is concerned. It was the desire to correct this latter condition that prompted the recent reorganization that has made Mutual similar in structure to the other networks. It has, in effect, virtually abandoned the 'mutual' idea, and has substituted for it a strong central office, which gets business and provides programs for its affiliates.

Thus far, Mutual, as a network, has remained outside the video picture, although a number of its key stations are engaging in television activities on a local basis. It is possible that these stations will become the origination points for television programs to be distributed in the future to affiliates situated throughout the country as Mutual, like the other radio networks, organizes a web of TV stations.

The American Broadcasting Company

This net, although the newest American radio chain, is nevertheless one of the oldest in the sense that it is the direct descendent of NBC's Blue Network. As noted previously, the National Broadcasting Company was forced to sell its Blue Network when the Federal Communications Commission decided that no station affiliated with a company owning more than one network would receive a renewal of its license. The Blue Network became an independent organization in 1942, but it retained its original title until the end of 1944, when the present name, the American Broadcasting Company, was adopted. The complete separation between ABC and NBC is indicated by the intense competition between the two companies and by the wide differences in some of their policies.

ABC, along with CBS and NBC, is also active in the expansion of television on a network basis. Like the other chains, ABC has established a TV network by joining affiliates to owned-and-operated key stations.

The Du Mont Television Network

The only broadcasting web established by a company active exclusively in television is the Du Mont chain, formed as television bloomed following World War II. The parent company, a leading manufacturer of television receivers, has been acquiring stations and affiliates throughout the country in the same way as the other TV networks. With this chain added to those established by the radio networks, the United States is now served by four television networks: NBC, CBS, ABC and Du Mont.

Regional Networks

In addition to the four national radio networks,[1] several regional networks play an important part in American broadcasting. At present there are more than 50 of these limited networks tuned to the needs of particular areas. Some, like the West Coast's Don Lee Mutual Broadcasting System, have retained their individuality, although they are now affiliated with a national chain. Other important regional chains are the Texas State Network, the Michigan Radio Network, and the Yankee Network. The regional network serves the needs of those advertisers with distribution areas larger than that covered by any single radio station, but not large enough to warrant the use of a national network.

Network Relations with Stations

There are three important parties to a network broadcast: the network, which originates the program; the American Telephone and Telegraph Company, which provides the facilities for connecting

[1] In 1950 a fifth national radio network came into existence when the Liberty Broadcasting System began originating descriptions of major-league baseball games, broadcast by more than 200 affiliates throughout the country. In the autumn the network added football games to its offerings and expanded its schedule to 16 hours a day. Whether LBS will remain a permanent part of our radio scene, no one as yet knows; its future existence probably depends to a large extent on whether the baseball industry continues to permit the broadcasting of major-league baseball games on a nationwide basis.

the stations; and the various stations through whose transmitters the programs reach the receiving sets of the listeners. The links that forge these various units into a broadcasting chain are made up of the actual physical equipment tying stations together and the contracts that set the pattern for co-operative action.

Fig. 6. Nerve center of a radio network, the main control room of NBC. (Courtesy NBC)

The Physical Set-Up

Broadcasting stations can be bound together in two different ways. One method is to install a wire between the stations. In the case of radio, a type of telephone line is satisfactory for this purpose, but for television a special kind of line, called a coaxial cable, must be used in order to transmit the image. The second method of network linkage involves the use of a relay, which sends the program from one station to the other through space in the same way that a program reaches a regular receiver from a transmitter. The relay method has seldom been used in radio but is of major importance in connecting TV stations. Because the television wave length used for this purpose is very short, the method is called microwave relay.

A description of the route of a radio program as it travels from network to station will illustrate the nature of the linkage. Beginning at the microphone in the network studio, the program goes into the studio control room, then to the master control room of the network (see Fig. 6), where it is converted into the proper long-distance lines; from these lines the program enters the affiliated station through its master control room, whence it travels to the transmitter to be broadcast.

During a single broadcast the point of origin for the program can be changed without difficulty. When the line connecting the stations makes a complete circuit, this transfer can be made instantaneously; when a complete circuit does not exist, however, the switch entails a pause of a few seconds to reverse the direction of program flow.

Television programs, like those in radio, can be changed from one point to another during a single broadcast. In fact, a method exists for picking up a telecast from two points simultaneously, so that a reporter in New York, for example, whose face occupies one half of the screen can be seen interviewing a senator in Washington whose face occupies the other half of the screen.

Contract Relations

In dealing with its affiliates, a network is a completely independent organization making certain arrangements with other completely independent organizations. The network provides programs, the affiliated stations receive them, and the conditions under which this takes place are determined by agreements dealing with every phase of the relationship. The following explanation describes contract arrangements only as they have evolved in radio, but it is likely that when television reaches its maturity, the agreements will follow a similar pattern.

1. *Financial Arrangements.* The most important item in an affiliation contract is the amount of money the network agrees to pay the station for carrying its programs. This is determined largely by the number of listeners the station can deliver, which depends, in turn, on the station's power, frequency, location, and general popularity. Obviously, the 50,000-watt station in a metropolitan area can charge the advertiser considerably more per period than can a 1000-watt station in a rural area.

Inasmuch as the conditions establishing the value of a station's

time for network programs are also those that determine its value locally, the national advertiser pays about the same for a particular period as does the local advertiser. However, the network keeps approximately half of this fee to pay for such items as line fees, commissions, operation costs, sustaining programs, and to provide the network's profit. The reasons why a station is willing to receive about half as much for carrying a network program as it would get for the same program sponsored locally have been explained in a previous chapter.

2. *Option Time.* A second important provision of an affiliation contract deals with the amount of time a station promises to make available for network programs. In other words, the network receives an option over certain periods of the broadcast day, which it may use or not as it sees fit. This 'on call,' or option, time is limited by federal regulation to three hours in each of four periods: 8:00 A.M.—1:00 P.M.; 1:00 P.M.—6:00 P.M.; 6:00 P.M.—11:00 P.M.; and 11:00 P.M.—8:00 A.M. The station may carry more network programs if it desires, but no contract may require it to do so. Furthermore, a station must be given 56 days to clear its schedule if a network decides to exercise its option over a particular time period. A station may refuse a network program even if it falls in the agreed option period, if it considers the network program to be contrary to the public interest, or if it can successfully argue that a local program it wishes to present is superior in public service to the network offering.

In exchange for an option over a specific part of the station's time, the network promises to provide programs for virtually the entire broadcast day. Affiliates of certain networks do, however, pay some charges, which may include line costs, for sustaining shows. If it desires, an affiliate may subsist almost entirely on network programs, although most stations intersperse them with local programs. The network is willing to provide programs, even when no sponsors are available to pay for them, because the option-time agreements permit it to guarantee a potential advertiser a certain time on certain stations beginning at a specific date.

3. *Basic and Supplementary Stations.* The basic network is a certain minimum number of stations that an advertiser must use in order to get any part of the network. It follows that a station in the basic network is assured of carrying any sponsored program that the network presents. It is required to do so if the program

falls during its network option time; it may decide not to if the program comes outside of the 'on call' periods. Basic stations are usually the most powerful stations located in the most populous areas.

Supplementary stations are added to the basic network in order to expand the coverage of a particular program. Often these supplementary stations are organized into groups or legs, which provide coverage of an entire section. The networks all have West Coast legs, for example. Some supplementary stations are usually designated as basic to a specific leg and must be used if any part of the leg is used. The use of other supplementary stations is optional with the advertiser. This means that stations in a network are arranged in importance from the basic stations, to the supplementary stations basic in a particular leg, to the stations that are entirely supplementary. Obviously, supplementary stations are not assured of carrying every program, since their use is optional with the advertiser. The distribution of his product determines the number of stations he uses. Sometimes a network produces a program for one group of stations at the same time that it is producing a different program for another group of stations. This procedure is called split-network operation.

4. *Bonus Stations.* A type of arrangement quite different from the usual one between a network and a station occurs when a station in an area not covered by a certain network asks for the privilege of carrying that network's shows. If the network considers the area not sufficiently populous or important to warrant a regular affiliation, it may permit the petitioning station to carry some or all of its programs under what is called a bonus arrangement. Not only does the station receive no fee for carrying commercial programs, but it actually pays the line charges. The bonus station may, in time, build a listening audience large enough to justify regular network affiliation. Even if this does not happen, its network offerings pull a larger audience than purely local programs could, and thus its own charges for commercial announcements and local-program time can increase accordingly.

5. *Federal Regulations.* In addition to regulating option-time agreements, the FCC has laid down other rules governing network and station relationships. By federal regulation, affiliation contracts may not run longer than two years, after which they must be renegotiated. A station may not require that it have the exclusive

privilege of broadcasting a certain network's programs in its area, although in practice this is generally the case as far as radio is concerned. A network, on the other hand, may not require a station to sign an exclusive contract, although, again in practice, most radio stations maintain affiliation with only one network. The same situation is developing in TV station affiliation, replacing the conditions prevailing in the early days of network television when, because of the shortage of stations, one station might carry the programs of all four TV networks.

Network Organization

Although a network is much larger in scope than any commercial station, the basic objective of the two—the presentation of programs for advertisers—is fundamentally the same. This means that the division into the fivefold function of management, engineering, programming, selling, and traffic is as natural in the network as it is in the station. The president is the chief management official, while vice-presidents direct other phases of the activities. The nationwide scope of network operation usually calls for the establishment of subsidiary divisions in various parts of the country. NBC, for example, is organized into eastern, central, and western divisions.

One way in which a network differs from a station is that the network must maintain close relationships with a large number of independent companies—namely, the stations affiliated with it. This circumstance requires the setting up of a special department, which in most networks is aptly named the 'station-relations department.' It takes over most of the traffic responsibilities of a network, sending out by means of teletype a constant stream of information to affiliated stations about coming programs, cues, changes, cancellations, and program-origin points. A major responsibility of the station-relations department is the negotiation of contracts with each of the network's affiliates. In addition, it makes individual arrangements for each of the programs the network wishes to present.

One department, which exists in some of the larger stations but attains a position of crucial importance on the network level, is the public-relations department. Because the network carries on such extensive radio and television activity, it usually obligates itself to present the case for all of broadcasting as advantageously as it

can to the general public. Some of the other tasks that fall to this department are handling fan mail and receiving guests. The promotion department works in close conjunction with public relations by sending out press releases on future programs. The advertising of radio facilities available to sponsors, with the corollary responsibility of arguing radio's worth as an advertising medium, is also a function of the promotion staff.

In considering network organization, it must be remembered not only that networks provide programs for affiliated stations, but also that all the networks except Mutual own and operate their own stations. Mutual, in contrast, is owned by several of its leading affiliates. The organization of network 'owned and operated' stations individually compares with that of any station. However, much of their guidance and direction comes from the central organization. The sales department of a network, for example, is concerned not only with selling network programs, but also in selling local spot announcements for these 'o and o' stations, as they are called.

Transcriptions and the Network

Until recent times radio networks have considered recordings and transcriptions their deadly enemies, because the use of recording, carried to extremes, could supplant the network. By providing local stations with programs of high caliber, featuring outstanding stars, the transcription can match the main advantage of network affiliation. In addition, the use of transcriptions is more flexible than the network from the advertiser's point of view, because he can spot transcriptions only in those areas where a potential market exists, while in using the network he must take all the basic stations whether or not he wants them all.

Because of the apparent threat to their existence, NBC and CBS for many years prohibited the use of recordings on any of their programs. Mutual was the first network to let down the bars when it permitted the use of transcribed transition music for dramatic programs. When ABC came into being, it led the way not in opposing the use of recording, but in taking advantage of it. The Bing Crosby show, the first top network program to be presented entirely by transcription, was an ABC offering in 1946. This company took an even more radical step when it began presenting programs of recorded music on its full network.

To prevent the disruptive time changes that occur when part of

the country switches to daylight-saving time, ABC also took the lead in transcribing shows for those parts of the country that made no change, in order to keep programs at the same time throughout the year. Broadcasts that came too early for West Coast audiences were transcribed at a central point for later transmission to ABC stations. Until recently, affiliates of the older networks were often forced to do this transcribing individually.

Following the example set by ABC and Mutual, NBC and CBS are now making much fuller use of recording. Programs are transcribed at central points, both to prevent time changes during daylight-saving periods and to bring programs to western audiences at more convenient times. CBS and NBC took the final step in 1949 when they permitted the presentation of some shows entirely by transcription, even in their initial broadcasts. On the whole, the use of transcriptions has improved and streamlined the service of the network to the listener, without developing any threat to its existence as yet.

Whether the use of transcriptions will ever displace the network is a question only the future can answer. That this possibility is in the minds of some is suggested by the network-like names given to some transcription and recording companies. Examples are the Keystone Network, the World Broadcasting System, and the Transcription Broadcasting System, which provide stations with recorded material on a regular basis. Some material furnished by such companies constitutes a complete program in itself; in other cases it is merely music recordings from which programs are built. Most of the stations using this material are not interconnected in any way, but the Transcription Broadcasting System has attempted to tie over a hundred stations together in what could be called a transcription network.

The counterpart of the radio transcription in television is a sound film of a TV program, made from the picture tube of a receiver. The process is variously called kinescoping, cinemascoping, or tele-transcribing. The tele-transcription, instead of meeting early opposition from the networks as did its brother in radio, was immediately welcomed with open arms. In the absence of countrywide coaxial cables and microwave relay stations, it provided the only means of linking TV stations on a national basis. Thus, viewers on the West Coast were able to see a film of Milton Berle's show, made during the New York TV production. In the same way, New

Yorkers saw Ed Wynn on a TV film made in Hollywood. Of course, when coaxial-cable and relay facilities are extended and it is possible for TV shows to be picked up directly, the tele-transcription will become less important in video network operations.

Projects and Problems

1. For class discussion: As far as the listener is concerned, is there any difference between listening to a 'live' presentation and a transcribed one?
2. Survey the national-network situation in your area, indicating (a) which networks are represented; (b) the relative power of the various network stations; (c) whether the stations are owned by the networks or are affiliates; (d) whether the stations are in the basic network, are supplementary, or are bonus stations.
3. Analyze the program schedule of a local network affiliate to determine the amount of network programs carried by the station as compared with the number of shows originating locally.
4. Write a detailed history of one of the national networks.
5. Survey the status of regional networks in your area.

FOUR

The Advertiser

The advertiser is of supreme importance in our American broadcasting system, because his money supports almost the entire industry—the only exceptions being the few educational and religious stations that are paid for out of public or private funds. Not only does the sponsor pay the cost of programs that advertise his product, but from the broadcasters' profits derived from these commercial shows comes the money to pay for noncommercial or sustaining programs. Through the years a complicated structure has arisen to serve the needs of the radio advertiser; a similar pattern is developing in television. Certain phases of this structure are common to the advertising business as a whole, but others are a product of broadcasting's special characteristics. This chapter will define the place of the advertiser in the pattern of American broadcasting and describe the organizations that serve him.

Before proceeding, however, we should mention that the advertising support of broadcasting has had consequences affecting not only the industry itself, but also many other aspects of American life. Some critics consider this influence so vicious that they would substitute for the existing structure a broadcasting plan supported by taxation. Certainly a great deal of the adverse criticism of the present system is well founded, but much can also be said in the advertiser's defense. It is not the purpose of this chapter, however, to enter the controversy; we shall restrict ourselves to a description of broadcasting and the advertiser, without taking sides. In a later chapter, when the nature of broadcasting as a whole is discussed, we

shall examine the social impact of broadcasting's support by advertising, listing its good and bad consequences for the American people.

Why Advertisers Use Radio and Television

When radio programs for the public began in 1920, their potentialities as an advertising medium were not immeditely perceived. The question how this new service was to be supported became a problem immediately. Many suggestions were advanced, among them that the government should take over radio and tax the public for its support, that wealthy people should endow stations, or that the manufacturers of radio receivers should provide the money for program service.

Then in 1922 station WEAF, still owned at that time by the American Telephone and Telegraph Company, offered ten minutes of time for a $100 fee to any commercial interest desiring to present a message. The Queensboro Corporation of New York purchased five of these periods to present talks on the advantages of owning land in a new real-estate subdivision the company was developing. These first sponsored programs, in other words, were devoted entirely to a commercial. Of course, no one would have listened very long if that type of program had continued; the next logical development was to offer entertainment as the main substance of the program in order to attract an audience. Support through advertising soon became a fundamental part of our American radio system. Now radio advertisers spend half a billion dollars a year, with local and network time sales accounting for an approximately equal share of this money. The advent of television is rapidly increasing the amount of money spent for broadcast advertising.

The swift development of radio as an advertising medium is not difficult to understand. Early appeals for audience response flooded telephone lines or resulted in a deluge of mail—impressive proof that people were listening to the radio. Even more important was the effect of radio advertising on sales. An offer of a pendant or seeds in exchange for a box top sent customers scurrying into stores for the sponsor's product. When Amos 'n Andy first went on the air for Pepsodent, sales of the toothpaste increased by 76 per cent. But even this achievement has been overshadowed by television's record. For example, an appliance-store owner, finding himself with an oversupply of television sets, presented a TV announcement and

sold out his entire stock within a week. Even more phenomenal is the record of the Cameo Curtain Company. After a series of TV announcements its sales in one city jumped 52,000 per cent.

Television's effectiveness in selling is usually attributed to the fact that the medium permits an actual demonstration: the viewer can see the product in action as someone uses it—the most powerful influence in persuading people to buy. Studies also show that the ability of a television viewer to identify the sponsor of a program is much greater than that of the listener to a radio program. Although this may not affect buying, the advertiser likes to be recognized as the source of a program.

A principal obstacle to the advertising use of television thus far has been the relatively small number of receivers and the great cost of television production, a condition that makes the cost of the program per listener very high as compared with radio. Though television program costs are not likely to decrease, the continual increase in set ownership will act to reduce the cost per listener, making television constantly more attractive to the average advertiser.

In addition to the advantages already mentioned, both radio and television offer other distinct benefits to advertisers. Though these advantages do not necessarily belong to broadcasting alone, they do help explain why the act of laying money on a counter for a sponsor's product as the result of a broadcast sales message has become such a common part of our American scene.

1. *Broadcast advertising is flexible.* A concentrated national campaign, permitting the same message to be heard by many people at the same time, can be tied in with a campaign broadcast on a local level, adapted to conditions existing in a particular region.

2. *Broadcast advertising is timely.* It can be correlated immediately with happenings in the contemporary scene, which may be used to the advantage of the advertiser. It is timely in another way: commercials can be delivered during the time of day when it is most logical to draw attention to a particular product. Thus, most of the daytime serial dramas advertise a product that women in the middle of their housework are very likely to need—soap.

3. *Broadcast advertising is difficult to avoid.* If a listener decides to turn on a program, he cannot avoid the commercials unless he resorts to the laborious expedient of sitting at his receiver to cut out the program every time a commerical begins. He listens to the

advertising messages whether he wants to or not. They cannot be skipped over as advertisements appearing in a newspaper or magazine can be.

4. *Broadcast advertising receives the spotlight.* While the commercial message is on the air, it is the only stimulus being presented to the listener. This contrasts with advertising in magazines and newspapers, which must often compete for attention with other material on the page.

5. *The broadcast advertiser can present entertainment exactly suited to the purpose of the advertising.* Because the advertiser has no control over what is published in a newspaper or magazine, it may happen that the material occupying a page with an advertisement is out of keeping with the mood and message of the advertisement. In radio and television the fact that the advertiser and his agents actually design the entertainment insures the compatibility of product and program.

An example of harmony between entertainment and advertising purpose is the type of program presented, not to sell goods directly, but to establish the worth or quality of the enterprise sponsoring the program. By featuring symphony music, complete operas, and quality drama, the sponsor enhances his reputation, even though the audience for such programs is not large when compared with those drawn by more popular entertainment. Programs of this type, designed primarily to build prestige, are called 'institutional.'

6. *Broadcast advertising can use sound effectively.* An important factor in radio and television advertising is the persuasive appeal of the announcer's voice, which can imbue the commercial with a far more personal touch than is possible on the printed page. Combinations of speech, music, and sound effects can also maintain attention through variety, and by their ear appeal serve to 'set' a product's name or message.

The Radio and Television Advertising Structure

The Advertising Agency.

The most important element in the structure serving the advertiser, other than the broadcasters themselves, is the advertising agency. Its service to people who want to sell goods takes a number of different forms. One of its major contributions is the provision of expert advice about advertising. Just as a law firm is hired to counsel

a company in legal matters, so specialists in the field of advertising are employed to recommend the most effective means of presenting the company's product to the public. Usually this involves the planning of an entire advertising campaign, of which radio and television may be a part. As far as the broadcast phase of the campaign is concerned, the advertising agency may plan the program, write the script and advertising copy, secure the talent, buy time from the station or network, and put the program on the air. When this procedure is followed, the broadcasting industry does not come into direct contact with the advertiser at all but merely rents the use of its facilities through the middleman, the advertising agency. At the present time, at least 80 per cent of network commercial programs are handled in this way, and even as early as 1929 the proportion was 33 per cent.

In return for its services the advertising agency receives 15 per cent of all the money it spends for a sponsor. This commission is received in two different ways. As far as charges for radio or television time are concerned, the station or network returns 15 per cent of the money it receives to the advertising agency. For all other charges, the agency adds 15 per cent to the cost of such items as talent, writing, and production when it bills the sponsor.

To illustrate, let us assume that a period on a station costs a sponsor $100. Of this amount the station receives $85, the advertising agency, $15. Let us assume, further, that a singer appearing on the program charges $100 for his services. The sponsor pays this fee and adds $15 for the agency's commission. The original cost of the program, including time and talent, totals $200, for the spending of which the advertising agency receives $30, an over-all commission of 15 per cent. The actual cost to the sponsor, of course, is $215. It is interesting to note that the advertising agency is one of the few businesses in the world that makes money by spending it, and the more it spends, the more it makes.

The Broadcasting Industry and the Advertiser

Although the advertising agency dominates the scene on the national level, there are many instances on the local level where stations and advertisers deal directly with each other. The time salesman of a local station goes to a potential advertiser and persuades him to use the facilities of the station. The announcement or program is prepared and presented by the staff of the station without

the intervention of any third party. In planning a campaign and then carrying it out in this way, the local station not only provides facilities but also performs the function of an agency.

Production Agencies

As the name indicates, these agencies are specialists in the building and production of radio and television programs. In most cases such an agency contacts neither the advertiser nor the network directly, but works through the advertising agency. Its sole function is to produce programs. Generally, it is called into play by an advertising agency too small to carry on the complicated task of radio or television production, or by an agency desiring to restrict its activities to advisory and contact functions for sponsors.

Frequently a production agency supplies all the elements of a program—talent, script, sound effects, and production—for one over-all price, instead of charging for these items individually. The only additional costs to the sponsor are the advertising agency's commission and the charges for radio time. A program purchased in this manner is called a 'package' show.

Individuals and networks may also sell programs as packages. Before CBS took over the program, Jack Benny presented his show under this arrangement. Out of the approximately $25,000 he received for each broadcast, Mr. Benny paid the fees of Don Wilson, Dennis Day, Phil Harris, Rochester, and Mary Livingstone, and took care of the writing, music, and miscellaneous costs. The remainder went to him and to those who were associated with him in owning the package. The Jack Benny program is now a package owned by CBS. The networks, particularly CBS, have also been leaders in the development of their own package programs. In the case of a show like 'My Friend Irma,' a CBS-owned production, the network makes a profit on the sale of the package as well as on the sale of radio time for the program.

National Sales Representatives

Manufacturers of products with national distribution frequently present announcements and programs on individual local stations in addition to the advertising they may do via the networks. This local advertising by national companies is a very important adjunct to revenue gained by the local station from carrying network programs and from advertising by local merchants. The securing of

national advertising accounts by the individual station from companies located in many different cities would be a very difficult task without special help. The national sales representative performs this service by maintaining offices in the centers of advertising activity to sell time for radio and TV stations scattered throughout the country. In effect, it acts as an extension of the sales force of each station it represents, usually collecting a 15 per cent commission on all sales it makes. It follows that when the 15 per cent commission of the advertising agency is also subtracted from the amount paid by the advertiser, only 70 per cent of the total charge is left to the station for the use of its facilities.

The Sponsored Program

The term 'sponsor,' a very familiar one in the broadcasting industry, is often used loosely to designate all buyers of radio or television advertising. It can be applied properly, however, only to those advertisers who purchase sufficient time to present a program of some sort along with their commercial messages. The advertiser who buys only enough time to present a commercial cannot accurately be called a sponsor, although, of course, the money he pays does contribute to the support of radio as a whole.

Sponsored-Program Commercials

The variety of form, placing, and purpose of the commercial messages on sponsored programs is so great that any rigid classification is impossible. Every day the best brains in the industry apply their ingenuity to the task of devising techniques that will make broadcast advertising as unobtrusive and acceptable as possible, and yet maintain the maximum selling impact. The simple, straightforward appeal presented by an announcer, once the most common type of radio advertising, is now being widely supplemented with music, sound effects, and different voices to add variety. Television, of course, can add to these a wide range of visual techniques. On comedy and audience-participation shows, an attempt is sometimes made to weave one of the commercials into the entertainment. The 'Fibber McGee and Molly' show is an example of this practice, as is Milton Berle's television show. At least one of the commercials is usually delivered completely straight, however, as an entity separate from the rest of the program.

The location of the commercials is another factor that varies

greatly. One of the most common formats places a commercial at the beginning, the middle, and the end of the program—which means that a strong advertising appeal is presented before the entertainment is actually begun. Following the theory that audience attention should be gained before the commercial message is given, some programs merely mention the sponsor's name at the beginning, waiting until interest is certain to be caught before presenting the long commercial.

Usually, only one product is advertised on a sponsored program. The two or three commercials on the program may all concentrate on one selling appeal, or a variety of approaches may be utilized. Sometimes a company that manufactures more than one product will advertise two of them equally on the same program. A more common practice is to place most of the commercial emphasis on one product, while a single commercial, called a 'trailer,' is brought in for a secondary product at the very end of a program. If the commercial for this secondary product occurs at the beginning of the program, it is called a 'cow-catcher.' A frequent user of the 'trailer' commercial is the tobacco company that closes a program, sponsored in the name of the cigarette it manufactures, with a brief plug for its pipe tobacco.

Sometimes companies purchase an entire half-hour period but divide it between two different programs advertising different products. In such a case a commercial for a third product, called a 'hitchhiker,' is often inserted between the two programs in the place where station identification would normally come. The 'trailer' is frequently called a 'hitchhiker' also.

Special Types of Programs

As far as sponsorship is concerned, the most usual program is one purchased in its entirety by one company, even though two or more products may be advertised. There are programs, however, in which two or more entirely different companies get together to share the costs.

1. *Participating.* The most common form of this type of program is the network show divided into segments, with each segment paid for by a different sponsor. Such an arrangement calls for a program that can be easily divided without destroying its unity—a requirement that practically eliminates the drama or comedy program from this category. Music and audience-participation shows are most sus-

ceptible to such handling. During one year Paul Whiteman presented an hour-long recorded program over the ABC network, with four different sponsors taking over each 15-minute period. 'Stop the Music' and the Arthur Godfrey daytime programs are other examples of participating shows. Local stations frequently present programs that are participating in that they feature recorded music interspersed with commercial announcements paid for by different advertisers.

2. *Co-operative.* The co-operative show is a network program sponsored by advertisers in the area of each local station. At predetermined spots in the program the local announcer cuts in to deliver a commercial for the advertiser sponsoring the program in his particular area. This arrangement may permit a single program to have a hundred or more sponsors. Rarely, however, do all of the local stations carrying these co-operative programs succeed in securing local sponsors. For them the program is presented on a sustaining basis, with the network announcer reading an appeal for a public-service cause, such as savings bonds or the Red Cross, at the point where the local commercial would be read.

Sometimes local cut-in announcements are made when a program is not of the co-operative type. This may happen when the conditions affecting the sale of a product differ from area to area even though it has national distribution. In such a case, the sponsor often requires that the local announcer cut in with a commercial having distinct local application.

3. *Open-End Transcriptions.* This type of program is the same as the co-operative show, except that the entertainment is presented by transcription rather than directly from the network. When these programs are transcribed, spaces are left at various points in the show for the introduction of commercials, usually read 'live' by the local announcer. The sponsor in whose interest these commercials are presented pays for the transcription and the entire time required to broadcast it.

Program Time Charges

The time charges for sponsored programs are usually figured with the hour period as the unit—the sponsor paying less for each minute the longer the period of time he buys. On this basis, the half-hour period costs 60 per cent of the hour period; the quarter hour, 40 per cent of the hour period. Thus, the sponsor who buys a half hour

for two different programs pays less than he would if he purchased the quarter hours separately.

The number of weeks or days a program runs also affects the time charge. Networks usually require a sponsor to buy a broadcast period of at least 13 weeks, but if he continues for a longer time, he receives a proportionate discount on each program. Another factor influencing time charges is the time of day the program is presented. Because greater audiences are available during the evening, the charge for a television time period after six o'clock is greater than it is for a daytime period of the same length. This differential has also existed in radio, but with television now reducing the size of evening radio audiences, some AM station owners are selling time after six o'clock at the same rate charged for daytime periods—a move that may presage the adoption of a similar policy for the entire radio industry.

Selecting a Time Period

One of the most important decisions a sponsor must make is the selection of a time period for his program. Sometimes he has a choice in the matter; sometimes he must take what he can get. Because the attractiveness of the programs that precede and follow his on the station is likely to affect his audience very significantly, the potential sponsor usually wants to know the nature of these programs. Of even greater importance to him are the programs being presented by other stations at the same time. A sponsor hesitates to compete with a program that, through the years, has proved its power to attract a large share of the audience. Another factor to be considered in selecting a time period is that networks and many stations require at least a 15-minute interval between programs sponsored by the makers of competing products.

Spot Announcements

The spot announcement is differentiated from the commercial on the sponsored program in that it is usually presented between programs rather than as a part of a program, and is a feature of local-station rather than network operation. Sometimes announcements of this nature come between items on a newscast or between numbers on a program of recorded music.

Station-Break Announcement

As the name indicates, this announcement is presented during the time given a network affiliate to identify itself after every program—a 30-second interval as far as radio is concerned. The briefness of the period restricts such announcements to 50 words or less, but the large audiences attracted by the network shows make even this short commercial well worth while. From one point of view, such announcements can be considered parasitical in the sense that they take advantage of the listeners another advertiser has gained. Despite this, they are a well-founded part of our system and account for an important share of the revenue earned by a network station.

The station-break commercial, purchased by both local and national advertisers, may be presented 'live' by announcers or actors, or may be broadcast from transcriptions or film. The advantage of the transcribed or film method is that the advertiser is assured of absolute uniformity in each presentation of his message.

Longer Announcements

The longer spot announcement, usually one minute in length, is most often heard between numbers on a program of recorded music, although it may follow a network show if the next program can be delayed long enough to permit completion of the announcement. On radio the transcribed method of presentation—utilizing music, sound, and varied voices—is far more common these days than the reading of the copy by an announcer. The same trend is evident on television, where advertisers make great use of filmed commercials.

Charges for Announcements

In charging for announcements, the station may base its rate either on the length of time required to present the commercial or on the number of words it contains. The conditions applying to the cost of sponsored programs also apply to commercials; thus the advertiser pays relatively less for the longer announcement, and less for each commercial the oftener it is repeated.

Projects and Problems

1. For class discussion: What are the relative advantages and disadvantages of the following methods for supporting radio: (a) a tax on receivers, (b) general taxes, (c) a tax on the manufac-

turers of radio sets, (d) payments by the listener according to the amount of time he uses his radio (it has been suggested that radio use can be metered through a telephone attachment), and (e) support through advertising?

2. Keep track of the commercials you hear during a week of listening and report any that you consider objectionable, with your reasons.
3. Using a stop watch, time several daytime and nighttime commercials and compare the two types in average length and in the over-all amount of time devoted to commercials in each 30-minute period.
4. Write a paper on the first five years of advertising in American radio.
5. From programs broadcast in your area, find an example of (a) a participating program, (b) a co-operative show, (c) a trailer commercial.

FIVE

The Regulation of Broadcasting

Two conditions inherent in the broadcasting of radio and television programs have made governmental regulation of some sort an absolute necessity. The first is that to carry his program from the point of origin to its many destinations, the broadcaster must use a frequency belonging to the people as a whole. Only the government can protect the public's interest in this important property. The second reason for a certain degree of governmental control is the practical necessity for some agency to apportion the available frequencies among broadcasters. Were station owners permitted to establish their own conditions of operation, the resulting interference and clash would unquestionably make broadcasting of any kind impossible.

As broadcasting has developed in various parts of the world, the degree of governmental regulation has varied from slight supervision to complete and rigid control. Although the detailed structure of government regulation has taken almost as many forms as there are nations, the various systems can be classified into three major types, existing separately or in combination in most of the countries of the world. The American system, in which broadcasting facilities are privately owned, is of greatest interest to us, but before describing it, we should take a brief look at two others, the government-owned and public-owned systems.

Government-Owned and Public-Owned Systems of Broadcasting

The Government-Owned System

Under this system, not only is broadcasting regulated by the government, but the facilities actually belong to the state. Programs are produced by a department specifically established for this purpose, with financial support provided by government funds and supplemented in some cases by money obtained from the sale of time for advertising. A natural result of such a system is that programs are likely to be presented in the interests of the group in power rather than in the interests of the public, and where dictators rule, broadcasting becomes one of the most powerful forces maintaining the dictatorship. Although some democracies do operate government-owned systems, the type is best exemplified in Russia, and it existed in the dictator-controlled countries of Germany and Italy prior to their defeat in the war.

The Public-Owned System

Since the outstanding example of public ownership exists in Great Britain, this system will be described in terms of conditions prevailing there. At first glance, the British system might seem to be a variation of the government-owned method, but several important differences put it in a class by itself. For one thing, the British have deliberately established checks that make it virtually impossible to use broadcasting as an instrument of the party in power. This has been accomplished by placing the control of radio and television in the hands of an autonomous public corporation, the British Broadcasting Corporation, chartered by Parliament for ten-year periods. Once the charter is granted, Parliament has no direct control over programs; this responsibility rests with the Board of Governors of the British Broadcasting Corporation.

Other distinguishing characteristics of the British system are the total absence of advertising; the monopoly granted to the BBC, which excludes any private broadcaster from air activity; and support through a tax on the owners of receivers. The BBC provides its listeners with a choice of three types of radio program: (1) *Light,* variety and dance programs; (2) *Home,* somewhat heavier fare; and (3) the *Third Program,* classical music and cultural works. Tele-

vision activity has been resumed since the war, but Great Britain's effort to regain its outstanding prewar position in the video field has been handicapped by material shortages and money problems, although there are some who claim that Great Britain, even today, leads the world in TV program quality and technical development.

An argument has long raged regarding the relative merits of the British and American systems of broadcasting. The desire of advertisers to attract the largest audience possible has made our system one that tends to offer programs desired by the mass of people. The English system, in contrast, without the necessity of catering to the advertiser's needs, can present programs that, to paraphrase an English commentator's statement, can lead rather than follow the public taste.

Examples of the government-owned, public-owned, and privately owned systems can be found in other countries of the world, while some countries combine features of each. Our next-door neighbor, Canada, with a public agency (the Canadian Broadcasting Corporation) operating side by side with a private system supported by advertising, is an interesting example of one of these combinations.

The Growth of Federal Regulation in the United States

The American system of broadcasting, as contrasted with the government-owned and British systems, is an industry of privately owned and operated radio and television facilities, subject to governmental regulation. The first step toward regulation was taken in 1912 when the federal government recognized the need for the allocation of radio frequencies by passing a Communications Act, giving the Department of Commerce the authority to license radio stations. Radio at that time was strictly an instrument for sending messages; moreover, its use as a public medium had not even been foreseen. And yet from then until 1927, long after radio's use in point-to-point communication had been overshadowed by its development as a public-broadcasting device, the sole power of the government to regulate rested in an Act intended to solve the comparatively simple problem of marine-wireless control.

While radio was restricted to sending messages, this regulation proved sufficient, and even in the early days of public broadcasting, before advertising had made radio stations valuable commercial properties, the owners were able to get along by making gentlemen's agreements regarding the use of channels. But when air time

acquired dollar value, station owners forgot they were gentlemen and began fighting for the listener's ear with conflicting frequencies. Soon new broadcasters were coming on the air without even bothering to obtain a license from the government and in many cases they began transmitting on frequencies being used by well-established stations. The result of the inevitable conflict and interference was pandemonium for the listener.

The Department of Commerce endeavored to re-establish control of the situation by bringing unlicensed broadcasters into court for violation of the Communications Act of 1912. But the presumed authority of the government vanished when the courts ruled in 1926 that the Act applied to radio only when used for sending messages. The clear implication of this decision was that broadcasters could establish stations on any frequency they wished without recourse to the government; thus, the only escape from kilocycle chaos was a new Act that would grant the government specific authority over public broadcasting.

The Congress finally responded to the clamor of the public and the broadcasters that something be done by passing the Radio Act of 1927, establishing the Federal Radio Commission as the agency for licensing and regulating broadcasting stations. Embodied in this Act was the fundamental assumption that the air waves belong to the public; an obvious corollary was the principle that the privilege of using a frequency involves an obligation to serve the public's interest.

The Federal Radio Commission was set up as a temporary agency and was expected to go out of existence as soon as order had been restored to broadcasting; yet year after year the five-man commission had to be reappointed to meet new problems. In 1934 Congress recognized the permanent place broadcasting had attained in our lives by passing the Federal Communications Act, which established a new seven-man board on a permanent basis. The philosophy underlying radio and television regulation remained unchanged, however, as most of the provisions were taken verbatim from the Act of 1927. In addition, the new board was given authority over telephone and telegraph communication.

Present Federal Regulation of Broadcasting

The Federal Communications Act

The seven persons on the Federal Communications Commission are appointed by the President, subject to confirmation by the Senate, for terms of seven years at $15,000 per year. To minimize the effects of partisanship, the Act decreed that no more than four of the commissioners can be members of the same political party. The major power granted to this Commission is the authority to license radio, television, and facsimile stations, including the right to assign call letters, to determine a station's power and time on the air, and to require that certain equipment specifications be met.

Besides having authority over the granting of licenses, the Commission may, for sufficient cause, refuse to renew a license or suspend a right to broadcast. In addition, it must authorize all changes in a station's status, such as an increase in power or time, a change of location, or a transfer of ownership. No reference to networks is contained anywhere in the Communications Act, but the Supreme Court has ruled that the Commission's right to regulate the stations that constitute a network gives it, in effect, authority over the network itself.

In the granting of licenses, the Communications Act places certain limitations on the Commission, among which are the following:

1. The Commission may not license aliens to operate broadcasting stations.

2. The Commission may grant licenses for not longer than three years and may renew licenses only 30 days before expiration.

3. By granting a license, the Commission may permit the *use* of a channel for a certain period but may confer no right of ownership.

4. The Commission must provide fair, efficient, and equitable distribution of broadcasting service.

5. The Commission is specifically denied the right of censorship over broadcasts and may not interfere with the right of free speech.

Another condition the FCC must fulfill in granting licenses to stations is stated in a section that has become the most important single influence in government regulation. The section says: 'The Commission, if public convenience, interest, or necessity will be served thereby, shall grant [broadcasting licenses] to applicants . . .

subject to limitations of the Act.' The terms 'public convenience, interest, and necessity,' a recognition of the public's rights to the air waves, occur again and again in the Act but are never defined. This leaves their interpretation to the Commission—a power that gives that body considerable authority over broadcasting.

The Communications Act places very few limitations on the radio industry directly, achieving its control by empowering the FCC to grant licenses and establish regulations under the limitations just described. The specific provisions listed below, however, do apply directly to broadcasters.

1. Obscene, indecent, or profane language is barred.
2. One station may not rebroadcast the program of another station without its consent.
3. If a station grants the use of its facilities to a candidate for public office, it must make its facilities available to all other candidates for that office on the same basis.
4. Sponsored programs must be identified as such.
5. A radio station may not censor a political broadcast.
6. No false or fraudulent signal of distress may be broadcast.

The Federal Communications Commission

The FCC derives its authority over broadcasting not only from the specific sections in the Act giving it the power to license and regulate stations, but also from the general provision that the Commission may perform any and all acts and make such rules and regulations as may be necessary in the exercise of its functions. As a result, the FCC has executive power in enforcing the provisions of the Act; it is legislative in that it issues rules and regulations controlling the broadcasting industry; and it is judicial in that it interprets provisions of the Act and its own rulings and sits in judgment over the record of stations.

As far as 'public interest, convenience, and necessity' are concerned, the Commission has been almost as hesitant as Congress was in reducing these vague generalities to specific terms. However, it has made very clear that radio frequencies belong to the public and that use can be granted only on the condition that public interest is served. In 1946 the Commission made its position somewhat more concrete by publishing a study of the broadcasting industry, entitled *The Public Service Responsibility of Broadcast Licensees.* This 'blue book,' as it was called, severely criticized several stations

for such faults as overabundance of commercials, lack of good sustaining programs, and failure to provide community service. Although this report threw some light on what the Commission considered good broadcasting practice, the FCC has never gone so far, for example, as to decree what per cent of program time should properly be occupied by the commercial message, nor has it indicated how much time should be devoted to educational programs. Generally speaking, broadcasters must decide for themselves what the public interest is, and the Commission judges them before a license is granted and after the broadcasting is done.

The FCC controls that are explicit deal primarily with engineering matters and details of operation rather than with program content. Some of the more important of these specific regulations are as follows:

1. A radio station must state its call letters and location at the beginning and end of its daily schedule, on the hour, and either at the half-hour or at the quarter-hour following the hour and at the quarter-hour preceding the next hour. The TV station need be identified only every hour. These requirements are relaxed if identifying the station would interrupt a consecutive speech, play, religious service, symphony concert, or operatic production, but the station must be identified at the first opportunity.

2. All recorded and transcribed radio programs over one minute in length must be identified as such. Programs between one minute and five minutes in length need be identified as recorded or transcribed only at the beginning; longer programs must be identified at the beginning and end. However, programs transcribed for presentation one hour later to avoid time changes due to daylight-saving time need not be noted as transcribed so long as the station announces at least once between 10:00 A.M. and 10:00 P.M. that certain of its programs are transcribed for delayed rebroadcast. Background effects, such as sound and music, need not be identified as recorded. Television programs transcribed or filmed in whole or in part must be so described either at the beginning or at the end.

3. Each station must keep a log of its broadcast schedule, including a statement of the times of station identification, a brief description of each program, and assurance that each sponsored program has been announced as such.

One of the noteworthy characteristics of the Federal Communications Commission's record has been its effort to prevent monopo-

listic control of broadcasting—a policy that has been expressed in several different regulations. The same person or group cannot own two stations of the same type in a single broadcasting area; one person or company is permitted to own no more than 7 AM stations, 6 FM stations, or 5 TV stations; a single company cannot own more than one network; networks are prohibited from operating talent agencies, since they are the chief users of that talent. Furthermore, under the announced policy of promoting 'diversification in the controls of the media of mass communication,' the FCC has often been reluctant to grant licenses to newspaper owners, on the theory that two such powerful influences as a newspaper and a broadcasting station can become dangerous when concentrated in the hands of one person or group. Despite this policy, however, many newspaper owners have obtained licenses; in fact, one third of the nation's broadcasting stations are the property of newspaper publishers. Many of these licenses were granted, of course, before the FCC came into being.

Other Laws Affecting Broadcasting

The broadcasting industry, in addition to being subject to the laws passed by Congress to regulate it specifically, must abide by other federal laws applying to all industry. Among these are the antitrust laws and the Act that established the Federal Trade Commission. This commission has the same authority over radio advertising that it exercises over advertising in other media. Post-office laws and regulations must also be strictly followed, inasmuch as broadcasters often invite the use of the mails in promoting contests and listener reactions.

Copyright Laws

The broadcasting industry is interested in copyrights for two reasons: it is anxious to protect the material originating with it; and, on the other hand, it uses much material to which other people hold the rights. The pertinent regulations are contained in the federal copyright law and in the decisions of courts ruling under this law. Two types of copyrights are legally recognized. The first type, known as a common-law right, gives the author or composer perpetual rights to the material he creates so long as he does not publish the material or have it copyrighted formally. The broadcasting of a work, by the way, has been held *not* to

constitute publication even when done on a network basis. The second type is the statutory copyright obtained from the Copyright Office of the Library of Congress. To copyright a play, for example, one must send an application and a copy of the play to the Copyright Office and pay a fee of four dollars. The statutory copyright runs originally for 28 years and can be renewed for the same period; after this the material becomes the property of the people at large. All material registered for statutory copyright, then, enters the public domain at the end of 56 years. Before material or music under copyright can be used, the rights must be obtained. The infringement of either common-law or statutory copyrights can result in the award of damages to the owners.

Because scripts are not usually published, many broadcasters are content to protect their rights through the common-law copyright, which exists by virtue of the creation of the material. Sometimes disputes arise between a broadcaster and his employees regarding the ownership of copyrights. It has usually been held that when an individual is employed to write scripts, the employer retains the copyright privileges; but when a writer creates material on an independent basis, he controls the copyright. In cases where disputes may arise regarding the ownership of material, the only certain guarantee of the author's rights is the statutory copyright, which should be secured before the script is submitted. The producers of programs, in turn, protect themselves against unwarranted suits by requiring that writers sign a release, which states, in substance, that the writer agrees that other people may have ideas resembling his and that the future broadcast of a similar program does not mean that his script has been plagiarized. This release must be sent before most producers will even read a script. Another frequent issue is the ownership of ideas, characters, and titles; although these cannot be copyrighted formally, the courts have often granted damages for infringement.

The development of television has introduced new complexities into the copyright situation. Precedent indicates that a previously obtained right to present material on the radio does not extend to television. Broadcasting rights for that medium must be expressly secured unless all rights have been released in the original contract.

State Regulations

The most important state laws affecting radio are those that define a station's responsibility for the broadcasting of material held to be defamatory. These laws vary from those that exclude the radio station from responsibility if it can prove that it exercised due care in trying to prevent the defamation, to those that hold a station liable no matter what the circumstances. In this latter situation a station may be held equally responsible with a political speaker for defamation, despite the fact that the station is explicitly prohibited by the Federal Communications Act from censoring a political broadcast. This responsibility holds even though the actual broadcast may originate in a network center many miles from the station that carries it. Thus, a station may find itself in the uncomfortable position of being unable to prevent what will make it liable for damages.

Other state laws affecting broadcasting prohibit the advertising of certain products, and exercise controls in some cases over contests or offers that require the mailing in of box tops or similar proofs of purchase. Some states require that an individual's name can be used in advertising only with his consent.

Television has a few legal problems that radio does not face. One is the possibility of a suit if a person's picture is broadcast without his consent—a likely happening at the telecasting of special events and sports contests. The precedents established when newspapers and newsreels have become involved in similar situations indicate that the use of an individual's picture for a commercial purpose would violate his rights unless his consent were obtained; a spectator held up to ridicule by a telecast would also be likely to win a suit. For this reason cameramen are cautioned not to keep their cameras on one section of a crowd for too long a period. However, the mere telecasting of a person attending a public event is not likely to make a station liable for damages. The principle that 'in public an individual does not have the right to remain unseen' will probably apply in television as it does in newspaper and movie activity. Private peeking would, of course, be prohibited.

Self-Regulation by Broadcasters

In addition to the control over broadcasting imposed by government, the broadcasters have placed certain restrictions on themselves. This

has been done through the medium of national organizations to which broadcasters belong and through restrictions on their own activity laid down by individual stations and networks. At least part of the motivation for self-regulation, of course, comes from a desire to avoid even stricter controls by the government.

The Code of the National Association of Broadcasters

The NAB, formed in 1923 as a broadcasters' trade association and now including most radio stations and networks in its membership, has from time to time published a code that proposes to regulate the activities of its members. Dealing with such matters as the length of commercials, products suitable for radio advertising, and standards for children's programs, the NAB code has had some beneficial influence on the industry. Its effectiveness, however, has been seriously hampered by three factors: (1) The importance of advertising to radio has resulted in a gradual loosening of the code with respect to advertising excesses. This tendency has intensified recently as radio has had to face the growing competition of television. (2) The association includes members with such diverse interests that it is almost impossible to get agreement on a code unless it is worded in generalities that are virtually meaningless. (3) When sections of the code do become specific, the absence of any enforcement except moral pressure makes violation easy and frequent.

An organization comparable to the NAB, the Television Producers Association, has recently promulgated its first code. An analysis of this document reveals, as might be expected, that the TV code is following the pattern established by the NAB.

Regulation by Stations and Networks

The final step in self-regulation is the setting up of policies that networks and stations impose on themselves. Formerly, the differences in individual policies were quite marked, but the recent tendency of those companies with the most stringent restrictions to relax their standards has leveled out some of these differences. For example, NBC is now accepting advertising for deodorants, previously on the taboo list. CBS, which not long ago barred recordings from its network entirely, has now gone so far as to present an entire network show from phonograph records—the give-away

program, 'Spin to Win.' Even more surprising is the fact that most of the networks and many stations have recently considered accepting advertising for hard liquor, a product formerly banned from the radio even by the NAB code. Certain differences among station and network practices still exist, however, and will probably continue. A case in point is the prohibition by some stations of programs in a foreign language, as contrasted with the practice of stations that make a specialty of such broadcasts.

International Treaties Regulating Broadcasting

It is obviously futile for a national government to regulate the allocation of frequencies within its borders if neighboring countries license stations to broadcast on conflicting frequencies. To prevent this international interference in the various bands, our government has entered into agreements with Canada, Mexico, Cuba, and other near-by countries to divide the AM, FM, and TV frequencies. In assigning frequencies to stations in the United States, the FCC is bound to abide by the terms of these agreements.

In the area of short-wave communications, where a radio signal may travel around the world, agreements and understandings entered into by a wider group of nations are necessary. International conferences have set up the types of frequencies to be used for various purposes and have assigned the band frequencies and groups of call letters to be used by the various nations of the world.

Projects and Problems

1. For class discussion:
   a. Should newscasters be permitted to editorialize?
   b. What are the relative advantages and disadvantages of the British and American systems of broadcasting?
   c. If you were a state legislator, what law would you favor for establishing the responsibility of a radio or TV station for defamation uttered by a speaker?
   d. Should broadcasters follow the general rule that nothing must be presented that will offend anyone in the audience?
2. Report to the class your definition of the terms 'public interest, convenience, and necessity' as they should apply to station operation.

3. Obtain from the library a copy of the Federal Communications Act of 1934 and summarize its most important features for the class.
4. Extending your study beyond the material contained in this text, write a paper on the conditions prevailing in American broadcasting before the advent of federal regulation in 1927.
5. Arrange an interview with the chief engineer of a local radio station to discover the nature of the engineering regulations imposed on the station by the FCC. Report your findings to the class.

SIX

Measuring the Audience and the Program

As soon as advertisers began using radio, the measurement of the audience became more than a matter of idle curiosity. Knowing how many people hear a program is as vitally interesting to the advertiser as are the circulation figures of the newspapers or magazines he uses. The size of a radio or television audience, however, cannot be measured as easily as the circulation of a magazine can. A broadcast signal leaves a station antenna and goes out an undetermined number of miles in all directions to an undetermined number of receivers, which, even if operating, may be tuned to another station.

The first step in measuring the size of the audience for a radio or television program is to determine the listening area of the network or station broadcasting it. This type of survey, called a measurement of station coverage, defines the area in which the signal of a particular station can be heard. Coupled with a count of the population and the number of receivers, coverage information will tell how many people can hear the program of the station if they all tune in.

The next step is to find out how many of the available audience actually hear a particular program. A number of methods have been worked out that arrive at this figure through the use of sampling techniques. In general, these measurements indicate the

comparative popularity of a program in relation to others on the air, and from this the actual audience can be estimated.

The advertiser is usually content to end the measurement process with this estimate, but, as many have pointed out, the size of the audience is not necessarily an indication of the program's worth. To complete the evaluation process, the final step of establishing program quality must be taken—a problem attended by even more hazards and difficulties than the task of measuring audience quantity.

Measuring a Station's Coverage

At first thought, it might seem that determining the area in which a particular station can be received is a comparatively simple problem, but when we consider the vagaries of reception from day to night, interference by other stations, and the influence of weather and terrain, we see that even this measurement can be only an estimate. Three principal techniques are now in use. These methods are described in terms of radio, but they can also be applied to television.

Field-Strength Surveys

This engineering method consists of taking a radio receiver out into the field to determine the listening area of a station. The strength of the signal coming from the transmitter is carefully measured at various points in the area surrounding the station. When this strength falls below a previously determined minimum strength, it is presumed that satisfactory reception will not take place. A circle or contour drawn through these points of minimum strength encloses the primary coverage area of the station. In order to establish the secondary and tertiary coverage areas, the survey is continued beyond this point until the signal disappears entirely. A contour map summarizes the information by indicating in graphic form the various coverage boundaries.

The field-strength-survey method has been criticized because it is limited to a measurement of a station's signal strength at a given time, without taking into account such factors as the changes that weather and the shift from day to night may make, and the effects of interference from other stations. To illustrate its weakness, even though a station broadcasts a signal well above the minimum strength to a given point, it may not be heard if a more powerful

station in the vicinity blots out this signal. A modification of the field survey takes these factors into account in measuring the 'listenability' of the station.

Mail Analysis

A second method of determining coverage is to analyze the mail received by a station. Often the writing of letters and cards is motivated by special offers on certain programs. On the assumption that the station can be heard at all the points from which mail is sent, the coverage of the station is indicated by plotting the most distant of them, then drawing a contour line.

It cannot be taken for granted, however, that because an occasional faraway listener hears a program, the station has coverage of the area. A rare atmospheric condition or an unusual set may have accounted for this reception. A refinement of the method of mail analysis is to correlate the amount of mail received from distant areas with the available listeners in that area. For example, the responses from two areas of equal population are compared, one area in the vicinity of the station, the other 20 miles away. If the more distant area draws only half as many letters as the immediate area, it can be assumed that the coverage is only half as effective. When this system is used, the station can determine its areas of primary, secondary, and tertiary coverage.

The Ballot Method

This method has been used by the Broadcast Measurement Bureau, an organization established co-operatively by broadcasting stations, networks, and advertisers specifically to gather coverage information. It sent ballots to listeners, who were selected to represent the nation geographically, socially, and economically, asking them which radio stations they listened to, when, and in what proportion their listening was divided among the various stations. The Bureau then analyzed these responses to determine the various coverage areas of stations and networks for both day and night. Although BMB is no longer in existence, studies similar to the type it made are being conducted by other organizations.

Both the mail and ballot methods measure actual listening to a station, while the field-strength survey merely indicates where the station can be heard. To establish their coverage areas, most stations correlate information gained from the use of all three methods.

Measuring the Audience

Coverage information is used by stations and networks to prove that programs broadcast from their facilities are potentially capable of gaining an audience of a certain size. Once an advertiser has decided to invest in a broadcast, his next concern is to know what percentage of his potential audience will actually take advantage of the opportunity to hear his program.

Mail Response

The earliest method of determining the audience for a particular broadcast was to make an estimate based on the number of letters sent in by listeners—the assumption being that the more letters received by a program, the larger the audience. Before the development of modern measurement systems, a letter was often the only tangible evidence that anyone was listening at all, and the number of letters received by a particular program had a great deal to do with whether it stayed on the air. Mail response is minimized by experts as an accurate measure of the audience, because no one has ever been able to determine what proportion of the people tuned in actually write to stations. A large number of persons have never written a letter to a station in their lives. The general belief that fan-mail writers tend, in general, to be a small and unrepresentative part of the population casts a doubt on the validity of the mail count as a measure. As a result, more accurate methods have replaced the counting of letters in larger stations and in networks, but fan mail is, in many instances, still the basis for estimating the number of listeners to smaller stations.

Telephone Surveys

Each year millions of telephone calls are made in the United States to estimate the size of the audience tuned in to various radio and TV programs. The outstanding exponent of this method is the organization founded by C. E. Hooper, the originator of the coincidental telephone technique, which measures the audience of a program through telephone calls made while the program is actually on the air. People answering the telephone are asked what program, if any, they are receiving, the name of the sponsor and the station, and who is listening with them. The first step in the analysis of the data is to determine the percentage of radio or TV

sets-in-use for a particular period. Of the number of sets actually operating, the number tuned to a particular program becomes the basis for arriving at that program's share-of-audience. In other words, this figure indicates the relative popularity of a particular program, as compared with other programs on the air at the same time.

The most important result of the Hooper survey, however, is the so-called 'Hooperating,' which indicates the percentage of homes called that were receiving a particular program—unanswered calls being included in the total of homes called. This means that a program earning a Hooperating of 30 was being heard in 30 per cent of all homes called by the telephone interviewers. This figure not only indicates the popularity of the program in comparison with others being broadcast simultaneously, but it goes beyond that to show how well the program is doing in relation to all other broadcasts, and even demonstrates its comparative popularity in relation to attractions other than radio or TV programs. Incidentally, the highest radio Hooperating ever registered, a 79, was earned by President Roosevelt when he addressed the nation over all four networks shortly after the attack on Pearl Harbor.

In those areas where a large proportion of homes are equipped with both radio and television sets, Hooper has refined his technique by determining ratings for programs in three different categories—for all homes, for radio-only homes, and for homes provided with TV sets in addition to radio. Thus, on a recent survey, in the New York area the Jack Benny program earned a rating of 21 when radio-only homes were considered but dropped to a 14 when the results of calls to TV homes were added. On the same survey the TV program of Milton Berle gained a 66 rating in television-equipped homes but earned only a 28 when all homes were considered, including those not provided with television sets.

Until recently Hooper established a rating for programs broadcast throughout the nation by averaging the results of calls made to people living in 36 cities throughout the United States. The audience of each program was measured twice a month, and the cities involved had affiliates of all four national radio networks. Now Hooper restricts his survey to individual cities, arriving at ratings for New York or for San Francisco, for example, instead of for the nation as a whole. The Hooper national rating services have been

sold to the Nielsen Company, whose automatic device for measuring broadcast audiences will be described in a later section.

Certain shortcomings in the Hooper method of measuring program popularity have been noted by various critics. For instance, it is argued that because a person is tuned in to a program when called, it does not necessarily mean that he will continue to listen or was tuned in before the call, although the rating seems to make these assumptions. Another charge is that the very nature of the method makes it possible to contact only telephone homes, and thus automatically eliminates from consideration that part of the population who own radio receivers but who do not have telephone service. Furthermore, telephone calls must be restricted to the period between 8:00 A.M. and 10:00 P.M. to avoid getting people out of bed—a limitation that entirely excludes some programs from Hooper measurement.

The main reason for considering the Hooper technique inadequate for the national measurement of programs, however, was that the 36 metropolitan centers in which the telephone calls were made include only 16 per cent of the population; the small towns and rural areas, containing the majority of our people, were left completely out of the survey. Listening habits in these areas are not always like those of city dwellers. The Nielsen technique, designed to cover a balanced cross section of the country as a whole, provides a more representative measurement of national preferences for radio and TV programs.

Another type of telephone survey, now of historical interest only, was the method based on recall—a technique used originally by the Co-operative Analysis of Broadcasting, headed by Archibald Crossley. When this method was used, the listener was asked not only to state the program he was listening to when the call was made, but also to recall the programs he had heard during a previous period of hours. Studies indicating that people cannot be depended on to recall accurately their previous listening resulted in the abandonment of this method. The Crossley survey then turned to the coincidental telephone technique, but in 1946 the entire enterprise was discontinued by the radio industry and advertisers because of the similar service being provided by the Hooper Company.

The Personal-Interview Method

This technique, used by such organizations as The Pulse, Inc., was developed in an effort to eliminate the errors inherent in asking a listener to recall programs without help; moreover, it could include other than telephone homes. The interviewer actually visits a home, bringing with him a list of programs broadcast in a previous period in the hope that cueing the listener's memory will make his recall more accurate. However, when nonexistent programs were put in the list by investigators, it was discovered that listeners remembered hearing these programs too. This discrepancy has tended to throw further doubt on the validity of any technique that depends on the memory for accuracy.

The Diary Method

By this method a group of listeners, representing the radio audience as a whole, are paid to list radio and TV programs as they tune in. The members of the panel obviously need not be restricted to telephone homes or to cities, as is the Hooper coincidental survey. Another advantage of the method is that it permits an analysis of the audience in terms of such factors as age, sex, and income. In addition, the changes from one program to another throughout the day can be followed for one particular person, and an actual evaluation may be gained by asking the diary keepers to rank programs as good, fair, or poor. The Hooper Company has supplemented the findings obtained from telephone interviews with information from listener diaries.

The accuracy of the diary method, of course, depends on how conscientiously an individual keeps track of his listening or viewing activity. If he forgets to make a record after each program and does it at one time for the whole day, the method becomes one based on undependable recall.

Automatic Devices

The Audimeter, introduced into radio-audience measurement by the A. C. Nielsen Company, is the outstanding automatic measuring device. When installed in a radio or TV set, this instrument keeps a minute-by-minute record of the stations to which the receiver is tuned. Placed in every set of a house, the Audimeter accurately indicates the programs tuned in by an entire family.

Unlike the Hooper method, all sections of the country and all types of homes are included in the sample to provide a cross section of the population. As does Hooper, Nielsen uses his sample to arrive at figures indicating the number of sets in use, the proportion of those sets tuned to a particular radio or TV show, and the percentage of the entire sample tuned to a specific program. It is this latter figure, the Nielsen rating, that has now superseded the Hooperating as the most important national index of a network show's success. This rating in conjunction with the size of the sample can be used to estimate the actual number of people who heard a specific program.

In addition to being more representative in its national coverage than the Hooper telephone technique, the Nielsen Audimeter method records the 'flow of listening' from one program to another, and thus may indicate the point at which a particular show loses a large number of listeners. This information can be used to improve the construction of the show at that point. To measure the influence of broadcast advertising, the purchases of family members can also be checked to determine whether they actually buy the products advertised on the programs to which they listen. The Hooper Company has endeavored to secure similar information by correlating diaries of family listening with a record of the week's purchases. The result is a rating that measures the sales impact of a particular program.

A criticism of the Nielsen method is that although the Audimeter records the times when a radio is on, it does not actually measure listening. A woman may have her radio on while she is doing her housework without listening for long intervals. Another practical disadvantage of the Nielsen method is that the costs of the survey have been considerably higher than those of the comparable Hooper survey, and the information takes longer to assemble. The Nielsen Company is now endeavoring to make its ratings available soon after a program has been broadcast, rather than keeping its clients waiting the five-week period that previously has elapsed between a week's broadcasts and the circulation of the ratings.

Another automatic method, now in the experimental stage, is the Instantaneous Audience Measurement Service being pioneered by CBS. An electronic instrument installed in a receiver sends out a signal whenever a set is put into operation. To get a proper sample, these instruments are distributed so that the owners of the receivers

in which the installations are made represent a cross section of the population. When the measurement of a particular program is desired, the signals sent out by the instruments are picked up by a receiving station in a central location, and thus a determination of the number tuned to a specific program while the program is actually on the air is obtained.

A second technique for measuring TV and radio audiences instantly is provided by the Radox device. This also must be installed in individual receivers, but its record of listener activity reaches a central office by means of a telephone line rather than through the air.

Measuring through Sales

The obvious method of measuring a program's audience by tabulating the sales of the product advertised cannot be overlooked, since selling is, after all, the objective of all commercial programs. A jump in sales after the advent of a new program is usually satisfactory proof to the advertiser that his efforts are successful. If this advertising is carried on in conjunction with advertising in other media, however, the filtering out of the effect of radio or TV is a difficult problem. One way of doing this is to offer premiums to radio listeners in exchange for tops torn from boxes containing the sponsor's product. The fate of certain programs, particularly daytime serials, is decided not by Nielsen ratings but by the response to these box-top offers.

Measuring the Program

The program ratings compiled by Hooper and Nielsen have been a major factor in determining whether programs were to stay on the air or be terminated—very abruptly in some cases. In view of their influence, both methods have been vigorously attacked, because they measure programs solely on the basis of their mass appeal—a questionable standard in the opinion of many critics. Measuring the audience, however, is a simple task compared with the problem of evaluating the worth of a broadcast, inasmuch as standards of program quality are not matters of common agreement, and objective measurement techniques are not available. This places the question of broadcasting merit, generally speaking, in the realm of conjecture and opinion. Nevertheless, some attempts at evaluation have been made.

Radio Reviews

The newspaper of show business, *Variety,* has made the reviewing of radio and television programs as fundamental a part of its editorial service as is the reviewing of movies or stage productions. Because of the number of programs on the air, the review is usually limited to the first program in a series, although any outstanding changes or developments are noted in follow-up comment. Practically all network programs are reviewed, as well as many of those presented by local stations. The various elements of each program, such as writing, direction, and performance, are discussed and evaluated. A few newspapers and magazines have followed *Variety's* lead, but unfortunately the vast majority of people never see a radio or television review.

Radio Announcements

Some newspapers and magazines draw attention ahead of time to broadcasts that are likely to be notable. Frequently, the programs listed in these announcements are those on which many critics would place the 'quality' stamp; thus listeners can plan to hear good programs which, without the announcement, they would probably know about only after the broadcasts.

Pre-testing Programs

Several mechanisms have been developed for testing the potential success of a program or series before it goes on the air. A typical example is the Program Analyzer, developed by Dr. Frank Stanton, now president of CBS, and Professor Paul Lazarsfeld of Columbia University. This device measures the interest value of a program from beginning to end. With both a green and a red button before them, participants in the tests are instructed to press the green button as long as they like the program, but to switch to the red when the broadcast loses its appeal. An indifferent or neutral attitude is registered by pushing neither button. A stylus keeps a constant chart of these reactions on a tape. Oral criticism and opinion registered on questionnaires at the end of the program help to supplement the findings obtained from the mechanical device.

While such instruments as the Program Analyzer are of great value to advertisers, since they indicate ahead of time whether a projected program will attract an audience, it should be noted that

these devices fall far short of measuring program quality. Interest value is an important element, certainly, but there are other factors to be considered before the matter of worth can be determined. In fact, the Program Analyzer merely does for the component parts of a program what the Nielsen rating does for the program as a whole—namely, indicates whether it can hold a mass audience.

Listener Councils

In many cities throughout the country, and occasionally on a national basis, councils have been established whose general objective is to improve the quality of radio and television programs. The most frequent approach has been to promote good programming by drawing the public's attention to outstanding broadcasts. By developing an audience for these programs, the councils hope to keep them on the air and encourage the presentation of more programs of equally high quality. Sometimes the councils try to discourage poor programs and thus drive them from the air.

Wisely recognizing that the most important factor in deciding whether a program stays or goes is the size of the audience, most councils have concentrated their efforts in that realm. Occasionally, however, they make recommendations regarding the buying or boycotting of a certain sponsor's product, while in extreme cases direct appeals are made to broadcasters to retain or remove specific programs.

Because listener councils have sprung generally from organizations of an educational nature, particularly parent-teacher groups, an important field of interest has been the effect of programs on children. Largely as a result of listener-council activities, the broadcasting industry has now abandoned some of the practices that educators and parents have long considered undesirable.

Research Studies

Although the results are too detailed to list here, many valuable studies of radio programs have been made, particularly in the field of educational broadcasting, which have contributed considerably to our knowledge of radio. The relative effectiveness of varying techniques and program types in reaching certain educational objectives has been measured by a number of individual investigators. Foundations have supported extensive studies at such institutions as the University of Wisconsin and Ohio State University.

The latter study, the Evaluation of School Broadcasts, after examining educational broadcasting for five years, arrived at many valuable recommendations regarding the presentation and utilization of school programs.

In the commercial area the effect of various types of advertising approaches has been evaluated through the medium of scientific studies. A considerable amount of research has also been carried on to determine the efficacy of radio presentation as compared with other media. These findings have been combined with the results of extensive investigations into the make-up of the air audience to give a complete picture of listeners in relation to the programs they receive. With television now an important factor in advertising, similar studies are being carried on to determine characteristics and potentialities of the video medium.

Projects and Problems

1. For class discussion: What should be the standards for evaluating the worth of a radio or television program?
2. If there are listener councils organized in your community, report on their activities to the class. Do they endeavor to influence programs by writing directly to the sponsor, or by encouraging or discouraging listening to the program?
3. The George Foster Peabody awards, like the Pulitzer prizes in other fields, recognize outstanding achievements in broadcasting. Check the choices for the current year against the favorite programs of your classmates and the country's most popular programs as revealed by the latest Nielsen reports (see *Variety*).
4. Obtain a coverage map from a local station with data on the method through which coverage has been established: (a) field-strength survey, (b) mail, (c) Broadcast Measurement Bureau ballot.
5. Persuade five of your schoolmates to keep a diary of their listening for a week. Analyze the results and report to the class.

SEVEN

The Broadcasting Menu

The radio and television stations of the United States broadcast a multifarious array of programs every day. Yet, despite their diversity, it is possible to discern certain major forms that can be used, not as a basis for mutually exclusive classification, but to help describe the various broadcast types. In this chapter, therefore, we examine the important trends in programming. Since television has tended to fall into the well-worn grooves established by radio, the two will be considered together; in fact, so similar are they that a number of programs are broadcast on radio and television at the same time. Examples of simulcasting, as it is called, are 'Author Meets the Critics,' 'We the People,' and 'Arthur Godfrey's Talent Scouts.' In other instances the same program idea is fitted separately to the demands of the two media, receiving one broadcast on radio and another on television. Examples are 'Suspense,' 'Ford Theater,' and 'Stop the Music.' Some types, of course, are suitable only for radio or only for television.

Programs of Education, Information, and Entertainment

Distinguishing among entertainment, information, and education on the air might seem a simple task, yet to arrive at a definition of these categories that will satisfy everyone is virtually impossible. Doctor W. W. Charters of Ohio State University, a pioneer in radio education, has defined an educational program as one that improves the listener by raising standards of taste, increasing the range of valuable information, or stimulating participation in worth-while

activities.[1] To that, we shall add the condition that to qualify as educational, a program should make a contribution of lasting value. Programs in the next category, informational, while bringing something of value to the audience, do so on a temporary basis; an example is the newscast, which retains its significance only until the next one is heard. The program designed merely to entertain carries over no benefits beyond the actual broadcasting period; it fulfills its function by amusing the listener or viewer while he is tuned in.

Even after we arrive at these definitions, however, the problem of classification is by no means easy. Into what class do quiz programs fall, presenting information as they do in a haphazard, unrelated fashion? Is a listener to a symphony or an opera broadcast being educated? To show how opinion can differ, there is the case of the network that, after a thorough analysis of its programs, placed 30 per cent of them in the educational category. A teacher, classifying exactly the same programs, decided that only 6 per cent deserved to be called educational.

Commercial and Sustaining Programs

The problem of distinguishing between commercial and sustaining programs is relatively easy as compared with defining an educational broadcast. If the talent and time costs of a program are paid for by a sponsor to permit him the privilege of including an advertising message or reference to his name, then it is a commercial program. All other programs are sustaining. Sustaining programs may be paid for entirely by the station or network presenting them, or the broadcasting company may merely provide facilities for programs that come from outside groups, such as the government, schools, or community organizations.

Whether or not a program is sponsored does not necessarily make an essential difference in the program. Many broadcasts are presented on a sustaining basis in order to prove their worth as commercial properties, with announcements for such agencies as the Red Cross or Community Chest inserted where the sponsor's advertising messages would otherwise be given. Generally speaking, however, advertisers tend to sponsor programs of assured popularity in order to gain the largest possible audience. The sustaining pro-

[1] Yearbook, *Education on the Air,* Columbus, 1936, p. 16.

gram, on the other hand, without the advertiser's dollar to consider, can afford to try out new ideas and present material of cultural and minority interest. In general, it balances a radio schedule that would remain strictly mass-appeal in nature if only commercial programs were on the air.

Some critics believe that the radio industry is not completely fulfilling its obligation so far as sustaining broadcasts are concerned. Network affiliates, for example, frequently substitute local commercial shows, inferior in quality, for network sustaining programs being broadcast at the same time. If a good sustaining show is presented at all, it is likely to be recorded for broadcast at a time either too early or too late for the average person to hear it. The conflict between the desire of the broadcasting industry to make a profit and its obligation to serve the public's interest gives rise to many problems of this type, which are not easy to solve.

Music Programs

This classification refers only to those programs in which the major emphasis is on the presentation of music, rather than to those that feature music merely as dressing or for transition purposes. Obviously, such programs are much more important in radio than in television, although noteworthy music has been presented by video, and some TV stations fill out their schedules by playing records accompanied by a broadcast of their test pattern. In radio, the music program is heard more frequently than any other, since many independent stations play transcriptions or recordings during virtually the entire broadcast day.

The most popular of these programs are composed of music of the moment, usually dance melodies of recent origin, which have a few brief weeks of life before receding into limbo, never to be heard again. Programs may be built around the music itself, as in the 'Hit Parade,' around singing personalities like Perry Como or Jo Stafford, or around orchestra leaders like Sammy Kaye or Guy Lombardo. Other popular types of programs are those composed of dance music that has become standard by surviving through the years, or those featuring old familiar songs. The 'American Album of Familiar Music,' an example of this type, has been a network attraction for many years.

Programs that offer an instrumental or singing star as the main attraction, with an orchestra in support, presenting such music as

operatic arias and the most popular movements of favorite symphonies, are generally termed 'light classical.' Examples are the 'Voice of Firestone' and the 'Telephone Hour.'

Classical programs present symphonies and operas in their entirety as well as many other works recognized as outstanding by musical experts. The Metropolitan Opera broadcasts and the CBS presentations of the New York Philharmonic Orchestra are examples of such programs.

The number of music programs being broadcast 'live' has declined in recent years, because the cost of production is too great for the audience gained. The transcribed or recorded show, which is taking its place even on networks, can usually be fitted into one of the categories just described. However, most of these programs lack the design and arrangement that characterize the 'live' show. Musical numbers are often presented one after another with no particular unifying idea, the announcer interspersing the records with some sort of chatter.

Millions of people listen to recorded music. The 'disc jockey' has become a familiar figure, and some, whose personality, comments, and handling of music have attracted large audiences, earn fabulous incomes. Sometimes even the 'disc jockey' is transcribed. Fred Robbins, who broadcasts 'live' in the East, has transcribed introductions to music, which are syndicated to many stations throughout the country.

Drama Programs

Because of the elaborate production facilities required, independent stations do not originate many dramatic programs, but the form is still one of the most important because of its domination of network program schedules both on radio and TV.

Serial Dramas

One of the most familiar types of drama is the five-day-a-week, 15-minute serial, which is called an 'across-the-board' or 'strip' program because of the solid line it makes across the weekly program schedule. First developed in radio, this form is now invading the television field. Written largely for women, these 'soap operas,' so called because the sponsor is usually a manufacturer of soap, deal with all kinds of problems and people. Sometimes the story goes on and on forever; in others, definite sequences dealing with a par-

ticular problem are developed and brought to a conclusion, although the leading characters remain the same. 'Ma Perkins,' 'David Harum,' and 'Just Plain Bill' are familiar people to the daytime-serial fan. Across-the-board, 15-minute serials are also presented for children in the late-afternoon hours, though recently this type of program has been declining in favor of the half-hour children's drama that tells a complete story.

An even rarer type of serial drama is one that continues the same story through the medium of a half-hour program presented once a week. The outstanding example was 'One Man's Family,' now nearing the end of its second decade in following the fortunes and misfortunes of the Barbours. Just recently, however, this program has been converted to a 15-minute serial presented five days a week.

Independent-Episode Dramas

The largest proportion of evening dramatic entertainment is made up of the series composed of complete stories, different from week to week, but unified by the presence of a program element or characteristic common to every program in the series. Among these elements of unity are the following:

1. Each story concerns the same leading characters: e.g. 'Mr. District Attorney' and 'The Lone Ranger.'
2. Two leading performers, usually a man and woman, appear in each story, although different characters are portrayed: e.g. 'First Nighter' and 'Curtain Time.'
3. One class of dramatic material is presented exclusively: e.g. 'Inner Sanctum,' which deals only with horror; and 'Mystery Theater,' restricted to mystery and detective fiction.
4. Each plot follows the same characteristic steps: e.g. 'The Whistler' always ends with the criminal's being caught because of an oversight or a surprising twist of fate; 'The Shadow' reaches its climax when the hero becomes invisible in order to defeat the villain.
5. Each drama has a certain characteristic quality: e.g. 'Suspense' and 'Escape.'
6. An adaptation of a motion picture is presented each week: e.g. 'Lux Radio Theater' and 'Screen Guild Theater.'

Comedy and Variety Programs

For many years the list of the ten radio programs most popular with audiences was completely dominated by comedy offerings.

Recently, drama shows have replaced a few of the comedy programs in the top rank, but shows devoted to making people laugh are still prime audience pullers. The same situation prevails in television, where variety shows with comedy as a major ingredient have polled the top audience ratings.

Personality Comedy

In this type of program the spotlight stays most of the time on the comedian, who retains his own name and personality on the air. An orchestra and a singer usually add musical variety to the show, and thus a name often given to this type of broadcast is comedy-variety. In some cases the program may be built around a situation, which provides a framework for the laugh lines, as does the Jack Benny show. Another type is the gag show, which features witticisms and wisecracks without any attempt to unify the entire program. The Fred Allen and Bob Hope shows are examples.

Comedy-Drama

This kind of program falls midway between the drama and the straight-comedy broadcast. It is built around a fictional character, who receives top attention, rather than around the person who plays the role. Although the emphasis is on getting laughs, the program tells an actual story from beginning to end. Examples are 'The Life of Riley' and 'My Friend Irma.'

Variety Show

The true variety show, which presents a potpourri of entertainment, including comedy, music, and serious drama, has gone into what is at least a temporary eclipse on radio, but on television it is one of the most important types. Of course, TV was immediately able to expand the base for such programs by using jugglers, dancers, acrobats, animals, and other 'sight' acts to which radio's doors were closed. As a result, the video revues led by Milton Berle, Ed Sullivan, and others gained top nationwide audiences.

Even though variety shows on radio have declined in popularity, their influence is still felt today, inasmuch as former programs of this type gave many of our present radio headliners their first important opportunity. Edgar Bergen is a graduate of the 'Rudy Vallee Hour,' while the 'Henry Aldrich' comedy-drama began as a ten-minute skit on the Kate Smith variety show of a few years ago.

News Programs

In view of the importance of news in the kilocycle diet today, it is surprising to find that it attained prominence on the radio relatively late, owing largely to the fact that newspapers, afraid of radio's competition, resisted its efforts to become a news medium. Gradually, however, the realization dawned that the two media could effectively supplement each other. Since 1938 radio has had full access to the services of the various press associations such as the United Press, International News Service, the Associated Press, and Transradio. The outstanding jobs performed in reporting the Munich Crisis and in its coverage of World War II have solidified radio's position as a news medium. With the advantage of keeping listeners up to date almost to the minute, it has made the newspaper extra virtually a thing of the past. The newspaper, on the other hand, can present details, maps, and statistics impossible to give on the radio, and, being less restricted in what it can say, it can give a more complete story. Usually, we hear an important news item on the radio first, but the newspaper fills in the picture.

News programs occur at all times of the day. The two most common types of schedulings followed by stations are the five-minute news summary every hour, and the fifteen-minute newscast presented at four different periods: breakfast time, lunch, the evening meal, and bedtime. News programs can be divided into three important types.

Newscasts

In this program the emphasis is on a simple telling of the news. The news announcer is usually chosen for his voice and his ability to read copy effectively. Rarely does the newscaster himself gain the spotlight, although Lowell Thomas is an exception to this rule. Network newscasts cover world, national, and regional news of nationwide interest. The newscast presented by a local station adds local news and angles to the network format. Sometimes newscasts are restricted to a special category, such as Hollywood, sports, or events of particular interest to women.

Commentaries

This kind of program differs from the newscast in that it spotlights the personality and knowledge of the individual who does the

speaking and adds his comments on the significance of the various news events presented. Often the commentator makes no attempt to cover the entire news picture but deals with only one or two significant items. The commentator does not need to have the conventionally good radio voice of the newscaster; acceptance as an authority by people in general is far more important. Cecil Brown, H. V. Kaltenborn, and Baukage are examples of outstanding news commentators.

News Reports

This type of news program is distinguished from the newscast in that the man who gathers the news, the reporter, actually presents the broadcast. The newscaster, in contrast, uses news from a press-association teletype or a newspaper, which is available at the same time to others in his trade. Many reporters, of course, supplement their own findings with news from these general sources. Well known among radio's reporters, many of whom have gained the 'authority' status enjoyed by commentators, are Drew Pearson, Walter Winchell, and Fulton Lewis, Jr.

News on Television

As in radio, news plays an important part in television. Most stations feature regularly presented newsreels, both those that are made by Hollywood movie companies and those filmed by the station's own newsreel units. In addition to newsreels, there are regular newscasts, comparable to those of radio except that the comments are illustrated with visual material. These programs often begin with the camera on the newscaster sitting at his desk; then the camera shifts to pictures, charts, slides, and movies that illustrate the news as he presents it.

Sports Programs

When radio broadcast a description of the Dempsey-Carpentier fight of 1921, it gained nationwide fame and a whole new army of listeners. Sports programs have been among the biggest audience pullers ever since; in fact, the largest audience ever gained by a single radio network was attracted by a sports broadcast, the description of the Louis-Conn fight of 1946, which registered a Hooperating of 67.2. Television has repeated the history of radio in this

field. Sports are attracting thousands to the video medium and constitute an important element in the schedule of most TV stations.

Actuality Sports Broadcasts

This is a broadcast of a sporting event as it takes place, bringing to the air audience the suspense and many of the thrills experienced by an actual witness. So effective are sports on television, in fact, that many promoters are afraid that people will prefer to sit home before their sets rather than come out to see the contest in person, with the result that TV coverage is being prohibited in some cases. A variation of the actuality broadcast is the studio reconstruction of baseball or football games for radio listeners. The announcer receives a running account of the game by telegraph, which he expands and delivers from the studio as if he were actually watching the game. Sometimes realism is added by snapping the fingers to simulate a hit or by dubbing in crowd reactions with sound records.

Sports News and Comment

In addition to putting information about sports on regular newscasts, many stations feature sports-news shows. The regular press associations make a practice of sending through special sports summaries on the regular teletype for use on such programs. Local angles and interviews with sports celebrities are often added to these broadcasts.

Special-Event Programs

In bringing listeners to the scene of great events while they happen, broadcasting is performing a service that is unique. As a listener in a Midwestern town sits in on the wedding of an English princess or watches the inauguration of an American President, the barriers of time and space are shattered. Through actuality broadcasts, the air audience has been brought to the scene of political conventions, mine disasters, parades, Congressional meetings, ship launchings, and battles. Broadcasting has shown the same versatility in the field of special events as it has in sports; every kind of happening that good taste will permit on the air has been covered.

Because the special event does not occur in a regular series, the broadcast that presents it is usually one arranged specially for the occasion, replacing, in many cases, the programs regularly scheduled as part of a series. Sometimes, when an unlooked-for news story

demands on-the-spot-coverage, this rearranging must be done very rapidly. Events like presidential inaugurations and the opening of the Congress, on the other hand, can be prepared for well ahead of time.

Audience-Participation Programs

To date there has been no diminishing of the vogue for the audience-participation program; it is one of the most popular programs in radio and television schedules. Advertisers find such broadcasts attractive because they draw a large audience for a comparatively modest outlay. Listeners apparently find diverting the antics of the many Americans who seem to have no objection to laying bare their private lives or to being made ridiculous before a nationwide audience.

Studio-Audience Participation

The simplest and earliest form of audience participation was the quiz, which brought people from the studio audience to answer questions. The 'Professor Quiz' program was one of the most successful of these shows and is generally credited with starting the trend toward audience participation. Soon interest and suspense were added to the programs by putting studio contestants into competition with one another, as 'Winner Take All' does. Another popular device is to give the contestant larger and larger prizes as he answers questions that become progressively more difficult. 'The $64 Question' creates suspense by giving the participant two choices: he may refuse to answer the next question and keep what he has already won, or he may try for a larger prize but take the chance of losing everything if he fails to answer the question correctly. Variations are continually being applied to the basic quiz ideas to create new programs.

Another popular type of studio-audience-participation program is one in which stunts are far more important than any questions asked of participants. The major emphasis is on getting the contestant into as ridiculous a situation as the agile mind of the producer can conceive. Seltzer water and cream pies often play a prominent part in such programs. Examples of stunt programs are 'County Fair' and 'People Are Funny.'

Air-Audience Participation

With audience participation in the studio so successful, the next step was to bring the air audience into the program. One of the first programs to do so was the 'Pot o' Gold' show, which some years ago gave money to listeners who answered their telephones. The recent flood of this type of broadcast, however, was started by Ralph Edwards on 'Truth or Consequences' when he gave fabulous prizes to radio listeners for identifying a succession of famous personalities, variously disguised as 'Mr. Hush,' 'Mrs. Hush,' 'Miss Hush,' and the 'Walking Man.' The first contest was begun to poke fun at quiz programs and the prizes that had been growing larger and larger, but when Mr. Edwards discovered that his idea was drawing one of the largest audiences in radio, he continued it in deadly earnest. At the peak of his 'Walking Man' contest, 'Truth or Consequences' had the top Hooperating in the land.

As is so often the case in broadcasting, the success of one program prompted a host of imitators, who set out to buy audiences with prizes that became ever more breathtakingly impressive. 'Sing It Again, 'Hollywood Calling,' and 'Stop the Music,' the latter on both radio and television, intensified the 'give-away' trend.

The future for such programs may be dark, however. A storm of criticism has been leveled at the idea of attracting a listener by giving him a chance to win a small fortune instead of catching his interest with good entertainment. Even more significant is the fact that the FCC has ruled that 'give-away' programs are not in the public interest because in method they closely approach a lottery.

Public-Service Programs

The problem of defining the public-service program is almost as difficult as deciding whether or not a program is educational. One reason is that, to some extent, the terms are used synonymously in the broadcasting industry, though the former term has tended of late to replace the latter because of the belief of some that the description 'educational,' when applied to a program, suggests dullness and dryness.

Actually, the term 'public service' should be applied to all programs, inasmuch as the owner holds his license on the condition that 'public interest, convenience, and necessity' will be at the basis of all his broadcasting. In actual practice, however, public service has

come to mean those educational or special-service programs that a broadcaster presents at his own expense, or for which he provides the facilities. If this qualification is accepted, it means that when an educational program gains a sponsor, as did the 'Town Meeting of the Air,' it tends to lose its public-service designation.

Among the most important of public-service programs are those broadcast for schools—a category so important that in the next chapter we shall consider it in detail. The major classifications of other public-service programs are as follows:

Community-Group and Government-Agency Programs

Stations and networks frequently turn their facilities over to such organizations as schools, parent-teacher associations, clubs, veterans' groups, and government agencies. Often the organization is left to develop a program completely on its own—a situation that is likely to result in a very poor broadcast. In some cases, however, the industry provides skilled assistance. When this is combined with the special knowledge and purposes of the organization, the result can be a program of outstanding value. In a few cases organizations such as government agencies and school systems employ people who have special skills in broadcasting to prepare and present programs.

Religious Programs

The four national radio networks have given free time to the representatives of the great religious faiths: Protestant, Catholic, and Jewish. Locally the same pattern is often followed by granting the religious council or ministerial association, which represents many churches, a free broadcasting period. When a minority faith or an individual church wants to broadcast, however, it usually pays the regular commercial rates. In fact, radio stations derive a good proportion of their income from the sale of time for religious purposes.

Discussion Programs

These programs are designed to present information or to explore the various sides of a controversial issue. Three major types exist:

1. The forum, exemplified by 'Town Meeting of the Air,' presents short talks on an issue, followed by questions from the audience.

2. The round table presents three or four men who discuss a question informally, endeavoring in most cases to reach some kind of conclusion. Usually, as is the case on the 'Chicago Round Table'

and the 'Northwestern Reviewing Stand,' an effort is made to get men whose views will complement each other rather than be in diametric opposition.

3. Debate, exemplified by the 'People's Platform,' often puts two speakers with directly opposite views into an informal discussion—a situation that may result in something that sounds more like an argument than a debate.

Documentary Programs

The documentary is a program presenting information or exploring an issue in dramatic fashion, with strong emphasis usually on the social significance of the problem. It may be compared in purpose with the nonfiction articles in a popular magazine. All radio techniques are utilized in presenting the documentary, including drama, sound, talks, discussion, recordings of events, and music. Norman Corwin became famous with his poetic documentaries, 'We Hold These Truths' and 'On a Note of Triumph.' CBS and ABC have performed notable service by presenting hour-long programs of this type on such subjects as juvenile delinquency, communism, mental illness, and Congress. NBC's 'Living—1950' was a weekly feature on that network.

Agricultural Programs

Clear-channel stations, the only stations that can be heard in some rural areas, have made a speciality of serving the farmer. Regional stations in farming areas also feature agricultural programs. The networks have done some broadcasting for farmers, notably the 'Farm and Home Hour,' but the time differential across the country makes it impossible to broadcast a coast-to-coast program at a time suitable for all. Another factor demanding the local touch is the difference in crops, and thus in interest, from area to area throughout the country. Not to be overlooked in the farm radio picture are the contributions of the state and college stations, many of which were founded primarily to provide broadcasting service for farmers.

Women's Programs

In addition to the daytime-serial programs for women listeners, there are many broadcasts intended to provide practical help for homemakers. Information about cooking, child care, interior decoration, and similar subjects are woven in with commercials, in-

terviews, and news. The broadcast is usually built around the personality of a woman speaker, who may appear under her own name, as does Mary Margaret McBride, or who may assume a fictional name that has become well known; there have been several Betty Crockers, for example. The general tenor of these programs is chatty and informal, with the speaker often giving the advertised products a personal endorsement. Such programs have also been a 'natural' for television, where cooking techniques or the latest fashions can actually be demonstrated.

Another example of a program built for the morning or afternoon audience of women is the collection of homely philosophy, poems, stories, and homemaking suggestions presented by men. Fletcher Wiley, Galen Drake, and Ted Malone have broadcast popular programs of this type.

Children's Programs

A great controversy has raged regarding programs for children. Many times the broadcasts that seem to be of most interest to youngsters are deemed undesirable by adults because of qualities of horror and suspense, which upset some young nervous systems. Broadcasters in general have bowed to constant public pressure by modifying their product. Even though they have not gone so far as some extremists would like by taking out all thrills and suspense, they have made certain that programs for children will encourage proper attitudes and will neither exalt evil nor depict extreme horror. In the opinion of many psychologists some thrills and excitement are not necessarily bad for children. It has been pointed out that radio performs a real service when it satisfies vicariously the innate craving of most young people for dangerous adventure.

This does not mean that broadcasts cannot go too far in arousing the emotions of their young listeners. Nor is the often heard defense that no radio program exceeds in horror the situations depicted in such children's classics as *Jack, the Giant Killer* or *Blue Beard* sufficient to excuse a similar presentation on the air. What is acceptable when read in a children's book might become too lurid and horrible when heard over the radio or seen on television.

Another phase of the children's-program controversy is the commercial appeals made to children to urge their parents to buy the sponsor's product. Children, being young and impressionable, are much more likely to respond to these appeals than adults are. Rec-

ognizing this, most reputable broadcasters have set definite limits on the number and intensity of commercials directed toward children.

The hour from five to six in the afternoon is the most popular period for children's programs, because it catches youngsters as they come in from play. Some children's programs are presented in the early-evening hours, although this time is usually considered of prime importance for general-audience programs. 'Let's Pretend,' an outstanding children's show, is presented on Saturday morning. Children's programs include across-the-board serials, storytelling periods, and independent-episode dramas. Children, as well as many adults, have been much intrigued by cartoon programs on television and by shows like 'Howdy Doody' and 'Kukla, Fran, and Ollie,' which feature puppets as leading performers.

One of the most troublesome aspects of the problem of children and broadcasting is the drama designed for adults to which children listen. These programs reach emotional heights and extremes of horror not permitted on plays meant specifically for children. At one time NBC showed the way to a solution by broadcasting such programs only after 9:30 P.M., when children are presumably in bed, but no other networks followed this good example, and the heavy commercial sacrifice finally caused NBC to abandon the policy. Recently, television dramas of the horror type have been arousing violent criticism; one program even went so far as to depict a character drinking human blood. TV network affiliates, reeling under the impact of viewers' protests, have threatened to discontinue series that so flagrantly violate the standards of good taste. The originators of these programs can be expected to respond by eliminating the excesses to which there is general public objection.

Movies on Television

The transmission of movies has played an important part in TV programming to date, and many people expect films to play a proportionally bigger role in the future. Some productions of the regular motion-picture companies have been presented on television; the features, however, have generally been ancient pictures of inferior grade. Obviously, a movie company is unwilling to risk a million-dollar investment in a feature by making it available free of charge to a nationwide audience via video, and to date, TV stations have had no funds to pay the price film companies would

have to ask. The result is that viewers generally see features for which no theater audience could still exist.

In view of this situation, special companies have been formed to produce films especially for television, aiming principally to cut down the expense surrounding Hollywood production. These movies can also be designed for the relatively small television screen as opposed to the large theater screen. Active in this field are the famous show personalities Rudy Vallee and Hal Roach.

A third major type of movie is the sound film made as a TV show is being broadcast. Photographed from the monitor tube of the station originating the program, this film can then be shown by other TV stations throughout the country. As pointed out in the chapter on networks, this kinescoping process has been the only way of providing network service for stations that cannot now be linked by coaxial cable or microwave-relay facilities.

A Final Word

In this chapter we have described the major trends in radio and television programs. It is obviously impossible to establish mutually exclusive types of broadcasts, but the various categories listed can be used to describe most of the programs on the air. A few programs, of course, are so individual that they resist any general classification. 'Candid Microphone,' which recorded conversations secretly and in its television form employed a secretly made film, is an example of such a program. So also is 'Twenty Questions,' a radio adaptation of the old parlor game. 'Information Please' and 'Quiz Kids,' although quiz programs, do not include audience participation but direct the questions at a board of specially selected experts.

Even now inventive minds are thinking up new program ideas. Some will be merely variations of established types, but others may be completely different from anything now on the air—ideas that may bring about a gradual evolution in our program structure. We can expect, however, that even though currently popular programs slip from favor and disappear, the general types they represent will endure for many years to come.

Projects and Problems

1. For class discussion:
   a. Can a program telling veterans how to fill out an important form be considered an educational broadcast?

b. What is the average radio station's obligation as far as the presentation of public-service programs is concerned?

2. Write a paper tracing the development of the comedy program from its beginnings in radio to the present day.
3. Study the programs broadcast in your area during the time when young people are up and could be listening to them. Describe those you consider unsuitable for children.
4. Analyze the program offerings of a local station, classifying each broadcast as primarily educational or entertaining.
5. If one station in your area follows the practice of presenting a five-minute news summary every hour, while another station presents a 15-minute newscast four times a day, arrange an interview with the program director of each station to discover the reasons for these varying practices.

EIGHT

Broadcasting for Schools

When broadcasting burst on the public in 1920, educators were quicker to sense its potentialities for education than advertisers were to realize its possibilities in the commercial field. The use of radio to sell goods began almost accidentally, but teachers immediately saw in radio an instrument that might revolutionize the processes of education. Some even prophesied that radio would eventually replace the teacher. Educators have been equally enthusiastic about the possibilities of television. As Sterling Fisher, in charge of educational programs for NBC, stated in *Variety,* 'television has the most remarkable potential for mass education and culture that any medium has ever offered.' It can obviously do more than radio, restricted as that medium is to what can be presented through sound alone.

As far as radio is concerned, actual achievements in the educational realm have been considerably more modest than those envisioned by its most enthusiastic proponents, but no one can deny that the medium has made significant contributions. Television, of course, is too young to have established any record. For that reason, this chapter deals primarily with radio in education—referring to television developments wherever they apply.

The Development of Broadcasting for Schools

Radio programs for schools have come, in general, from four sources: the radio industry, local school systems, states, and the national government. Although the contributions of these four

groups have differed in kind and in extent, all have played an important part.

Educational Broadcasting by School Systems

As early as 1923 the Los Angeles schools broadcast programs for classrooms. New York and Oakland followed in 1924, and soon other cities were presenting occasional programs for schools. This activity continued sporadically until 1929, when Cleveland made educational broadcasts a recognized part of the curriculum by establishing a school radio department. In 1935 Detroit did the same, followed by Chicago in 1937. At first these school systems used the facilities of commercial stations. Now all of them own FM stations, which carry the bulk of their programs, although a few broadcasts are still presented from commercial outlets. A number of other school systems throughout the country present regular school programs in the same way. That radio broadcasting by schools has remained somewhat limited, however, is shown by the most recent survey, indicating that less than 30 school systems are now engaged in it. A few schools have already started presenting programs over local television stations in such cities as Philadelphia, Chicago, St. Louis, Cleveland, and Detroit.

Educational Broadcasting by the Radio Industry

The obligation to broadcast in the public interest has been interpreted by many in the radio industry as entailing a responsibility for broadcasting to schools. The most famous classroom program ever offered, the 'Music Appreciation' hour conducted by Walter Damrosch, went on the air in 1928 over NBC, and was continued until the maestro's retirement in 1942. A current feature on the Pacific Coast portion of the NBC network is the 'Standard Music Appreciation' program, presented every week since 1928 by the Standard Oil Company of California, one of the few commercial organizations ever to sponsor a school broadcast. A number of other series in a variety of fields have been presented by NBC for short periods. At the present time, however, this network is presenting no broadcasts for schools except the Standard programs, and even these come from the oil company rather than from the network itself.

The withdrawal from school broadcasting by networks was complete with the ending by CBS of its 'American School of the Air' in 1948. This series began in 1930 with programs in various subject-

matter fields presented during the five school days of each week. MBS broadcast the 'Nation's School of the Air' for a short time in the late 1930's but otherwise has not presented programs specifically for school use. ABC, as the blue network of NBC, was a vehicle for the Damrosch programs, but under its present ownership it has not engaged in school broadcasting as a regular network feature.

The abandonment by the networks of radio presentations for classrooms is not a denial of the value of such programs but reflects the belief that school broadcasting on a countrywide scale is impractical. The problem of integrating the programs with the curricula of many local systems is insurmountable. Also, in view of the fact that the time change across the country makes it impossible to present a single program that will come when all schools are in session, the network's decision to withdraw can be understood. The presentation of broadcasts on a delayed basis through the use of transcriptions, now a common network practice, would, of course, solve this latter problem.

NBC has endeavored to make up for the dropping of school programs by presenting broadcasts on the college level to students in their homes. An example is the 'NBC Theater,' which features great literature in dramatic form. Arrangements have been made with some institutions to tie these programs into regular courses of study by actually granting credit for listening. The other networks have added programs of general educational value to replace school broadcasts. Since the broadcasting of television programs to schools involves the same problems inherent in radio, network educational programs on video are also likely to be the out-of-school variety.

The presentation of programs for schools by the radio industry has not been limited to the networks. A number of individual stations have made notable contributions, among them WLS with its 'School Time' series, KGO with its 'Schoolcast,' and WMAQ with programs on art, music, and social studies. The major contribution of local stations, however, has been to provide facilities for the educational offerings of such organizations as schools and colleges. An interesting example of co-operation was the University Broadcasting Council of Chicago, which enlisted the services of three universities, three networks, and three local stations, and received support from the Rockefeller Foundation and the Carnegie Corporation. Until its dissolution in 1940, this council was the source of many excellent programs for schools.

Educational Broadcasting by States

The legislatures of a number of states have appropriated money to support school broadcasting. Much of this activity has centered around the radio stations operated in connection with the state university or college. The 'Wisconsin School of the Air' is an outstanding example. Begun in 1931, it has broadcast a wide variety of programs for school children of all ages, from the Wisconsin state stations WHA and WLBL. The recent addition of new FM stations is now widening the coverage of these broadcasts. Other states presenting programs for schools over their own radio facilities are Iowa, Illinois, Ohio, Oregon, Minnesota, and Michigan.

Another phase of state activity is the school of the air promoted and presented by the department of education rather than by the state university or college. For many years the 'Ohio School of the Air' was of this type and utilized the facilities of WLW in Cincinnati, one of the most powerful stations in the country. The Texas State Department of Education is engaged in school broadcasting through the medium of a regional commercial network, which provides excellent coverage of the state. The Rocky Mountain Radio Council is a combined effort of colleges, school systems, state departments of education, libraries, radio stations, and community groups of various types. It has received financial support from national and local foundations, which provide it with funds to present outstanding school programs.

Educational Broadcasting by the National Government

The United States Office of Education, a division of the Department of the Interior, has in the past presented a number of radio programs, some of which have been directed toward school audiences. The same difficulties attending broadcasts originated by networks have handicapped this type of broadcast, with the result that there is no present activity in the field. However, by acting as a depository for scripts and informational pamphlets, which are loaned to any educational organization desiring them, the U.S. Office of Education continues to contribute to the general field of educational broadcasting.

Educational Broadcasting and National Committees

Whatever else may be said about the history of educational broadcasting in the United States, it must be admitted that neither in quantity of programs available nor in the number of classroom listeners has radio come anywhere near the general use in schools that was anticipated by some. Arguing that this constitutes a foolish neglect of a valuable teaching aid, a number of committees have been formed to promote the school use of radio. In 1930 the National Committee on Education by Radio was set up to combat the steady decline in the number of educational stations. Its work has encouraged educational broadcasting in general.

The Federal Radio Education Committee came into existence in 1935 to promote co-operation between educators and the broadcasting industry, and in 1941 it entirely supplanted the former committee. This committee, known as the FREC, has organized the script service located at the U.S. Office of Education and has further helped by providing suggestions and information on broadcasting techniques.

These national committees have unquestionably advanced the cause of educational broadcasting. For one thing, they were instrumental in securing the reservation of bands in the FM range exclusively for educational broadcasters. Even though schools have not applied for these frequencies in the number expected, because of either financial problems or lack of interest, most of those institutions that have been granted FM licenses are providing a valuable educational service for schools and the community.

The present situation in broadcasting to schools may be summarized as follows: There are virtually no programs available on a national basis. A few school systems, states, and stations are presenting programs, many of which are outstanding in caliber. These broadcasts are of significant benefit to the students who hear them, but it is probably safe to say that the vast majority of the nation's children never hear a radio program in the classroom. Whether this will continue to be the case, no one can say. It must be remembered that, considering the entire history of education, the period in which radio has played a role still represents a minute portion of the whole. So far as television is concerned, a major obstacle to school use is the high cost of receivers. In spite of this, some schools have installed

TV sets, but the number of schools so equipped is likely to remain limited for a long time.

Uses of Radio and Television in Education

Before we list some of the ways in which broadcasting has entered American schools, it may be well to deal first with a bogey that has caused concern among some teachers—the fear that radio or television might eventually replace them. To anyone acquainted with the average schoolroom situation this idea may seem ridiculous, and yet some teachers have been so convinced that it might happen that they have consciously stifled the use of broadcasts. Two actual experiences with radio indicate that these fears have no foundation. In 1937 the Chicago schools, kept closed beyond the usual opening date because of an infantile-paralysis epidemic, presented the regular courses over the radio to children in their homes. While the results indicated that radio gave valuable assistance in education, the general achievement of the pupils was far below that attained in the classroom under the supervision of a teacher. The Denver schools, closed by a big snowstorm, tried the same experiment, with similar results.

There is now general agreement that no mechanical device like a radio or TV set can possibly do the whole job of education. The warm, personal touch of a teacher, responding to the needs of individual pupils, is an absolute essential. Norman Woelfel, an expert in the field of radio education, has pointed out that the 'use of radio . . . makes the teacher more necessary than ever.' [1]

Even though radio cannot replace the teacher, experience has shown and research has proved that it can assist teachers in reaching educational objectives by supplementing and reinforcing their efforts. It can bring information that students retain; it can help build acceptable attitudes; it can develop interest in new subjects; it can enhance discriminating tastes and appreciation; it can even teach skills in such subjects as language and music. Television can also do all of these things, and in the field of skills can do much more than radio because of its possibilities for demonstration. One use, suggestive of its potentialities, has been the televising of operations in a medical school, providing every student with a close-up of the surgeon's hands at work. Valuable results from broadcasting can be

[1] Woelfel, Norman, and Tyler, I. Keith, *Radio and the School,* Yonkers-on-Hudson, 1945, p. 7.

gained in a number of ways: by using programs designed specifically for schools; by using programs not meant especially for schools but valuable anyway; by assigning to pupils radio or television programs presented outside of school hours; and by listening to records and transcriptions.

Most school systems have used educational broadcasts merely to supplement or enrich the regular curriculum. An exception has been the Cleveland Public School System, which has presented by radio such regular lessons as the concept of fractions. Of course, this kind of use demands the closest co-operation between broadcaster and teacher. The teacher must reach a particular point in the course of study by the time the program is due, and she must have enough information about the program to participate with the broadcaster in teaching the lesson. Most schools have found this type of detailed correlation so difficult to attain that they have been content to broadcast or utilize programs that have more general application.

Broadcasting can accomplish so many different objectives in the classroom that the question how often it should be used naturally arises. Undoubtedly, there have been some teachers who have used the radio too much. The teacher must decide whether using a program will actually aid in the achievement of a particular objective. One guide is to consider the unique contributions radio or television can make to education—contributions difficult or impossible to gain by other methods.

The Unique Contributions of Broadcasting to Education

1. *Radio and television can keep textbooks and material up to date.* In fields like the social studies and health, where changes are a day-to-day matter, broadcasting can play an outstanding role in keeping pupils abreast of the flow of events. The radio and TV quality of immediacy gives them a definite advantage in this regard.

2. *Radio and television can bring great events, great personalities, and the atmosphere of other places into the classroom.* Radio and television, by conquering space, can give students a feeling of participation in outstanding happenings. Boys and girls may 'sit in' at political conventions, or be present at the inauguration of a President or the coronation of a king.

3. *Radio and television bring in many points of view.* A teacher may unknowingly present a one-sided picture, which can be modi-

fied by the introduction of broadcast authorities and discussions into the classroom.

4. *Radio and television can synthesize and integrate learning.* Teaching is usually done in compartments—reading one period, spelling the next, music the next, and so on. Some radio and TV programs, by cutting across subject-matter fields, can help unify knowledge into the whole in which it must be applied outside of school. A single program may have ramifications into such varying subject-matter areas as music, history, and art.

5. *Radio and television can vitalize teaching.* The use of broadcast programs adds variety to the classroom day and helps break down formal routines. The provision of a pleasant experience alone may be sufficient justification for the use of the school receiving set. Research has shown that radio drama is particularly effective in developing interests and building attitudes, because it influences a pupil's emotions. Vividness and realism can be accented by radio or TV use.

Problems of Broadcasting to Schools

Scheduling Problems

The first phase of this problem is the very practical requirement that programs be presented while schools or particular classes are in session. As we said previously, the networks discovered that it was almost impossible to do this for a broadcast presented on a national basis, but even local programs run into difficulties. A program primarily designed for a social-studies class may come when a teacher is scheduled to teach music. Moreover, class periods, even in a single school system, are not uniform, a fact that makes many programs unusable because they are interrupted by a change of classes. A partial solution to this problem is to broadcast the same program a number of different times, but this is possible only when school systems own their own stations. Playing a recording of a radio program in the school instead of trying to hear the actual broadcast also helps solve the problem.

A second phase of the scheduling difficulty is the task of fitting programs into the curriculum. As stated before, schools have tended to use class broadcasts of the general type capable of broad application, because teachers proceed at different rates through the same course of study. Sometimes teachers adjust their courses of study

to fit the arrival of programs, rather than expecting the broadcasts to adjust to them. Among the most popular classroom broadcasts are those that tie in with the celebration of holidays and special events. Since these occasions occur on the same day in all schools, the curriculum phase of the scheduling problem is automatically solved.

The Problem of Getting Information

To make intelligent use of a program, a teacher needs certain information about it in advance of the broadcast. A knowledge of the general subject matter will determine whether the program should be used at all, and, if used, how it can be tied in with the current class study. Specific information, such as the names of characters in the script, is also valuable. A teacher is likely to feel much more comfortable if he has seen names like 'Aguilar' or 'Guerroro' in print before hearing them pronounced on the program.

Getting advance information to the teacher is not easy. Few newspapers do more than print the title of a series of radio or TV programs. Sending out regular bulletins not only is expensive but introduces complications when the bulletin must be prepared before the script is written—frequently the case when a whole series of programs is announced to schools a year ahead of time.

Preparation and Presentation

The problems of writing and producing programs will be covered in the chapters devoted to broadcasting techniques. We may mention here, however, that inasmuch as radio and television are generally regarded as media of entertainment, children in classrooms look for this element; consequently, the broadcaster should present a program that is interesting as well as educational. This is even more important when the facilities of a commercial station are being used. In order to avoid losing its regular audience while a classroom program is being presented, a station is likely to demand that the the school program have qualities of general interest.

Problems of Utilization

The utilization of broadcasts is usually divided into three phases: activities before, during, and after the program.

Teachers are advised to strive before the broadcast to develop an attitude of anticipation on the part of pupils by giving them some idea of what is to come. This preparation, however, should not be

so drawn out and complete that the program itself becomes an anti-climax. Another part of the pre-program preparation, which seems obvious but is often overlooked, is the requirement that the set be tuned in properly.

It is generally considered sufficient for teachers and pupils merely to listen or look during the broadcast, although note-taking may sometimes help in conducting the follow-up session. Teachers are counseled to resist the temptation to catch up with clerical work during a program, since an attentive manner, by setting the proper example, is most likely to encourage sustained listening by children.

The activities following a program may vary widely according to the purpose for which the program is used. If a broadcast is employed to initiate an entire unit of work, the follow-up may be extensive and continue over a long period of time. If it is used merely to provide a period of entertainment and relaxation in the day's schedule, the follow-up can be very brief. No matter what the purpose, however, experts recommend that the program be tied in with the existing activities at least to the extent of encouraging comments. The program loses much of its value if the teacher merely shuts off the receiver and goes on with a completely unrelated activity.

Broadcasting by Students

An important phase of educational broadcasting is the opportunity it may offer for students to participate in radio and TV programs. This activity has several values. When he actually takes part in programs, a student is provided with his best opportunity to learn about the important media of radio and television. Furthermore, the co-operation and the ability to work under pressure demanded by broadcasting activity may help develop desirable character and personality traits. Finally, participation in a radio activity puts the spotlight on speech. The necessity for a good voice and good articulation in most radio speaking motivates students to do their best to improve. This particular objective is most likely to be reached when students are given the opportunity to hear recordings of the radio programs in which they have participated.

Projects and Problems

1. For class discussion:
   a. Do the national networks have any moral obligation to present programs for school use, despite the practical difficulties?
   b. Who should be primarily responsible for the presentation of educational programs—the educators or the broadcasting industry?
2. Write a paper on the use of radio for education in a country other than the United States.
3. Survey the programs available in your community, and classify educational offerings according to the following categories: (a) programs designed specifically for in-school use; (b) programs broadcast during school hours suitable for classroom use, though not specifically designed for that purpose; (c) programs broadcast after school hours which would make good 'outside listening' for students; (d) TV programs that can be used for education.
4. Listen to an educational broadcast, then explain how you would use it in the type of class for which it is intended, listing both pre-broadcast and follow-up activities.
5. Write a report on the utilization of radio by your local school system. Cover the use of broadcasts in the classroom and the participation by students in programs.

NINE

The Nature of Broadcasting

As we pointed out in chapter 1, the inventors of radio were concerned primarily with developing a device that would permit people to exchange messages almost instantaneously without the necessity of wires. This objective was accomplished, but radio has played an even more important role in society by becoming a medium through which millions of people are affected and influenced all at the same time. Now that television is adding its force to that of radio, the impact of broadcasting on our lives is greater than ever before. Radio as an agency for the transmission of mass entertainment, education, information, and persuasion has certainly become a much more complicated activity than it would have had its function remained limited to the sending of messages. The complex conditions under which programs are produced and received are a matter of vital concern to the broadcaster; it is from this knowledge that he derives the principles that guide him in every phase of program preparation and presentation. In the same way the telecaster must know the essential characteristics of his medium—how television resembles radio as a vehicle of mass communication and in what respects it is different.

Characteristics Common to Radio and Television

In view of the fact that television is both a sight and a sound medium while radio is restricted to sound alone, it may be surprising to discover that they possess so many characteristics in common; actually, the similarities seem greater than the dissimilarities. Many

of these resemblances have already been mentioned. Both radio and television are essentially broadcasting media that send impulses out in all directions from a central source, using channels belonging to the public; the right to broadcast is granted by the same agency, the FCC, under approximately the same conditions for both media; both are organized into systems involving broadcasting stations and networks; the present assumption is that the advertiser, though not as yet completely supporting television, will eventually provide all the funds as he now does for commercial radio. The other important similarities are as follows:

Home Reception

Most radio and TV programs are received in the home. The exceptions—radio programs heard on automobile or portable equipment, and TV programs observed in taverns and theaters—constitute a relatively small proportion of total program consumption. The fact that most radio and television programs are received in the home gives rise to conditions that invest the media with much of their uniqueness.

1. *The air audience is composed of individuals and small groups separated from one another.* To date, the number of people per set has been higher for television than for radio because of the relative scarcity of TV receivers, but both types of audiences are broken up into a great many segments, which hear the program without relation to any other part of the audience. This distribution among a multitude of homes is a matter of the greatest significance for the broadcaster. Even if he is on a network, talking to millions of people at the same time, he should not think of his audience as one gigantic mass but should employ the approach used in talking to just one individual.

It is important to realize, also, that the solitary way in which we receive most radio and TV programs has an important effect on our reactions, which are quite different from those experienced in watching movies or plays in a theater. In those situations the reactions of other people reinforce our own. Their laughter builds up and expands our own merriment. By the same process, tension and excitement are transmitted from one person to another during scenes of suspense or terror. This phenomenon, known as social facilitation, is virtually nonexistent in listening to a radio or television show. The individual who howls with glee at a funny line

heard in company with others may not even smile when he hears an equally funny line while listening to a radio program alone.

Broadcasters have tried to make up for the lack of social facilitation in radio and TV reception by presenting programs before studio audiences. Particularly in the case of comedy programs, the listener's enjoyment may be enhanced through hearing the broadcast reactions of those in the studio. In a sense, he becomes a part of that studio audience, whose reactions help to time and reinforce his responses. The studio audience also performs an important service for the comedian, who can neither see nor hear his air audience, by providing him with observable reactions through which he can time his material. Other programs in which the studio audience helps a member of the air audience to 'feel into' the situation are broadcasts from political meetings, sports contests, and audience-participation shows. We might say here, however, that some performers seem to forget the audience beyond the microphone as they play to a few hundred gathered in a studio. This is certainly an unforgivable slight to the air audience.

2. *Radio and TV programs are received by a widely varied audience.* In a single home the listeners to a program may include everyone from the four-year-old on up to Grandpa. When the total audience is considered, all kinds of people, occupations, interests, and educational levels are represented. Several factors account for this diversity in air audiences. Members of a family do not all read the same books, but if they are gathered in the same room, they can scarcely avoid hearing any radio or TV program that may be tuned in. This contrasts with the selection involved in the formation of movie or stage audiences; young people can be left at home when the material is strictly for adult consumption.

Another condition contributing to the haphazard and unselected nature of air audiences is the lack of advance knowledge on programs. Most newspapers list programs by title but provide virtually no information on content. Movie and stage reviews, on the other hand, can give us a pretty good idea of what to expect before we go to the theater. A review of a radio or TV program usually has only historical value.

Furthermore, many programs come into the home unbidden, following without invitation on the heels of a preceding program. In some cases these accidentally received broadcasts are not desirable, at least for certain members of the family, but the programs are left on

through inertia or a desire to avoid upsetting those whose interest has been aroused.

3. *Radio and TV programs face vigorous competition in the home.* Broadcast programs are received as part of the daily business of living; there is the competition, first of all, with all the other activities going on in the home. Often, in fact, attention may be completely broken by temporary interruptions. The daytime-serial fan, during a 15-minute period, may be subtracted from the audience several times by such household emergencies as the soup's boiling over or Junior's falling down and skinning his knee. Even the television viewer is not immune to similar distractions. This condition contrasts with that in a theater, where, by the very nature of the situation, the production holds attention. With the stage or screen as the only lighted area as well as the source of all the sound and movement, it is difficult not to attend. Here, the activities and distractions that compete with a radio or TV program simply do not exist.

The theater has a further advantage over broadcasting in that once an audience is gained, it is usually retained. Even when the bill of fare proves disappointing, one is usually more inclined to stay than to get up and leave. A member of the air audience is under no such restriction. He can remove himself from the broadcaster's influence without a qualm merely by twisting the dial. To avoid losing its audience, therefore, a radio or TV program not only must capture attention immediately but must provide the listener, from the beginning, with a reason for receiving the entire program.

Another factor heightening the urgency of capturing interest at once is the intense competition for air audiences. If one program palls, programs on other stations are instantly available. When an auditor is seated in a theater, however, the entertainment has no immediate competition. Further, the viewer leaves his normal environment to see a movie or play. This, plus the excitement of anticipation felt in company with many others before a show begins, provides a stimulation that is missing in broadcasting and that may modify the effect of a bad beginning. In addition, the ordinary theatergoer may have some information about the movie or play as a whole, and the knowledge that better things lie in store is sufficient to carry him through some dull opening scenes. The member of the air audience usually has no way of knowing that a program is about to get better just after he tunes away from it. The only

situation in which a broadcaster escapes the exacting responsibility of building interest immediately is in the case of well-established programs whose content is so well known that it has sufficient lure to retain listeners through a slow opening.

The Quality of Immediacy

The ability to report events as they are occurring gives the unusual quality of immediacy to the broadcasting media. A viewer before a television set, watching a political convention in action, can actually see history being made before his eyes, even though the events are taking place 1000 miles away. A New York Yankee fan in California who is listening to a radio report of a World Series game endures all the agonies, suspense, and thrills experienced by the fan in the ball park, because he, like the in-person viewer, is transported to the scene of the event before he knows what the result of the contest will be. The newspaper or newsreel report is stale by comparison, for the outcome is already decided.

One objection to transcriptions on radio and to films on television is that their use robs broadcasting of this unique quality of immediacy. This certainly applies to the presentation of sports contests and news broadcasts, and it applies, to a certain extent, to other types of programs also. When a listener to Jack Benny, for example, knows that the comedian is not at that moment speaking into the microphone but has been transcribed previously, the listener may lose whatever feeling he may have of participation in the program. The same qualification applies to the film version of the Milton Berle TV program as seen by Western audiences, as compared with the same show seen 'live' by Eastern viewers.

The Time Factor

Radio and television programs take place in time. This condition contrasts with the situation prevailing in magazines and newspapers, where material is presented in space. The implications of this particular characteristic are of tremendous importance to broadcasting. For one thing, parts of radio and television programs cannot be easily avoided, as can sections of a magazine; if a program is to be received at all, it must usually be taken in its entirety. As a case in point, we cannot readily escape the radio commercial; it is intrusive and demanding, whereas the ad in the newspaper can be easily skipped.

Another consequence of the time factor is the requirement that an individual be at a receiving set at a specific time in order to get a particular program—a condition that does not apply to movies, books, or plays. When one of these is recommended by a friend, it can generally be enjoyed at a later period. The vast majority of radio or TV programs, once broadcast, are gone forever. A further aspect of this restriction is that a radio or TV listener has no chance to say, 'How's that again?' If he does not get it the first time, he does not get it at all. He has no second chance. The reader, in contrast, can look up a word he does not know. He can go back in his detective mystery and refresh his memory on the circumstances surrounding the victim's death. But there is no review opportunity while receiving a radio or television program.

Probably the best-known effect of the time factor is the requirement that broadcasts begin and end at a precise instant. Two conditions make this necessary. Since broadcasts exist in time, sponsors pay for a certain time segment, and none of them is willing to give up even a few seconds of the period for which he has paid hundreds of dollars just because the program ahead of his runs overtime. Furthermore, the network system demands that many different stations throughout the country be ready at the same second to begin a new program. We might mention that in England, with neither advertisers nor networks of independent stations, strict timing is not necessary, but in America time is a tyrant that hounds all broadcasting.

Another consequence of the American situation is that program material must be fitted into a specific period. Even though *Gone with the Wind* ran four hours as a movie, the radio version on the 'Lux Radio Theater' took exactly 59 minutes and 30 seconds, the same period allotted to the adaptation of a film with a running time of an hour and a half. The stage or movie producer can expand or compress his running time to fit the material. In broadcasting it is the material that must be stretched or squeezed.

The time factor extends its influence to rehearsals also. Because the program goes on the air at a precise instant, the rehearsal must be complete when that second rolls around. A director cannot decide to lengthen his preparation time because a show is not ready. A further restriction on rehearsal is the shortage of studios existing in most stations and networks. The cast of one program marches in while the other marches out. In addition, the talent, by union

rules, must often be paid extra for any rehearsal extending beyond a certain limited period.

In the same way, the writer of radio and television programs finds time always at his elbow emphasizing a deadline. Facing the requirement that scripts must be ready by a certain specific moment, he cannot afford to look out the window and wait for inspiration to strike.

Another aspect of the time problem is the change in time zones from one part of our country to the other. The difference of three hours between the East and West Coasts introduces intricate problems into network broadcasting; programs must often be repeated or be rebroadcast from transcriptions in order to reach each area at an appropriate time. The change to daylight saving in the summer by some sections of the country, while other sections remain on standard time, is another complicating factor.

Although time usually seems to be a tyrant, restricting or hampering radio and television, it occasionally takes on the character of a benevolent despot. In other words, it does not always operate to the disadvantage of broadcasting. For example, the fact that listeners have to be at their radios at a specific time in order to hear a particular program does have an important compensation. It gives the medium impressive power in those cases where the size of the audience makes it possible to affect or influence a tremendous number of people all at once. The value of this was illustrated during World War II. In the desperate days after Dunkirk, Winston Churchill used the radio to bring his people these now famous words: 'I expect that the Battle of Britain is about to begin. . . Let us therefore brace ourselves to our duties, and so bear ourselves that, if the British Empire and its Commonwealth last for a thousand years, men will still say, "This was their finest hour!"' Thus he inspired all of his people simultaneously for the struggle ahead. Many historians attribute England's magnificent staying power in those dark days to the surge of hope and courage that swept the nation after this and other speeches—a result made possible because radio provided Churchill with an opportunity to reach everyone at once with a personal message. Of course, this same power can be devoted to evil ends; witness Hitler's use of the radio to prepare his people for aggression on their neighbors.

The size of the simultaneous audience can also be a source of satisfaction from the artistic point of view. Some writers have re-

fused to work in broadcasting because of the fleeting existence of the product. In answer to this, Arch Oboler, a prominent radio writer, has pointed out that the relative impermanence of a radio program is offset by the size of the listening audience. His argument is that gaining a million listeners for half an hour is just as satisfying as writing a book that 50,000 people may read in ten years.

The Demand for Material

Radio and television's appetite for material is insatiable. The average radio station is on the air 18 hours a day, 7 days a week. A staggering number of words must be written to fill these program periods. It has been estimated that hungry microphones gobble up 20,000,000 words every day. In the light of this enormous demand for material, the fact that so much of it is unoriginal and routine is not surprising. A count of half-hour radio dramas showed that 32 were available to radio listeners in a large city on a single Sunday. Can we expect each of these dramas to be characterized by a fresh idea, ingenuity and originality in plot construction, and new and different characters speaking sparkling dialogue? Moreover, each one of these programs presented another story the following Sunday, and another the week after that, and so on. As Russel Crouse, the playwright, has pointed out, the value of words in radio and television is very low, since a certain arrangement is worn out after one broadcast. In contrast, the value of the words that he, with Howard Lindsay, put together to make the play *Life with Father* was very high, for that drama ran on Broadway for seven and a half years.

Consider the problem facing the writers of comedy. In the days before broadcasting, a performer might use the same skit before different audiences for 20 years. Now he must devise a new sketch every week, requiring the invention of anywhere from 50 to 100 jokes, to be presented to the same audience. And even if it were possible to prepare fresh, original material on such a week-to-week basis, the writer must face the prospect that the appetite of the audience will become jaded by the very glut of programs. Certainly, the rapid consumption of material is one of the major problems faced by radio and television broadcasters.

Unique Characteristics of Radio

The uniqueness of radio, the characteristics that differentiate it from its sister medium, television, derives almost entirely from the fact that a radio program is made up solely of sound. This dependence on the listener's ear as the only avenue of approach endows the medium with certain major advantages and some disadvantages.

Benefits of Dependence on Sound

One of the great advantages of radio is that in sound it is employing a medium that has impressive power to affect the emotions. This power has been demonstrated in many instances. The terrific noises of battle are considered by psychiatrists to be a major factor in bringing about mental breakdowns on the battlefield. During the last war the Germans made use of this knowledge when they equipped their Stuka dive bombers with special screaming sirens to increase the already terrifying effect of these carriers of destruction. The shriek of a frightened child or a scream of pain sends a chill through all of us. On the other hand, who has not warmed with sympathy at the wail of a hungry baby? Sound needs no language to carry a message that has a universal emotional meaning.

The emotional effect of sound is probably responsible for the generally accepted fact that, while the eye is difficult to convince, the ear tends to believe what it hears. One of the best examples of this tendency occurred in 1938 when Orson Welles presented his famous 'Invasion from Mars' broadcast. Using the news-flash technique, he portrayed a Martian onslaught on the earth so realistically that a million people were completely terrified, and hundreds actually took to the fields with whatever weapons they could find to defend themselves against the monsters. It is doubtful that a visual presentation of the story could possibly have achieved this result. The eye would have detected the impossibility of the events. But the credulous ear, without the restraint of a logical eye, accepted what seemed to be happening as the truth.

The fact that listeners tend to be less alert, less analytical, and more receptive than observers is indicated by the experience of Jean Hersholt, the radio and motion-picture actor. He states that never in his long career has he received a letter addressed to a motion-picture character he portrayed. But in radio, Jean Hersholt, the actor, dissolves into the character he plays, with the result that

countless letters are addressed to Dr. Christian. This completely fictional character has, through sound alone, become a real person to thousands. So have the soap-opera characters, who receive thousands of dollars worth of gifts from members of the air audience, though these characters have no real-life existence.

If sound is the most powerful of all stimuli in affecting the emotions, radio, then, can enjoy the maximum benefit of this power, because it presents sound with nothing else competing for audience attention. As the entire focus of the experience, with no sight elements to distract, the sound of radio has the best opportunity to achieve a maximum emotional effect. A further contribution to this end is the full close-up of sound provided by the radio microphone. Sound in movies or television, by contrast, is usually secondary to what we see.

Not only does this dependence on sound alone give radio striking emotional force, but in addition, it forces the broadcaster to depend on the listener's imagination for many of his effects. This might, at first glance, seem a handicap, but actually it is the source of some very material benefits. Before detailing them, let us see how imagination operates in radio listening. In broadcasting a drama, an actor stands before a microphone, script in hand, and in the background one sound man plays a recording of an eerie wind, while another tramps on some squeaky stairs leading to nowhere. The scene in the mind of the listener, however, is quite different from this mundane studio picture. He sees, instead, a terrified man fleeing some strange presence in the ghostly confines of a haunted house. To cite another example, a broadcaster may play as simple an effect as the recording of a train whistle, and the listener, in addition to hearing that sound, sees the train, smells the smoke, and may even taste soot in his mouth—depending on his past experience.

Reliance on the imagination can be a benefit, first of all because the pictures an individual creates in his mind may be more vivid and realistic than those a producer can create on a stage or screen. An interesting example is the case of Edgar Bergen and Charlie McCarthy. The primary entertainment value of a ventriloquist was presumed to depend on the visual element—the fact that his audience can hear him speak without seeing his lips move. Yet Edgar Bergen became an outstanding radio success. The reason is that the listener's imagination, stimulated by sound alone, converts

Charlie McCarthy from a ventriloquist's dummy into a real individual with a diverting and inimitable personality. In radio he is no longer a carved block of wood but a character in his own right. When we see him on the screen, this human personality disappears because we cannot escape the obvious fact that Charlie McCarthy is actually inanimate, with the result that the whole performance falls to the level of an ingenious trick. That explains why the success of Edgar Bergen in the movies, a medium that theoretically seems better suited to the talents of a ventriloquist, has not matched his success on the air waves. It will be interesting to follow his career in television, a medium that has gained puppet characters a wide following.

A second practical advantage of dependence on imagination is that the radio broadcaster can present programs simply and easily from scripts, without the need to provide sets or costumes. They are ready as stored-up images in the minds of the audience, waiting to be brought into play by the stimulus of an appropriate sound. Furthermore, the listener can be shifted in time and space with a mobility and ease impossible in the other media. Dependence on imagery enhances the freedom and fluidity of the medium. The imagination of a movie or TV viewer may actually be shackled by what he sees on the screen. The radio listener at the sound of a key being stealthily inserted in a lock is free to visualize a far more sinister scene than could possibly be pictured in a movie. A word, a sound effect, or a bar of music may whisk him from the earth to a faraway star. This example underlines a generally accepted advantage of radio over other media: it is superior in the realm of fantasy. In this area the imagination needs the free rein and scope that radio can give it.

Up to this point we have considered the advantages of radio's dependence on sound from the broadcaster's point of view, but there are some benefits that accrue to the listener also. For one thing, the equipment necessary to receive sound is relatively simple and inexpensive; consequently, the ownership of sets is virtually universal. Almost everyone listens to radio programs. A second advantage is that it is possible to receive a program composed of sound alone and do something else at the same time. In fact, it is wise for the radio broadcaster to remember that 75 per cent of his audience are engaged in some other activity as well. People read, sew, talk, iron, eat, or shave while a radio program is on, with

these activities competing to a greater or less degree for the hearer's attention. The radio program may be at the focus of attention, or it may be shoved to the outer edge of consciousness. This emphasizes the importance of making every effort to seize and hold the attention of the listener.

Limitations of Dependence on Sound

Thus far we have listed the definite advantages of radio's total reliance on sound, but this restriction entails some important and sometimes crippling disadvantages. Most of these limitations spring, of course, from the lack of the visual element. This does not mean that a radio listener is 'blind,' as so many people seem to think. As we have already indicated, he sees with his imagination. But radio is obviously inadequate where demonstration is necessary. The revelation of complex action and setting is also difficult. It is clear, then, that unless the broadcaster enjoys burdensome and awkward tasks, he should avoid certain material, restricting himself to situations that can attain realism and clarity through rendition of their sound elements alone. In other words, there is much that radio cannot do effectively.

Radio is at a further disadvantage because sound as the sole stimulus is not able to hold attention as long or as successfully as those media that include sight elements. It has already been pointed out that an individual is usually doing something else while listening to the radio—a feat that is difficult or impossible in TV viewing or movie-going. But even when he is attending to radio completely, the absence of visual stimuli is likely to cause the listener to lose interest rapidly. That may be one reason why radio programs, in comparison to movies or plays, tend to be relatively short, although the English, who sometimes broadcast dramas two and three hours in length, would dispute this point. They would argue that our chopped-up radio schedules are a direct result of commercial support; as many advertisers as possible must be given a chance to broadcast their messages.

Unique Characteristics of Television

Television has been with us so briefly that it is difficult at this time to evaluate its qualities as a medium. As already indicated, it is much like radio in many respects, possessing, in addition, some of the characteristics of movies, the stage, and newspapers.

But its basic nature is probably more than the sum of these elements; it is safe to say that the new medium has a unique essence all its own. What this 'x' quality is we cannot say as yet, but as a first step toward defining it, let us contrast television with the media most closely related to it—radio and motion pictures.

Television and Radio

Because television adds sight to radio's sound, there are some who claim that the new medium is not merely twice but five times as effective as the old. Whether this is true remains to be seen. We have already observed that radio's restriction to sound does give it some advantages in affecting the emotions and the imagination. There seems no doubt, however, that an approach through both eyes and ears does magnify the impact in some respects. For one thing, people remember better what they both see and hear.

The addition of sight also enhances the immediacy of TV—a characteristic it shares with radio. But because television gives the audience eyes as well as ears, eliminating the middleman announcer who describes the scene, its effectiveness is many times as great as radio's. Now our sight as well as our hearing have crashed through the barriers of time and space to bring us virtually in person to the scene of great events. Many believe that this constitutes the unique contribution of the video medium.

A practical disadvantage of seeing the program in television is that many of the effects that radio built in the mind of the listener with sound alone must now be built in actuality. Positively, this calls for sets, costumes, and performers who look as well as sound the part; negatively, it requires that such illusion destroyers as scripts and microphones be eliminated or hidden. Without the handy reference of a script, the television actor must fall back on the arduous process of memorizing lines, except in those programs where ad-lib speaking is possible.

As far as the sound elements of a television program are concerned, the necessity of hiding the microphone means that performers cannot maintain the perfect adjustment before that instrument that is possible in radio; as a result, television sound is not as well controlled as radio sound.

One of the greatest differences between radio and television lies in the degree of concentration required of the audience. By its very nature, television cannot play the same kind of accessory function

that radio often plays in a situation. Most TV programs must be seen as well as heard to be intelligible—a requirement that calls for almost complete attention to the receiver. A second limitation on the receiving end is that the present high cost of TV receivers and the slight or nonexistent television activity in many parts of the country have limited the size of video audiences. A further restriction is that the line-of-sight range of TV transmitters deprives many rural areas of the service, since the stations are located in large cities. This means that video activity is likely to be largely urban in nature for a long time to come, whereas the audience of a radio program includes a large number of rural listeners in addition to those living in cities.

Television and Movies

Because television, like talking movies, includes both sight and sound, it is easy to assume that the two media are identical. A difference we have already referred to, however, is the contrasting situations in which the two are viewed. A movie is seen in company with many other people, whose responses enhance and build up the responses of each individual in the group, while the television show is usually seen in the privacy of the home and by a small group.

Important differences exist also in the production of movies and television programs. The making of a movie can be broken down into the filming of a number of small scenes, each of which can be prepared for completely ahead of time in the matter of lights, rehearsal, and microphone and camera position. Moreover, each scene can be shot over and over until perfection is achieved. Even the sound can be dubbed in later.

What a contrast the production of television programs presents! The entire show must be produced in one sustained performance, like that of a radio broadcast or an act of a stage play; lights, cameras, and microphones must be moved 'on the fly' while the program is actually in progress. Any error is irretrievable. One result of this is that movie stars, who benefit from the most flattering adjustment of lights for each specific movie scene, must be content in television with a lighting situation designed generally for an entire show.

Another important difference between movies in the theater and television in the home is the relative size of the two screens. Sharp

contrast, avoidance of too many long shots, and elimination of detail in costumes and sets are necessary to get a clear picture for the small television screen, while the movie screen is large enough to present long shots, intricate detail, and slight contrasts. Fred Allen, the famous radio comedian, believes that the size of the screen in TV is a major problem, pointing out that some performers seem to lose their impact as television reduces them to puppet size.

The Advertiser and Broadcasting

No consideration of the nature of broadcasting can be complete without some reference to the effects of advertising support. The domination of the commercial motive has imbued our system with certain characteristics that seem, thus far at least, to be the inevitable consequence of that domination. Before examining these characteristics, we should realize that the advertiser was invited into radio in the beginning with great reluctance. David Sarnoff, for example, hoped that wealthy men would step forward to maintain broadcasting as a philanthropic project. But when this and other means of support failed to materialize, station owners turned to the advertiser as the only person who could keep radio from expiring in its infancy.

Even after commercial support was accepted as a fundamental aspect of our system, the general feeling prevailed that advertising must be limited to the amount necessary to provide funds for broadcasting service. Herbert Hoover, as Secretary of Commerce, expressed this point of view to the first conference on radio, which met in Washington in 1923, when he said: 'It is inconceivable that we should allow so great a responsibility for service, for news, for entertainment, and for vital commercial purposes to be drowned in advertising chatter.' That even broadcasters agreed with this principle is indicated by a provision in the NAB code of 1929 that excluded advertising announcements from the hours between 7:00 P.M. and 11:00 P.M., now considered the most important commercial period. In the same vein, direct selling approaches, such as the quotation of prices, were barred for a time. Even as late as the 1940's, some station owners had occasional attacks of conscience regarding certain sales methods. The owners of WWJ in Detroit, for instance, temporarily barred singing commercials from their station.

Now, of course, advertising on the radio has been accepted not merely as a means of support but as a source of considerable profit as well. And as far as television is concerned, there have never been any ifs or buts regarding the question of advertising; station and network owners have been cheerfully willing to endure serious initial losses, because of the vista of profits to come when advertising use becomes complete.

The problem of commercialism in broadcasting is a subject of much controversy. Our intention in this section is to present as objective a picture as possible; to sift, if we can, facts from opinions. In a large measure, we shall let the student draw his conclusions, limiting ourselves to summarizing the criticisms of those who have attacked the broadcasting industry, and presenting in rebuttal the replies of speakers for the defense.

The Dominance of the Advertiser

That the advertiser wields the dominant influence in radio and television is a fact most broadcasters do not even dispute. Unlike the situation in newspaper and magazine publishing, where advertisers prepare only the copy and nothing else, the advertiser in broadcasting prepares both commercials and programs; chooses times, talent, and scripts; and is the major influence in determining policies. His overwhelming authority stems from the fact that his money supports all commercial radio and is expected soon to do the same for television. Newspapers and magazines, on the other hand, supplement advertising revenue with money from selling subscriptions.

This virtual control by advertisers is of the utmost significance, for the inevitable consequence is that programs are presented in terms of a selling purpose rather than of a citizen need. It means, further, that regulation by the federal government must be exerted indirectly, since the advertiser, despite his importance, secures no license to broadcast. This is granted to the station owner on the condition that he operate in the public interest. Many have questioned the health of a system in which the station owner virtually surrenders control to advertisers bound by no obligation whatsoever to serve the public's interest.

What are the answers to these criticisms? Broadcasters point out that they do retain some control by establishing policies that advertisers cannot violate. This is undoubtedly true. They remind us,

too, that sustaining programs, paid for and presented by networks and stations, help to balance the steady diet designed to sell goods. No one can deny that broadcasting has brought Americans some memorable experiences, e.g. Archibald MacLeish's 'The Fall of the City' and Norman Corwin's 'We Hold These Truths.' In fact, many programs sponsored by advertisers have been ventures of outstanding merit.

One of the interesting comments on the problem of commercialism comes from a broadcaster who admits advertising domination but sees it not as an evil but as a positive good. Writing in 1947, A. D. Willard, Jr., Executive Vice-President of the National Association of Broadcasters, said, 'Does not [the advertiser] in selling as much of his product as he can, serve the public interest. . . Is not that vague but significant interest served in our economy by the free movement of goods? For in commerce, there is prosperity. And advertising serves well the cause of commerce.'[1]

The Problem of the Commercial

The radio commercial has been one of the most maligned, heckled, and ridiculed elements of our modern civilization. Now television advertising is undergoing similar attacks. Yet commercials go merrily on. They not only help to sell millions of dollars worth of goods but have other influences as well. During a recent spelling contest at a Long Island public school, every pupil in the third grade missed on the same word, 'does.' They all spelled it D-U-Z.

Some people detest commercials so much that they remain poised at the radio, ready to turn it down as soon as a commercial begins. An acquaintance of the writer turns the radio on only when he leaves the house, using it to scare away burglars. Does the attitude of such people represent that of the public as a whole? A survey by a disinterested body, the National Opinion Research Center, indicates that the answer is no. Two thirds of the people it questioned did not particularly mind advertising on the radio.[2] Of course, that still leaves one third who feel in the mood to criticize.

If we admit that advertising of any kind is obnoxious to some people, why is it that radio and television advertising bear the brunt of the attack? The answer can be found in two facts: First,

[1] Quoted in Williams, Albert N., *Listening,* Denver, 1948, p. 78.

[2] Lazarsfeld, Paul F., and Kendall, Patricia L., *Radio Listening in America,* New York, 1948.

a considerable portion of the published criticism appears in magazines and newspapers, which, as chief competitors for advertising use, cannot escape the suspicion of self-interest. Secondly, the very nature of radio and television makes advertising on these media more objectionable than that appearing in printed media. Broadcasters have explained the objections to commercials by drawing attention to the following factors, some of which we have already mentioned.

Advertising in radio and television, existing in time as it does, must be endured. One cannot jump over it as he can over advertisements in a newspaper.

Programs are heard by groups including family members of all ages and visitors from outside the home. What can be read individually without embarrassment is often not suitable for group reception.

Commercials frequently interrupt programs at their points of highest interest—a most irritating experience for the listener. Unfortunately, this procedure is commercially effective. By chaining the listener to a set, waiting to hear who killed Louie, the advertiser makes sure that he will hear the commercial. But hate for radio advertising is generated as a result.

Finally, because broadcast advertising is presented primarily by the human voice, the approach is personal and intimate. This holds the greatest potentialities for both appeal and resentment.

Let us emphasize again that the majority of people do not consider listening to commercials too high a price to pay for the entertainment that broadcasting provides. But if people do resent advertising, they are likely to resent it most of all on radio or television. With this in mind, let us examine some specific criticisms of commercials.

1. *There are too many commercials and they are too long.* One station was accused by the FCC of presenting an average of 16 commercial spots every hour; another of frequently presenting five minutes of advertising without any intervening entertainment. These unquestionably represent objectionable extremes. The proper amount of commercial time for a system supported by advertising is a problem that may never be settled. The NAB has established certain limits, often noted in the breach rather than in the observance, for the average advertiser is prone to pile on as many commercials as the traffic will bear. In defense of radio, Charles Wolfe,

an advertising writer, has pointed out that radio advertising occupies at most only 12 per cent of program time, whereas magazines and newspapers are frequently 50 per cent advertising.[3] This argument, however, seems to overlook what Mr. Wolfe himself has indicated, that broadcast advertising, taking place in time, cannot be skipped. A proportion much above 12 per cent would soon become unendurable.

2. *Improper products are advertised.* A second major criticism of broadcast commercials is that some products cannot, with propriety, be advertised before groups including persons of all ages. The sluggishness of one's liver, for instance, is usually considered not a proper subject for public discussion, yet some commercials dwell on it in selling medicine. Other products that many consider out of place on the radio are laxatives, deodorants, and alcoholic beverages. It is clear that radio and television cannot advertise everything that magazines do. The problem is where to draw the line. A regrettable recent tendency is for radio, in the face of television's competition, to accept advertising that was formerly taboo.

3. *Improper approaches are used.* If we assume that references to the products belong on the air, a third major criticism is that broadcast advertising is often characterized by approaches that are in some cases childish, in others deliberately irritating. The biggest target is the singing or sound-effects commercial that goes to extremes to corral attention and indelibly register the message. Defenders point out, however, that these are no worse than the display techniques used in other media. They add that singing commercials are often entertaining in themselves—witness 'Chiquita Banana' which became a song hit.

An example of the irritation approach is the campaign, of unsavory memory, in which the sentence 'Lucky Strike green has gone to war' was repeated 20 or 30 times on a broadcast. The deliberate intent was to so exasperate the listener that he could not possibly forget the product name. It is said that this particular campaign drove network officials almost as frantic as it did the audience, yet they did nothing to stop it. Even more discouraging is the fact that such tactics have been proved to be effective in selling. Another example of an undesirable approach was the plan contemplated by one daytime-serial sponsor. He actually considered

[3] Wolfe, Charles, *Modern Radio Advertising,* New York, 1949, p. 602.

offering a baby for adoption as a prize in a box-top contest, but fortunately wiser heads prevailed.

Finally, radio advertisers are frequently attacked for making more exaggerated claims than those found in other media. Mr. Wolfe, however, has a very good counter to this claim. He points out that the Federal Trade Commission has consistently found that about five per cent of magazine and newspaper advertising contains false statements, while only a little more than one per cent of radio advertising has been so accused.[4]

The Advertiser and Programs

We have seen that a major objection to advertising influence in radio and television is that the air waves are burdened with too many commercials of the wrong kind. But even the programs built around those commercials have not escaped criticism. Dr. Lee DeForest, inventor of the audion tube, which made modern radio possible, summed up a common attitude when he wrote these words in 1947 to the National Association of Broadcasters:

> What have you gentlemen done with my child? He was conceived as a potent instrumentality for culture, fine music, the uplifting of America's mass intelligence. You have debased this child. . . Soap opera without end or sense floods each household daily. Murder mysteries rule the waves by night, and children are rendered psychopathic by your bedtime stories.

Then, sorrowful but not too downhearted to create a fine pun, Dr. DeForest referred to his audion tube as 'This is DeForest's Prime Evil.'

It is certainly true that advertising control has had a major effect on programs. Tailoring them to a strictly selling aim has brought the following consequences:

1. *The size of audience determines the fate of programs.* On the theory that the bigger the audience the greater the sales, the fate of broadcasts is dependent largely on the number of people who tune in. Because the Hooper and Nielsen surveys attempt to estimate mass audiences, they have been viciously attacked for degrading American broadcasting. In fairness, however, they can be considered as no more than accessories to the crime, since they are merely responding to advertisers' demands for information.

[4] Ibid. p. 603.

2. *Advertisers present programs of assured popularity.* The advertiser's desire to attract a large number of listeners gives rise to some unfortunate outcomes. When a sponsor thinks he can count on a certain audience return for a specific outlay, he is prone to continue a program long after its appeal has been exhausted. Even when he does decide to try something else, he is usually afraid to experiment with a program that may fail to attract listeners. Instead, he looks around to see what kinds of shows are garnering the largest audiences. Then he chooses one of a common type, makes an original contribution by giving it a different title, and a 'new' program is on its way. Thus, when comedy shows prove popular, the audience is satiated with them; when a crime drama rises into the top ten, the advertiser turns to this field until the radio listener can hear the gory details of fifty murders every week; when give-away shows attract people, advertisers rush to shower money and other gifts, including an elephant and a round trip to the North Pole, on 'lucky' listeners.

New shows, of course, do come into existence, but they are almost always the product of the broadcaster's invention. Even then, they must be presented at the broadcaster's expense until their ability to attract listeners persuades sponsors to invest in them.

To answer these criticisms, the advertiser points out that in presenting programs of assured popularity he is serving public interest by giving people what they want. He feels no obligation to raise standards of taste and appreciation. His cue is the position of the on-off switch on a multitude of sets. If it stays on, that is proof that the program is satisfactory. If it goes off, then he must look for something else to please the audience. A further argument for the defense is that only advertising funds are sufficient to provide the top-caliber shows to which Americans have become accustomed. What other means of support could possibly supply every week the $50,000 necessary to present the Jack Benny show?

3. *Local needs are ignored.* The big money in broadcasting has always been in the expenditures of national advertisers, particularly for network shows. This has meant that affiliates become merely outlets for national programs instead of adapting to the needs and interests of their local community. Even some independent stations are guilty of the same practice by concentrating on campaigns for national products. A further consequence is that home-town talent is passed over in favor of national stars whose

popularity has been proved. In addition, local programs often show the effect of insufficient funds. We should mention that a few stations, by planning their broadcast schedule specifically to meet the needs of their community, have been encouraging exceptions to these general criticisms.

4. *Advertisers avoid controversial issues.* The stated policy of Procter and Gamble, at one time the greatest spender in radio advertising, is never to offend a single listener, for fear of losing a sale. The result is that the discussion of issues on which a difference of opinion exists has been virtually nonexistent on commercial shows. Sustaining programs have carried this important burden. Of course, many believe that this is as it should be. In view of the special interest of most advertisers, is it wise to give them an opportunity to influence opinion one way or another through a medium as powerful as radio or television? Even broadcasters, by the terms of the so-called Mayflower decision, were for a long time prevented by the FCC from advocating a particular point of view. This position has been reversed, however, with the result that station owners are now permitted to take an editorial position, although few are thus far taking advantage of this opportunity.

5. *Programs for minority interests are presented at unfavorable hours.* That advertisers pre-empt all the good hours to broadcast programs designed for a mass audience is a common complaint. There is plenty of evidence that this is true. A program of string-quartet music is presented in the San Francisco area at 7:00 A.M. Sunday morning. Even lovers of this kind of music probably like to sleep on Sunday morning. A cynic has defined a documentary program as one that comes on before you get up or after you go to bed. Supporting this view is a radio announcement, heard almost as these words are written, stating that the latest CBS documentary on education will be heard locally from 11:30 P.M. to midnight. As stated in a previous chapter, the networks often present such programs at a favorable time, but their good intentions are nullified by stations that substitute a local commercial show, transcribing the documentaries for later presentation.

An additional consequence of advertising domination is that good sustaining programs are likely to lead a grasshopper existence, jumping around from one hour to another. An advertiser needs only to crook his finger at a period, and the sustaining inhabitant

must immediately leap elsewhere. Listeners frequently need detective qualities to follow their favorites around the schedule.

Toward Better Radio and Television

In the preceding pages we have summarized some of the criticisms of the broadcasting industry and the replies made in its defense. What is to be done? Interestingly enough, very few critics, even the harshest and most bitter, have recommended substituting another broadcasting system, such as the British, for the American system. But many suggestions for improvement within the present framework have been made. Some are obvious from the criticisms. To conclude our discussion of this subject, we summarize the most important suggestions, addressing them to those interests in broadcasting whom they most closely concern. It should be understood, of course, that many of the recommendations listed are themselves controversial.

To Advertisers

The audience should never be considered as one mass, all liking the same thing. As Gilbert Seldes, formerly director of television for CBS, has pointed out, actually the mass is made up of many different groups with different tastes and desires. Any program that tries to satisfy all of them becomes mere unappetizing gruel.[5] Nor should it be assumed that because people tune in a program, they are satisfied with it. It may be the best they can get. Furthermore, those millions who are irregular listeners should not be overlooked. A fruitful research effort might be to count the people who fail to tune in, and find out why; adaptations to their needs might add millions to the sponsor's audience. Finally, the apparent assumption of advertisers that the same people like the same thing all the time is probably faulty. It is possible for a person to enjoy Bing Crosby singing 'White Christmas' at one time and a rendition of Beethoven's Third Symphony at another.

A discouraging qualification to this last statement is the evidence that people do like a succession of the same programs, at least during a single evening. For example, when the 'Screen Guild Theater,' which features adaptations of movies, was placed in the schedule immediately after the 'Lux Radio Theater,' which also presents

[5] Seldes, Gilbert, 'How Dense Is the Mass,' *Atlantic Monthly,* vol. 182, pp. 23-7.

movie adaptations, the first program immediately gained 65 per cent more listeners.[6] Research also shows that a news program after a news program and comedy following comedy gain greater audiences than when they succeed unlike shows. Finally, it has been discovered that when some listeners finish hearing a crime drama, they immediately try to tune in another. These findings have resulted in a trend toward block programming in recent years.

To Broadcasters

The recapture of control so that broadcasters and not advertisers will be the masters of facilities is a frequently heard recommendation. This would mean eliminating advertisers from program production and restoring this function to broadcasters. Commercialism could then be reduced by restricting advertisers to brief commercials at the beginning and end of programs, which broadcasters would write and produce, always maintaining program value and not advertising value as the prime requisite.

Some suggest distributing the production of network programs among a number of different centers instead of concentrating, as is now the case, in Hollywood and New York, which through the interchange of personnel actually constitute one community. New ideas and approaches might come from this dispersal of production responsibilities. Furthermore, strictly local programs should be presented by all stations, adapted to local needs and employing community talent.

To prevent the exhaustion of material and the satiation of the audience, Fred Allen has suggested that fewer big programs be produced—with the industry limiting the schedule to once-a-month shows in a given series instead of trying to do something tremendous, exciting, and overwhelming every week for 39 weeks. These fewer programs might then become big events to which the entire nation could look forward. This trend is already apparent in television.

To the Federal Communications Commission

The question of what the FCC should do is so controversial that it is difficult to find any recommendations that meet with general approval. This body finds itself in the unfortunate position of being

[6] Sill, Jerome, *The Radio Station*, New York, 1946, p. 46.

an umpire in many cases, and no one likes the umpire. A few examples will illustrate its problem. When the FCC ruled in 1949 that give-away programs were lotteries and thus contrary to public interest, three of the four national networks immediately decided to fight the decision in the courts. When in 1946 it published its Blue Book criticizing many of the questionable practices referred to in this chapter, the industry rose in revolt. An atheist living in California has continually bombarded the Commission with demands that station KQW (now KCBS) be deprived of its license because it gives free time to religious groups to argue their beliefs, yet refuses, except in one instance, to give him time to argue his unbelief. In the same vein, station KOA in Denver once received a letter from a citizen claiming it was violating the code in presenting religious programs. 'You are not giving equal time to sinners,' he said.

It should be understood that Congress has prohibited the FCC from restricting free speech; thus, its control over programs is limited. Anyway, no one wants to see a public agency censoring broadcast fare. Many feel, however, that the FCC could use its licensing powers more effectively in determining the kind of broadcasting service we are to enjoy. One specific recommendation is that those educational stations performing fine service, many of which are restricted to daytime operation, should be granted unlimited licenses.

To the Audience

The listener, if he chooses to exercise his power, is the final arbiter of broadcasting. If enough people turn off their sets when poor programs are on, Mr. Hooper or Mr. Nielsen will get the word to advertisers. Too many people complain about programs without flicking the switch.

In addition to this, letters from listeners, even in these days of scientific audience research, still carry a great deal of weight. Enough of them could accomplish great changes in broadcasting. Listeners should write when they do not like a program—and when they do. All that exists now is a great, yawning silence from most members of the air audience. Another effective approach is the united campaign of a listening council; multiple reactions are much more effective than single ones. Thus, the audience can improve broadcasting by attacking the problem together. But without question, the

listener's most potent weapon is the on-off switch on his radio or television set. It can speak more eloquently than anything else, in a language that broadcasters and advertisers understand.

Projects and Problems

1. Most of this chapter, particularly the last two sections, deals with material that should provide ample basis for discussion, e.g.:
   a. Does the studio audience play an essential role in radio broadcasting, or should it be eliminated?
   b. Should broadcasters sell time to religious organizations, or should periods be given free of charge?
2. To study the phenomenon of social facilitation, make a tape or wire recording of one of the popular comedy programs; play the recording for one or two people, then for the entire class, and analyze the difference in reactions.
3. Study *The Invasion from Mars* by Hadley Cantril (Princeton University Press, 1940), a report of the Orson Welles' broadcast and its effects on the people who heard it. Prepare a summary of the conclusions for presentation to the class.
4. Listen to a radio drama, giving special attention to sound effects and noting whether they are used effectively to evoke emotional responses in the listener.
5. From your radio or television listening of a week select the best program and the worst and explain your evaluations to the class.

PART II

The Techniques of Radio Broadcasting

TEN

The Tools of Radio

Radio engineering in its entirety is a complicated, technical subject that is the province of experts in that field. This chapter makes no attempt to present all of the information necessary for the specialist who develops, operates, and maintains radio equipment. However, there are a few basic engineering facts that everyone who wants to be a well-rounded worker in radio should know, and certainly the broadcaster should be acquainted with the basic nature and operating characteristics of the most important tools employed in radio broadcasting.

How Sound is Broadcast

Sound is created when a series of condensations and rarefactions of the molecules composing the atmosphere are set up by the rapid vibration of some object. The vibrating object, in effect, pushes the air molecules next to it closer together, which then spread out or rarefy to compress succeeding molecules; thus, the sound is transmitted in a wavelike motion from molecule to molecule. To a certain extent sound waves in themselves, quite apart from any connection with radio, can be considered a broadcasting medium in the sense that they go out in all directions from one source. However, sound is limited in that it travels short distances at the relatively slow speed of 1120 feet per second on the average; it is easily blocked out by such barriers as wood, stone, or steel; the desired sound cannot be separated or filtered out from the multitude of other sounds in the air. The broadcaster must use a force without

these disadvantages—namely, electromagnetic energy, which, for brevity's sake, will be referred to hereinafter as electric energy.

Electric waves, as compared with sound waves, travel unlimited distances at the speed of light—186,000 miles per second. They readily penetrate most material and can be differentiated from other electric waves by restriction to a specific frequency, which makes it possible to select only the desired impulses out of the air. The phenomenon of radio, then, is a three-step process, which begins with the translation of sound into electric waves, follows with the broadcasting of these waves, and ends with the reception of this electric energy and its reconversion into sound waves exactly like those that began the process.

Sound waves become electric waves. The microphone is the instrument that converts sound energy into waves of electric energy. Although microphones differ in various ways, the basic principles of operation are the same for all of them. Suppose that an announcer in a studio identifies his station with the sentence: 'You are listening to station KWK.' The sound waves created by his voice strike an element in the microphone that vibrates in exact correspondence to the sound waves. A system of magnets surrounds this vibrating element, and, as it moves back and forth, tiny electric currents are generated, which faithfully retain the pitch, force, quality, and duration factors of the announcer's voice. In addition, the acoustic characteristics impressed on the sound by the studio are reproduced. Sound energy has become electric energy.

Electric audio waves are broadcast. Even though the sound of the announcer's voice has been converted into waves of electricity, several steps are necessary before these waves can be sent out into the air. For one thing, the impulses that come from the microphone are very feeble and minute. Before broadcasting can take place, this energy must be built up tremendously. The problem, of course, is to accomplish this amplification without changing the relationship among any of the factors or characteristics of the original sound waves.

The unit that strengthens the initial electric waves is called, logically enough, an amplifier. It is made up, primarily, of a series of vacuum tubes, successors to the audion tube invented by De-Forest, through which the audio waves are carried. As the waves progress from tube to tube, they continually gain in power until their final strength may be billions of times greater than that of the

faint energy generated in the microphone. In this process of amplification the relationship among the various factors of the voice wave remains unchanged, just as an enlarged picture, though increased in size, looks exactly like the small original. When the waves are sufficiently strengthened, they go by wire to the place where they are to be transmitted through space.

However, the voice waves, because of their relatively low frequency, are unsuitable for broadcasting by themselves; a second wave of high frequency is therefore generated at the transmitter to transport them through space. This second flow of energy is called a carrier wave. Transmission cannot take place, of course, until it and the audio waves are joined. This is accomplished through a process called modulation, which in essence means change or variation of the carrier wave.

A carrier wave can be changed or modulated in two different ways: either its frequency or its amplitude can be varied. Frequency refers to the number of times per second that energy is radiated from the antenna of the station. This factor can also be described in terms of wave length, since the wave length becomes shorter in direct relation to increase in frequency. Amplitude has reference to the power or strength with which energy is broadcast.

In chapter 11 we said that two methods of radio broadcasting, AM and FM, exist side by side in the United States. The major technical difference between them is the contrasting ways in which modulation is accomplished. In amplitude-modulation radio, the amplitude of the carrier wave is varied in response to the audio waves, while its frequency remains constant. Exactly the opposite is done in frequency-modulation radio: the frequency of the carrier wave is varied, while its amplitude remains the same. FM also employs a much higher frequency for its carrier wave than does AM. The highest frequency for a regular AM station is 1600 kilocycles—which means that electric energy is radiated at the rate of 1,600,000 times per second. FM broadcasting, in contrast, begins at 88 megacycles, or a radiation rate of 88,000,000 times per second. The advantages and disadvantages of these two methods will be summarized at the conclusion of this general description of the broadcasting process.

With the audio waves impressed on the carrier wave, transmission into space can be achieved. The carrier wave goes out on a channel that is separate and distinct from the channels of other carrier

waves being broadcast in the area, because the stations transmitting them are operating on different frequencies.

Electric waves are received and become sound again. A radio set picks up the impulses from a given radio station when its receiver is tuned to the frequency of the station. This serves to open the door to its carrier wave and the audio waves that are riding on it as passengers. One question may arise: if the frequency of the carrier wave changes in FM broadcasting, how can a receiving set remain tuned to the station without constantly changing its frequency setting also? The answer is that the variation in frequency caused by impressing sound waves is a very slight percentage of change in the very high-frequency FM carrier wave. FM sets remain tuned in through this band of frequencies.

When a radio set is tuned to a particular station, the radio waves striking the receiving antenna induce in it electric currents of precisely the same nature as those that originated at the station transmitter. These currents flow down the antenna into the receiving set. The journey through space has weakened them to such an extent, however, that they must be built up again before they can be used. As before, this amplification takes place in the receiving set without distorting the relationships among the various tone factors.

Before the electric waves can be converted back into sound waves, one other step is necessary. Up to this point the carrier wave and the voice waves are joined as they were at the transmitter, but now that the carrier wave has performed its vital function of transporting the voice through space, it must be separated and discarded. This filtering out of the carrier wave is called demodulation, or detection. The residue is the electric waves, which correspond exactly to those originally generated in the microphone.

After further amplification these electric waves are carried to the loudspeaker of the receiver through wires. There they activate a coil that pulls the diaphragm of the loudspeaker back and forth. This movement sets up vibrations in the atmosphere, creating sound waves exactly like those produced in the studio by the announcer's voice. The listener hears the words: 'You are listening to station KWK.' (See Fig. 7.)

The announcer may be hundreds of miles away, and yet through the magic of radio the listener hears him as if he were in the same room. This process of translating sound into electric energy and converting it back into sound again, complex as it may seem, takes

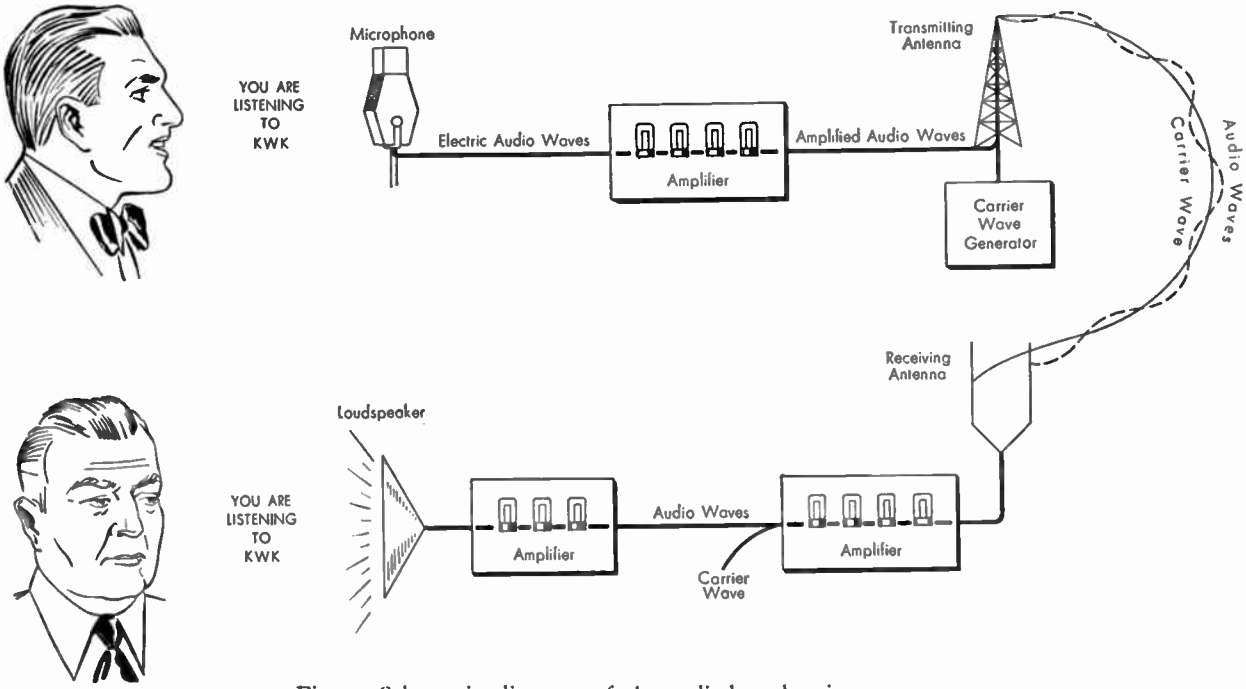


Fig. 7. Schematic diagram of the radio-broadcasting process.

place with such rapidity that a radio listener at home may hear the words before the sound has had time to travel to someone sitting at the back of the studio in which the announcer is speaking.

The Relative Advantages of AM and FM

The fact that the FM carrier wave is modulated in frequency rather than amplitude and is broadcast on a much higher band than AM gives the new method some very significant advantages. Major Edwin Armstrong, the inventor of FM, has described one of these advantages by calling his system 'staticless broadcasting.' Since static is a phenomenon produced by amplitude changes, it is not picked up by the FM receiver. This means that frequency-modulation reception is largely unaffected by the interference of natural or man-made electrical disturbances, which so often add objectionable noise to AM broadcasts. Interference from other stations is not present either, since the strongest FM station usually blanks out any weaker ones. Thus the annoying situation of hearing a program against the background of one or two other programs being broadcast near the same frequency, so often the case in AM listening, is prevented. The net result of eliminating static and station interference is that FM programs are heard against a background of complete silence—that is, always assuming that the equipment is operating properly.

A second major advantage of FM lies in the greater fidelity with which the tones of music and speech can be broadcast. An FM station can transmit a range of pitches approaching the limit of average human hearing. This fidelity gives the listener the impression that a radio speaker is in the same room with him, and musical programs have a richness never achieved in an AM broadcast, limited as the latter is in transmitting the higher frequencies.

A third advantage of FM is that the necessary transmitting equipment is much less expensive than comparable AM equipment. The fact that FM stations can be established and operated more cheaply than the standard stations is a boon to many organizations, such as schools and colleges, that desire to broadcast but cannot afford the expense of AM radio.

The elimination of fading constitutes the fourth advantage of FM over AM. Listeners to AM stations are often annoyed by variations in the volume at which the signal is received—a condition that is likely to arise at the outer limits of a station's range. The FM signal is usually received at a constant volume.

Despite its superiority in many respects, FM does have a major disadvantage—namely, the relatively short distance the signal travels before going off into space. This minimizes the problem of interference, but the lack of a ground wave that follows the curvature of the earth and of a reflected sky wave at night keeps an FM station's coverage far below that of a comparable AM station. To provide radio coverage of the nation, many more stations would be required than are now necessary; in fact, it is likely that some remote areas will never be reached by FM. A few long-range AM stations would have to be retained to provide these areas with programs.

Whether Americans will switch to FM as their primary radio system no one as yet knows. Some obstacles to this change have been mentioned in chapter 11. But even if a general shift does not take place, FM has already fulfilled a vital purpose by making hundreds of new stations possible, thus extending AM's service to the public.

Studios

Now that we have outlined the basic fundamentals of radio transmission, let us turn to some other technical facts that concern those who work in the radio world. Of prime importance to the broadcaster are the studios in which he creates most radio programs. The nature of sound requires that certain conditions be met to assure a desirable and efficient pickup.

The first requirement of a studio is that it be suitable in size and shape to the most usual type of broadcast occurring in it. Of course, this condition cannot be met by a small station originating almost all of its programs from a single room that houses control equipment, a microphone, and transcription and recording turntables. In a larger station, however, broadcasting activity is constantly shifting from a tiny announcing booth, from which call letters are given and spot commercials read, to a small studio for an interview, to a medium-sized studio from which a dramatic program may originate, and finally to a large studio with room for an orchestra and an audience (see Fig. 8).

In addition to suitability in shape and size, there are two other basic requirements for studio construction. First, unless special steps are taken to isolate it from the intrusion of outside sound, the noise and shock of such interferences as passing streetcars and trains will become part of whatever program happens to be on the air. Sec-

ondly, the studio must be treated acoustically to attain the most desirable conditioning of sound originating in the studio before it reaches the microphone.

Keeping Out Unwanted Sound

In elaborate radio structures vibration is eliminated by suspending studios from supports of horsehair or metal springs within the

Fig. 8. An auditorium studio. (Courtesy WWJ)

framework of the building. The studio is thus hung like a box within a box and has no direct contact with the rest of the structure. Sound from outside is further excluded by building the studio without windows. This in itself once created a problem, inasmuch as the air-conditioning equipment, which windowless construction made necessary, tended to be noisy and to set up air currents disturbing to sensitive microphones. However, ventilation machinery has been successfully silenced, and baffling has eliminated unwanted drafts.

To keep out sound from a corridor, most studios are entered through a small antechamber, called a sound trap. The door from

the hall is closed by the time the door to the studio is opened. The sound trap also comes into use in entering the studio from the control room. As an additional precaution, rubber stripping along the frames seals out all sound when the doors are closed.

Studio walls are separated from each other by dead air, an effective sound killer. Control rooms and observation lounges are isolated by several panes of glass, which are also separated from one another by dead air. The glass is slanted in order to eliminate the light reflection that would make seeing into or out of the studio a difficult problem.

The procedures described above are those employed by the networks and the largest stations for keeping out unwanted sound. Suspending a studio within a building, however, is a very expensive project, as are some of the other sound-isolation methods. Smaller stations must compromise their solution of the problem by using only those methods that the budget will permit. One way to avoid sound from outside is to build the studio in a country area away from the noise and vibration of city streets; but this has the disadvantage of making the station relatively inaccessible by public transportation.

Even if outside noise does occasionally seep into a studio, the program is not necessarily ruined. Once, an announcer found himself working for a small station whose studios were completely incapable of eliminating the louder outside noises, one of which was the whistle of a train that came by every night. Instead of permitting it to interfere with his program, he used the whistle as a welcome and amusing part of it by making a guess regarding the train's arrival time a regular feature of the evening's activities.

Conditioning Studio Sound

The conditioning of sound within a studio is the acoustic problem of controlling the length of time a sound is bounced back and forth by the surfaces of a room after the source has stopped—a factor known as reverberation. When reverberation time is relatively long, a studio is said to be 'live'; when short, the studio is 'dead.' If reverberation time is excessively long, previously uttered sounds are still being reflected by the surfaces of a room when the next sound comes along; this causes a confusing overlapping and intermixing of the various sounds, and a consequent echoing or hollow

effect. This is the condition prevailing in most railroad stations, and it suggests one reason why train announcers are usually so difficult to understand.

Fig. 9. A modern radio building. Some of the space is now being used for television production. (Courtesy WWJ)

Because of the sensitivity of microphones, the ideal reverberation time for a radio studio varies between five tenths of a second and one and two tenths of a second. The attainment of this relatively short period calls for special design and treatment of studios. The

ordinary room with its hard surfaces bounces sound back and forth for too long a time.

Engineers have discovered that certain dimensional relationships among the width, breadth, and height of a studio provide the most desirable acoustical conditions. For example, if all other conditions are equal, a rectangular studio is acoustically superior to a square studio. Reverberation is further reduced by placing absorbent material on studio surfaces. The cloth drapes of early broadcasting days have now been replaced with linings of rock wool and asbestos wallboard, but the objective of soaking up sound waves is still the same. Usually, this wallboard is perforated by many small holes, which act as an additional sound deadener. Engineers have also found that walls built in a saw-toothed arrangement, with V's running from floor to ceiling, tend to inhibit sound reflection.

A further development in sound conditioning is the building of studios that gradually progress, from one end to the other, from a condition of 'liveness' to one of relative 'deadness.' The live end is likely to have flat surfaces of seasoned-wood panels that act as sound reflectors, much as does the sounding board of a piano. Farther down the studio, saw-toothed walls are introduced and special wall linings are added until a condition of maximum sound absorption is reached. The existence of drapes or hinged panels that can be shoved aside or brought into play makes the acoustic situation even more flexible. Under these conditions a broadcaster may adapt the studio to whatever degree and type of reverberation his program requires.

Isolation Booths

Sometimes radio production requires that certain elements in a program be kept completely separate from others. Two different studios can be used, but a more common practice is to employ a portable booth, equipped with windows, and placed inside a larger studio. An announcer can read the final commercial on a program from inside this booth, and thus the sounds of the audience, which may still be reacting to the entertainment, are excluded. Another example of its use was the presentation of Archibald MacLeish's 'The Fall of the City,' which required that the narrator, Orson Welles, read description while 150 people in the studio moved, talked, and yelled to suggest a crowd of 10,000. So that Mr. Welles could hear himself, he was placed inside an isolation booth, where

he could receive cues through the windows. This procedure also permitted a more delicate balance than would have been possible with the narrator and crowd together in the same studio.

The Echo, or Reverberation, Chamber

In some cases the demands of a program may require that sounds have a reverberation effect that is impossible to attain in even the 'livest' conventional studio. This condition is necessary for scenes supposedly originating in such places as caves or tunnels. To accomplish the desired effect, the sound is first picked up by the regular studio microphone and is then carried to a loudspeaker at one end of a special chamber, separate from the studio, which is divided into long, connected passages to make a labyrinth. The sound proceeds along this labyrinth to the end, where another microphone picks it up for return to the control board, to be mixed with the other elements of the program. The lag between the time the sound is first picked up by the studio microphone until its return after the journey through the special chamber gives a synthetic but very realistic echo effect. In the most elaborate systems the engineer can control exactly the amount of reverberation effect added to the sound. Sometimes the echo chamber is merely a room where the sound is bounced back and forth between the walls before its return to the control board—a process that adds actual reverberation.

The Control Room

An integral adjunct to every studio is the control room, from which the engineer and the radio director control what is going out on the air. It is a small room, isolated from the studio so far as sound is concerned, but connected to it by various electrical circuits, and visible from the studio through glass. It contains the control board, a loudspeaker, a microphone for talking to people in the studio, and, in some cases, turntables for playing records and transcriptions.

Control rooms in large stations are usually small, designed to hold only the two or three people who have an essential function in getting the program on the air. Since the control room is the place where the various elements of a program are balanced and blended, it is treated to produce optimum conditions for hearing. Ideally, each studio has its own control room, although economy sometimes requires that a single control room serve two or more studios. Inevitably, this creates problems, particularly in the rehearsal of

programs. In small independent stations the control room is likely to be the place from which programs of news and transcribed music originate. Because the control board is being used constantly to put programs on the air, it is virtually impossible to use it in rehearsing programs before they are broadcast.

In addition to control rooms for studios, large stations and networks are equipped with a master control room, in which the flow of all broadcasting activity is regulated (see Fig. 6). Programs are switched from one studio to another at the master control board, and it serves as a central distribution point from which programs coming from the control rooms of the various studios are sent out to the station's transmitter or are turned into the proper network lines.

Observation Booths

Networks and large stations often provide a special viewing room, isolated from the studio by panes of glass, from which a person, such as a sponsor, can see what is going on and at the same time can hear the program as would a radio listener. With a special booth of this type, interested persons can be kept out of the control room, where their presence might distract the engineering and production personnel.

Microphones

The microphone is the most important piece of equipment used by a broadcaster. The instrument that converts sound energy into electric energy, it is the starting point of all radio programs. As we pointed out previously, microphones are alike in basic principles, but they differ in details of construction and in operating characteristics. The first thing a broadcaster needs to know about a microphone is its pickup pattern—one of the ways in which microphones differ. An individual may be heard clearly when speaking into one side of a certain microphone, while he is scarcely heard at all when speaking into another side. Obviously, it is essential that he know the proper direction from which to speak; for this reason, we classify microphones according to the direction of their pickup patterns.

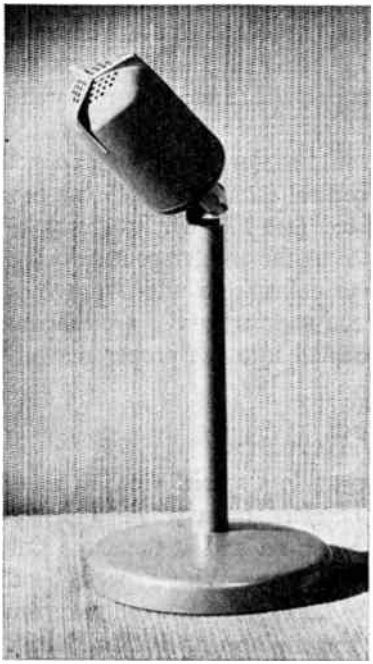


Fig. 10. Omnidirectional, pressure-actuated microphone, Western Electric 633-A, called the 'salt-shaker.' (Courtesy Western Electric)

Fig. 11. Omnidirectional, pressure-actuated microphone, Western Electric 630, called the 'eight-ball.' (Courtesy Western Electric)

Fig. 12. Omnidirectional, pressure-actuated microphone, RCA 88-A. (Courtesy RCA)

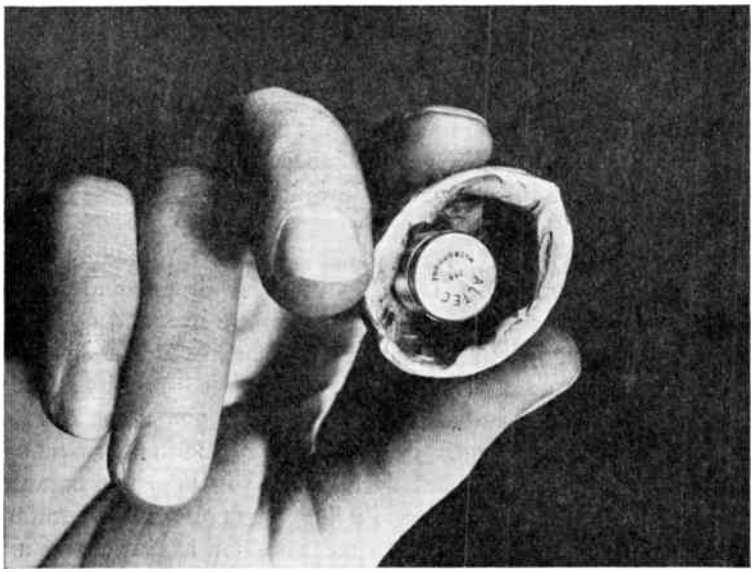


Fig. 13. Omnidirectional, pressure-actuated microphone, Altec 21-B. This microphone is very tiny, designed particularly for use in television shows to prevent the mike from obscuring the performer's face. (Courtesy Altec Corp.)

Omnidirectional Microphones

When placed upright, this type of microphone picks up sound equally well from all directions—a characteristic that is also described as 'nondirectional' (see Figs. 10-13). It is of particular value in programs requiring that a number of people be around a microphone at the same time—round-table discussions are a good example. Being also relatively small and sturdy and unaffected by wind, the omnidirectional microphone has been widely used for remote broadcasts and out-of-doors originations. And because it can be readily moved and is small enough to be placed next to such effects as doors or feet on gravel, it is most useful for picking up sound effects. The microphone becomes unidirectional when it is pulled over and pointed in a specific direction. The addition of a disc-shaped baffle around its face helps to keep out sounds that may be occurring in other parts of the studio, and thus increases its unidirectional characteristics.

The vibrating element in an omnidirectional microphone is a metal diaphragm, which moves in response to the changes of pressure caused by sound waves striking against it. It is, therefore, often called a pressure-actuated or dynamic microphone. A type of microphone widely used in public-address systems is the crystal microphone, which turns sound into electric energy by means of a Rochelle-salt crystal. Radio people, however, do not consider it sufficiently sensitive for use in broadcasting.

Bidirectional Microphones

This type of microphone is widely used for drama and music programs; for drama because only two sides are live, and so actors can achieve fading effects by moving from a live side to a dead side; for music because, of all the microphones, it transmits sounds with greatest accuracy and faithfulness. Acoustic values can also be altered by varying the live and dead sides in relation to the reflecting surfaces of the studio. It is usually restricted to studio use, because wind blowing on it is likely to add a fluttering noise. The vibrating element is a metal ribbon, which is set in motion as particles of air actuated by sound rush past it; hence, it is frequently called a velocity or ribbon microphone (see Figs. 14-16).

Unidirectional and All-Purpose Microphones

The unidirectional microphone is used in cases where it is desirable to shut out all the sounds except those coming from one direction. When placed with its dead side toward an audience, for example, it would exclude disturbances from that source while picking up sounds from the stage. A variation of this type is the all-purpose microphone (see Figs. 17-18), which, by the turning of a screw, can be set into the three different pickup patterns. This flexibility comes from the fact that it has two vibrating elements: a free-moving ribbon comparable to that in the velocity microphone, and another ribbon baffled to react to changes in pressure, as does the diaphragm. The position of the switch determines which of these vibrators is brought into play. Because this type of microphone in its unidirectional and bidirectional settings has a heart-shaped pickup pattern, it is frequently called a cardioid microphone.

Filter Microphones

These microphones, used to simulate telephone conversations, the voice of one's conscience, or utterances from another world, are a necessary item in the equipment of any station that originates drama programs. The peculiar, eerie quality of the filter is attained by subtracting certain frequencies from the voice, which is thus flattened and thinned out. Sometimes the frequency is narrowed by reducing the ability of the microphone to respond to the normal range of frequencies. A more flexible way of accomplishing the same objective is to remove frequencies after the impulses have reached the control room—a method that permits variation in the range of frequencies subtracted.

Miscellaneous Equipment

Clocks and Stop Watches

Because of the split-second timing necessary in the broadcasting of radio programs, accurate clocks, corrected at regular intervals, are a vital part of a station's equipment. The clocks must be large, and placed in positions where broadcasters can easily see them. Particular pains must be taken to keep the minute and second hands in complete synchronization, to avoid the disastrous errors in timing that can be made if the broadcaster is not sure which of two disagreeing hands is correct.

Fig. 14. Bidirectional, velocity microphone, RCA 44-BX. (Courtesy RCA)

Fig. 15. Bidirectional, junior, velocity microphone, RCA 74-B. (Courtesy RCA)

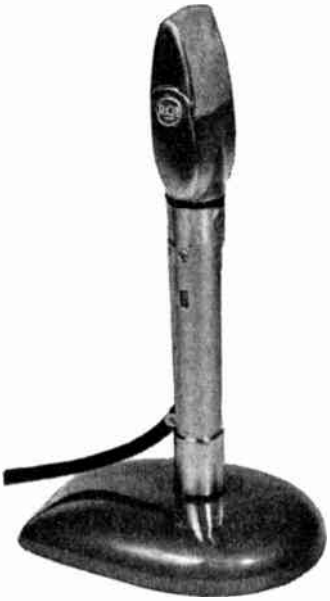


Fig. 16. Bidirectional, bantam, velocity microphone, RCA KB-2C, another small microphone suitable for television use. (Courtesy RCA)

Fig. 17. All-purpose, cardioid microphone, Western Electric 639-A. (Courtesy Western Electric)

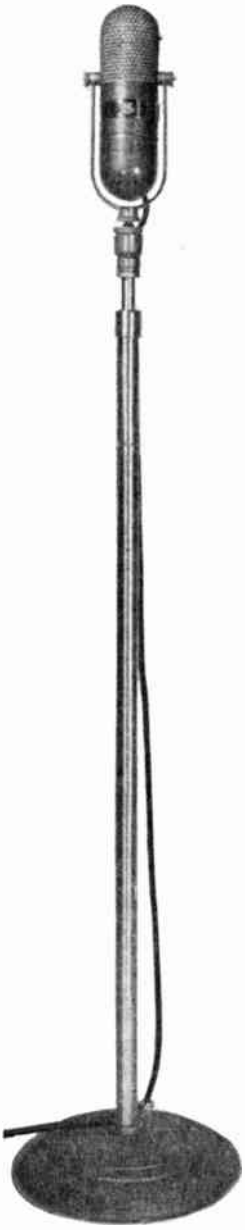


Fig. 18. All-purpose, cardioid microphone, RCA 77-D. (Courtesy RCA)

The stop watch is another indispensable item in the preparation of most radio programs. It should be the type that permits cumulative timing—that is, one that can be stopped and then started again when a program is interrupted without having to go back over the entire program. This requires two controls—one that starts and stops the watch, and another that returns the hands to the zero position after timing is completed. Watches used for timing sports contests usually have only one control and are therefore not suitable for radio use.

Sound-Effects Equipment

This includes a table or truck for playing recorded sound, and the various devices necessary to create live or manual sounds. The chapter on sound effects will describe them in detail.

Control Board

The most important item of equipment in the control room is the console, mixing panel, or control board, as it is variously called (see Fig. 19). All of the microphones and sound-playing equipment in the studio lead eventually into this panel, which is equipped with separate volume controls for each microphone and the sound truck. In addition, a master control regulates the volume level of all the elements of the program combined. Another important part of the console is a dial, which shows the volume level of the program. This dial is sometimes called a v.i. (volume indicator) or a v.u. (volume units) meter. Connected to the console is a loudspeaker, which permits the director and engineer to hear exactly what is going on in the studio.

In England the director often handles the controls on the board himself; in American broadcasting this is the function of the engineer. Under the supervision of the director, he regulates the volume of the various elements in a program in relation to one another by adjusting the proper volume control; thus, the various sound, music, and speech elements of a program are appropriately mixed and balanced. In addition, he is responsible for keeping the entire program within the proper limits—a function known as 'riding gain.' By watching the volume indicator, he knows when the sound becomes too loud, because the needle on the dial jumps into an area marked in red. If it does this continually, the engineer

reduces the total volume of sound coming from the studio by turning down the master gain control. Permitting sounds that are continuously too loud to go to the transmitter might cause damage to sensitive broadcasting equipment.

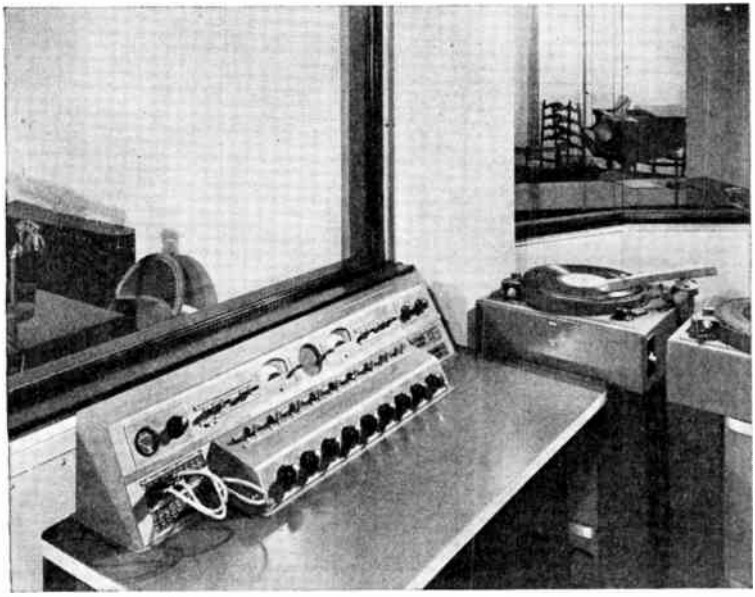


Fig. 19. A control board built to handle an AM and FM program simultaneously, on which two volume indicators are necessary. Note the turntables at the right for playing transcriptions. (Courtesy Western Electric)

The Talk-back

This is a microphone in the control room, used by the director to give instructions to participants in the studio, who hear his words over a loudspeaker. For greatest convenience, the pressing of one button or switch should cut out the control-room loudspeaker and open the talk-back microphone. Less elaborate setups require that the master control be brought to zero before the talk-back can be used, or feedback results. A talk-back of some sort is a vital necessity. Without it the director wastes a great deal of time running back and forth between the control room and the studio; consequently, he is forced to do too much rehearsing away from the microphone.

Transcription and Recording Equipment

With the use of transcribed and recorded material constantly increasing, few stations can get along without their own record-making equipment. At the present time this is of two major types: the disc recorder (see Fig. 20), which transcribes by cutting grooves in relatively soft plastic material placed on a metal disc; and the magnetic recorder (see Fig. 21), which records sound impressions

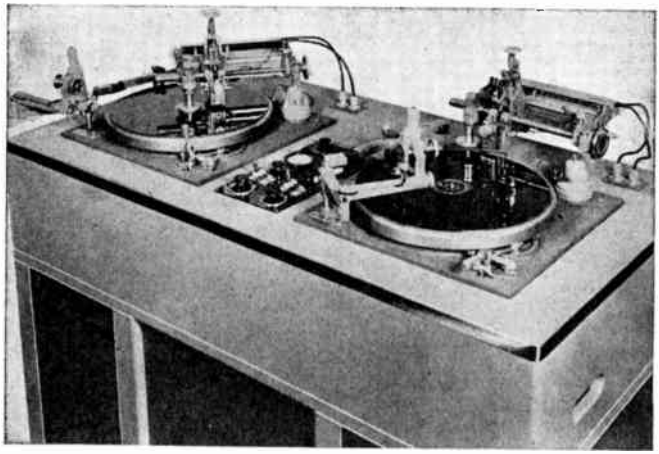


Fig. 20. A disc recorder for making transcriptions. By using both tables, programs of any length can be recorded without a break. (Courtesy Presto Corp.)

by changing the magnetic characteristics of a wire or tape. The latter method has the advantage of erasure, which makes it possible to use a single wire or tape over and over again. The tape or wire recording can also be corrected or changed by cutting out and redoing only that part of the program that requires adjustment. In order to correct a disc recording, the entire program must be done again.

The distinction between the terms 'transcribing' and 'recording,' vague before, is becoming even more so since record companies have begun changing the size and speed of discs. We can say, however, that the transcription is usually made for radio use exclusively, while records are meant for both radio and home use. An example of a radio transcription is the disc, 16 inches in diam-

eter, which revolves 33⅓ times per minute. Its grooves may be cut either vertically or laterally, and it is large enough to take 15 minutes of program. A program of longer duration can be transcribed on discs without a break only if a station is equipped with two

Fig. 21. A magnetic tape recorder that can record up to two hours of programs. (Courtesy Presto Corp.)

cutting turntables. The term 'transcribed' is also used to describe programs recorded on tape for later broadcast to radio audiences.

Records now include discs ranging from 7 to 12 inches in diameter and revolving at 33⅓, 45, or 78 revolutions per minute. These are pressed in many copies from a master recording in material that is hard enough to withstand considerable wear. Some transcriptions for radio use are also manufactured in the same way.

Many radio disc transcriptions, however, are of the 'instantaneous' variety, which can be cut and presented immediately, and are not expected to last more than a few playings.

Turntables

A radio station must have at least two turntables in order to present recorded programs without interruption. The tables are usually adjustable in speed so that they can handle either transcriptions or records, and they should be able to play either the vertical or the lateral type of groove. In small stations the turntables are frequently placed around the control console to permit one person both to announce and to operate the tables. In large stations the turntables are located either in the control room of the studio or in a special room designed for this purpose. Equipment for playing wire or tape recordings is now an additional necessity for all stations.

Projects and Problems

1. Arrange an interview with the chief engineers of two of your local radio stations to discover what microphones are used by each station for various broadcasting situations and why. Compare the practices of the two stations and present your analysis to the class.
2. Using a radio set that receives both AM and FM broadcasts, compare the reception attained by the two broadcasting methods. One way to do this is to switch back and forth on a program that is being broadcast by a local station on both an AM and an FM frequency. Do you notice any differences? If so, what are they? Are the differences more noticeable on the music or the speech portions of the broadcast?
3. Draw a pattern, based on actual experimental tests, showing the pickup properties of each microphone in your studio.
4. Find a space in your building that could be built into a good echo chamber for your radio programs.
5. With the co-operation of your physics department, conduct a study to determine the reverberation time of the studio in which you rehearse or broadcast programs.

ELEVEN

Speaking into a Microphone

Radio speakers face microphones with sharply contrasting purposes and employ widely divergent styles of delivery. The announcer reading a high-powered commercial, the actress portraying a scene of deep emotion, the observer reporting a football game play by play, the comedian telling a joke, the commentator giving a calm analysis of the news perform quite different functions. But all of these speakers, no matter what their aim or approach, must meet one general demand in order to be successful on the radio—all must achieve *effective oral expression.* This is the one indispensable requirement not only because the speaker must rely entirely on his voice to secure communication, but also because the absence of visual elements denies him any opportunity to compensate for vocal failures. In radio the spotlight is first, last, and always on the voice; it must do the job of communication alone and unaided. For this reason the performance of a movie star on the air waves often seems less satisfactory than his playing of the same role on the screen. In radio a masculine physique or a pretty face cannot hide the fact that a voice is not as expressive as it should be.

Radio Voice and Speech

The average person asked to name the requirements for effectiveness on the radio would probably list a rich, resonant voice, good diction, and proper pronunciation as the most important essentials. These qualities are necessary, it is true, for a large number of radio performers. As far as networks are concerned, for example,

the announcer is rare indeed whose voice is not a superior vocal instrument from every point of view. But it is equally true that many people whose voice and diction are poor even by ordinary standards have become outstanding radio performers. A squeaky voice and a lisp need not necessarily bar the way to success on the air, provided the individual achieves effective oral expression in spite of them. Jimmy Durante, for example, has been a popular air personality for twenty years even though he has never in his life uttered a golden tone before a microphone.

We can conclude that a resonant voice and good diction are not the vital attributes, since effective oral expression is possible without them. What, then, are the requirements that must be met by every radio performer who hopes to achieve headliner status? Is it possible to discern any demands that must be satisfied by even a Phil Harris or an Abe Burrows, whose speech seems, in many ways, to defy the usual standards? Four such requirements do exist, four basic qualities that are essential to the attainment of effective speaking on the air, whether it be announcing, acting, newscasting, comedy, or any other form. The only people likely to gain consistent audiences without these qualities are individuals, such as a war hero, an outstanding writer, or a President of the United States, whose news value or achievement outside of broadcasting is sufficient in itself to hold the listener's attention.

Vocal Individuality

Very few radio speakers have become outstanding personalities without a style of speech or a characteristic voice quality that made them separate and distinct from other persons on the air. Sometimes individuality is gained through the projection by the voice of a warm, human, and vivacious personality. Millions of people feel that they actually know Kate Smith, Don Wilson, and Helen Hayes just from hearing their voices coming out of a loudspeaker.

Another route to individuality is the development of a special style in complete accord with the material presented or with the character traits assumed by the performer on the air. Fred Allen's voice is a perfect instrument for the sharp, dry wit that is his most distinctive characteristic. Notice how accurately the rapid-fire, staccato delivery of Walter Winchell matches his material. On the other hand, the calm, unemotional deliveries of Charles Collingwood and Elmer Davis are a faithful reflection of their approach

to the analysis of world events. The character of a girl who is not too bright about a great many things is ideally mirrored in the voice of Marie Wilson as she portrays 'My Friend Irma.'

The need for care in establishing standards for all radio speaking is illustrated by the success of performers who have acquired vocal individuality, to some degree, through the development of what would usually be considered actual faults. The harsh, rasping voice of Jack Benny's 'Rochester' is an appropriate vehicle for his brand of comedy, although the speech teacher would probably want to improve its quality for general purposes. J. Scott Smart, the actor who plays the 'Fat Man' in the radio series of that name, delivers his lines in a style marked by an unusual intoning of certain final syllables. Were an aspiring actor in a radio class to read lines in a like manner, he would probably be told that he must eradicate this tendency before he could hope for success on the air. Yet Mr. Smart has transformed this apparent fault into a trademark of distinction, which imbues his entire performance with a singular, personal quality.

The development of an unusual radio style is a problem that rests squarely on the person concerned. It is difficult to tell another individual how to be different. Unless you are planning to become a specialist in impersonation, however, we can say that imitation of another's mannerisms is not the route to success. In fact, such a procedure will result in the direct antithesis of the individuality that is the essential objective. The public is not looking for replicas of former or present stars; interest will be attracted only by something new and different. Usually, the best starting point is an endeavor to express in the voice the arresting and inimitable qualities that distinguish you as a person. If these qualities are slight or nonexistent, the problem becomes the more basic and difficult one of doing something about the entire personality.

Vocal Flexibility

By a flexible voice we mean a voice that can change pitch, rate, quality, and force in the proper places and with sufficient variation to express the diverse moods and meanings the speaker is called on to communicate. Few have attained success in radio speaking, no matter what the form, without the asset of a responsive, pliant vocal instrument. Floyd Gibbons, one of radio's earliest newscasters, developed as his special trademark a machine-gun type of delivery

that fired well over 200 words a minute into the microphone. This feat gained him some attention, but he would never have earned the long-standing popularity he enjoyed without a voice responsive enough to reflect the wide range of logical and emotional meanings that he communicated in every broadcast. Reporting the death of a beloved and well-known personality, Gibbons' voice acquired overtones of sadness and reverence. A humorous story was told with an infectious chuckle. Successively through a program his voice might be angry, patient, wistful, or exhorting.

Flexibility is essential not only because of its importance in the communication of meaning, but also because the changes that the term implies are necessary to hold attention. Just as a painter introduces a variety of color combinations to make his picture interesting, so the radio speaker constantly varies his pitch, rate, force, and quality in order to keep people listening.

Because the microphone projects a close-up of the performer's voice, the medium of radio provides an ideal opportunity for taking advantage of vocal flexibility. The delicate nuances of intonation and subtle inflection changes that endow speech with its richest meaning are conveyed intact to the radio audience. This contrasts with the situation in which a speaker's words must reach a large audience gathered in a theater or auditorium. The relatively great volume required flattens out the subtler changes and colorings that radio can transmit so well.

We might mention in passing that radio's facility for picking up delicate shades of meaning and mood may work to the speaker's disadvantage if he permits his voice to reveal a feeling that should be kept secret. An announcer bored with his job is likely to find his participation in broadcasting coming to a sudden stop if he reflects that attitude in the reading of commercials.

Vocal Energy

The third general attribute necessary for effectiveness in all forms of radio speaking is an active, alive, dynamic voice. Even though he is sitting before a microphone, the radio speaker should give the impression that he is going somewhere. One of the most important factors in the success of such performers as Jimmy Durante, Al Jolson, Bob Hope, and Walter Winchell is the intense energy and the animation that are manifested in their voices. A dead voice, on the other hand, encourages dial turning.

Learning to speak with animation seems to be one of the most difficult lessons for beginning students. The impression given by many of them is that the vocal organs have been turned on, while the rest of the body remains inert and withdrawn. Verve and vibrancy in the voice come from a dynamic muscle tone that results when an individual participates completely in the activity of speaking. Even though the audience cannot see the speaker, full effectiveness cannot be attained unless the whole body takes part in the process.

It is important to understand, however, that energy in the voice is not incompatible with relaxation of manner; in fact, both are necessary for maximum effectiveness. A speaker can sound spirited and vivacious and still give the impression that he is completely at ease. The exaggerated, forced delivery that some students assume in an effort to sound energetic is likely to generate a feeling of strain and uneasiness in the listener. Animation that seems artificially contrived is scarcely better than none at all.

Vocal Presence

In the theater an actor is said to have stage presence if his personality has a magnetic attraction that seizes the attention of the audience from the moment he steps upon the stage. Presence in radio speaking has the same connotation; the speaker whose voice possesses it cannot be easily ignored. More than mere individuality is suggested by this term. It is possible for a person to display distinctiveness in speaking and still lack the authority of manner that compels attention. This characteristic can be considered a fourth essential ingredient in the performance of most of the outstanding air personalities. The success of Milton Cross, Bill Stern, and Jack Benny in their various fields can be attributed in part to the intangible something in their vocal performance that makes people want to listen to them. The sound of their voices alone is sufficient to draw the spotlight of audience interest. Elmer Davis, the news commentator, is another example of a speaker who evidences presence or authority. Used in this way, these terms have no reference to Mr. Davis's reputation as an expert on world affairs; rather they imply a characteristic of voice and speech that, by adding substance and weight to his personality, lends significance to everything he says.

Thus far we have considered four attributes that are indispensable to anyone who hopes for outstanding success before the microphone, no matter what his field. Everyone needs vocal individuality, flexibility, energy, and presence. Some forms of radio speaking, however, make additional demands on the radio performer. Announcers, newscasters, and many actors must also reach high standards in voice production and diction. We refer now to those speech factors that are usually considered important for general purposes—crisp articulation, proper pronunciation, and a clear, resonant voice. Even though a comedian can gain a laugh by deliberately mispronouncing a word, the announcer or actor who unintentionally does the same thing is likely to jeopardize his job. In fact, the standards for some radio speaking are even higher than those established for good speaking in general, since the close-up provided by the microphone reveals faults in speech that can exist in other situations without being noticed. Radio's glaring spotlight often demands a performance free from the taint of everyday imperfections.

Good Articulation

The term articulation is used to refer in general to the formation of the various sounds of speech and the way in which these sounds are joined or fitted together to make words or phrases. The signs of good articulation are distinctness, precision, and ease of utterance. These qualities can be attained only through precise movements that place the vocal organs in exactly the right position for the formation of a particular sound. The changes from one position to another must be made, moreover, with sufficient speed to produce free-flowing speech. A slow-moving vocal apparatus, which approximates rather than reaches the proper positions for various sounds, results in fuzzy, blurred speech, difficult to understand. No announcer afflicted with the form of vocal sluggishness known as 'lip laziness' can ever hope to attain a top-flight position. In fact, even the comedian, while he may violate esthetic standards of diction with impunity, must articulate clearly enough to be understood with ease or he will soon lose listeners.

In addition to general sluggishness, speakers are often guilty of omitting sounds or of substituting improper sounds for the correct ones—faults due in most cases to slovenly speech habits, but which may also be the result of a misunderstanding regarding the way

in which a word should be pronounced. But whatever the cause of errors, excellence in articulation must be the goal of most microphone speakers. We list now some common faults, so persistent in the speech of beginning radio students that particular pains must be taken to eradicate them. Some of the standards indicated may be more stringent than those demanded for some types of radio speaking; nevertheless, they constitute the basic requirements for acceptable microphone work in many fields.

Sounds are either dropped or telescoped. A common example of this error is *dint* for *didn't; whether* is given the same pronunciation as *weather; library* becomes *li'bry; particularly, particul'ly.* The final consonants in many words are either skipped or given insufficient attention, especially when the sound is a *d* or a *t. Hand* becomes *han'; moment, momen'; couldn't, couldn'.* The orchestra leader, Morton Gould, was recently announced by a beginner as Morton Goul.

More easily formed sounds or ones mistakenly considered correct are substituted for the proper sounds. Just becomes *jist; get, git; because, becuz; February, Feb-yoo-ary; hundred, hunderd.* Voiced sounds are substituted for unvoiced sounds, or vice versa. *United* becomes *unided; second, secont.* The *s*'s in *houses* are given an *s* pronunciation instead of the proper *z. Z* sounds at the ends of words tend to become *s* in such words as *bells* and *dims.* One of the most common errors is the substitution of an *n* for the *ng* in words ending in *ing. Coming* becomes *comin'; doing, doin'; watching, watchin'.* To illustrate how standards differ in relation to the field, we might point out that Arthur Godfrey, with his relaxed, humorous style, can make this substitution without damage —in fact, even advantageously—but the announcer who introduces him is expected to adhere to the correct sound.

Although the elimination of inaccuracies and general sloppiness is the major problem, it is possible for a person concentrating on articulation to become too precise. In connected speech a certain amount of blending and adaptation of one sound to others is perfectly proper and desirable. The sounds immediately before and after a particular sound are bound to influence its formation to a certain extent. Vowels in unaccented syllables properly lose the form we usually associate with them to become, in many cases, a simple 'uh.' An announcer who tried to form every sound in a narration as it is formed in isolation would read like a first grader

laboriously plodding through a story, word by word. Blending, however, should not descend to the wholesale telescoping of syllables or the slovenly approximation of sounds. Acceptable performance requires a proper balance between the amount of blending necessary to maintain smoothness and ease of flow and the excessive blending that results in careless speech, difficult or impossible to understand.

Proper Pronunciation

Pronunciation is a general term that refers both to the accurate formation and fitting together of speech sounds and to the correct location of stresses. The person who pronounces well, therefore, is one whose speech is articulated clearly and accurately, and who, in addition, places the accent in each word on the proper syllable. To make a further distinction, pronunciation is the general term that covers the over-all correctness of speech production, while articulation generally refers more narrowly to the precision and clarity of utterance.

In this country there are now three types of pronunciation generally considered correct: the Eastern, Southern, and General American, which differ mainly in the pronunciation of the *r* and *a* and in the diphthongization of sounds. Though any of these types is acceptable for radio work, most radio announcers adhere most closely to the General American standard, since it is the speech used by the great majority of our people. But whatever the criterion, the radio announcer at least is expected to be a model of standard speech, for a strictly regional dialect would make him unacceptable in any area but his own. Even in local stations situated in areas characterized by a marked dialect, the speech of the announcers tends to be closer to General American than to the speech of the people in the surrounding territory.

Following acceptable pronunciation practices presents no special problems except in connection with certain words. Pronunciation, in general, is determined by the usage of cultured people, but usage, being a dynamic and not a static control, is subject to changes that introduce themselves imperceptibly as the years go by. There are always some words undergoing a transition. For example, 'margarine,' 'hangar,' and 'de luxe' are now given pronunciations different from those indicated as most acceptable by dictionaries several years ago.

The best recourse for a radio speaker in doubt about the pronunciation of a word is to consult a dictionary first, but this should not be considered the final authority in all cases. Even though dictionaries purport to record the pronunciations of cultured people, they differ on some words and may lag behind general usage. When dictionaries disagree, or when the indicated pronunciation of a word in transition is obviously behind the practice of the times, the speaker is justified in using a pronunciation that his own knowledge and experience indicate is most acceptable.

The pronunciation of foreign names and words in newscasts and music programs presents special problems. In the United States announcers are expected to employ the foreign pronunciation in so far as it can be given with the usual English sounds and does not interfere with our customary phrasing and rhythms. This necessity requires that the announcer be familiar with a number of foreign languages. Complete proficiency in every language is not called for, but acquaintance with at least the major musical names and terms in Spanish, French, German, Italian, and Russian is an absolute essential. Inasmuch as the names and works of certain composers occur over and over again, this is not quite so heavy a burden as it might appear.

The foreign names appearing in the news from day to day are not as predictable as musical terms. Current events may spotlight a previously unheard-of village in Tibet or a Polish patriot, whose names seem to be made up primarily of consonants. Unless the news service has sent out a pronunciation guide on the teletype along with the news, the announcer may find himself completely on his own. The difficulty of the challenge does not lessen the responsibility of arriving at an acceptable pronunciation. Again, familiarity with languages, particularly with the most important pronunciation rules, must be the announcer's main resource in solving problems of this nature.

Once the correct pronunciation of an unusual word has been decided on, the speaker must get the proper form clearly in mind, marking the word phonetically, if necessary, in order to pronounce it on the air as confidently as if he had been using it all his life. A tentative, hesitant pronunciation will detract from the authority of the broadcaster by betraying unsureness and indecision.

Proper Breathing

Since the expelled breath provides the power for actuating the vocal apparatus and is itself a raw material of speech, the importance of proper breathing habits is obvious. Air is taken in by a general lifting and expansion of the chest structure and a lowering of the diaphragm at the center of the body. Air is expelled by a reversal of these movements. The major control over the breathing process can be centered either in the chest or in the abdominal muscles located at the diaphragm. The chest breather concentrates on expanding his chest to take in air, while the diaphragmatic breather directs his attention toward pushing out his abdominal muscles. Although scientific experimentation has thus far indicated no superiority for either method, general observation and experience indicate that control exerted at the diaphragm has several advantages over chest control. More air can be taken in with less effort; a finer control of the breath stream is possible; virtually silent breathing can be attained; and diaphragmatic control exerts less strain in the area where the voice is produced—the larynx.

The unobtrusive breathing made possible by the centering of control at the diaphragm recommends this method especially to the radio speaker. The emotional tensions generated by radio activity are likely to induce a shallow, chest type of breathing, which signals the taking of every breath with an audible gasp. The microphone picks up this unintended sound just as efficiently as it transmits the sounds the speaker intends to make. By consciously concentrating on control of breathing at the diaphragm until the method becomes a habit, the speaker can practically eliminate this unwanted noise.

Two other suggestions regarding breathing are inspired by frequent mistakes of the beginner. (1) Be sure that the lungs are full of air before a broadcast is scheduled to begin. A common fault is the taking of a nervous and very obvious breath just before the opening sentence. (2) Take in air during the pauses dictated by a proper phrasing of the material; do not let demands for breath force pauses that will bring about an inappropriate phrasing pattern.

Using a Proper Basic Pitch

The basic pitch is the one that dominates in the speech—the general level from which changes in pitch are made, and to which the

voice returns after variations above or below it. For every person there is a specific basic pitch—high, medium, or low—which provides the voice with its maximum resonance and flexibility. A good starting point for discovering the optimum basic pitch is to determine the pitch range of the voice from the lowest note that can be uttered to the highest. The best basic pitch is likely to be about one fourth of the way up from the bottom, but whether or not this is its exact location, the most used pitch should be the one that is resonated best by the vocal passages.

The use of an improper basic pitch, a very common vocal fault, has two serious effects on voice production. First, it detracts from the flexibility of the voice by reducing the scope for pitch variation. Secondly, it thins out the voice by robbing it of the quality that maximum resonance can provide.

Particularly in radio, where nervous tension acts to drive the voice up, the tendency of most people is to use a basic pitch higher than the one for which their vocal mechanism is best adapted. In addition to the other disadvantages, too high a basic pitch detracts from the authority and presence of the speaker. In those cases where the basic pitch is too low, the voice tends to disappear on downward inflections and is characterized, on the whole, by a gruff, gutteral quality. Each person must discover the basic pitch that is right for him, since that is the only way in which he can achieve the best quality and greatest expressiveness of which his voice is capable.

Relaxation

The ability to relax while speaking, an important element in all speaking, assumes special significance in radio, where rehearsals and broadcasts may require that the voice be used almost continuously throughout the day. The performer must be able to rehearse diligently before a broadcast and still maintain his voice at its maximum effectiveness for the period that really counts, the actual time on the air. The production of speech with the body and vocal organs in a condition of relaxation permits the voice to be used long and arduously without difficulty.

The high-pressure conditions under which programs are produced usually call for a conscious effort to remain relaxed, since the nervous strain of broadcasting is likely to be reflected in a constriction and a tightening of the vocal organs. The resulting strain may

eventually cause a temporary loss of voice, with permanent damage a possible danger.

Relaxation is important not only because it provides the best defense against the hazard of strain, but also because of its effect on quality and flexibility. Harshness or stridency may be introduced into the voice by the constriction of the throat that comes from tension. This is in contrast to the mellow richness of the tone produced by a relaxed, open throat. A tight throat detracts from general expressiveness by reducing the ability of the voice to make pitch, quality, and force changes. When a person is relaxed, his voice is a much more responsive instrument than it can possibly be when the vocal organs are gripped by tension.

Relaxation, however, should not be carried to the point of flabbiness. Sufficient muscle tone must be maintained to assure animation in delivery. Students sometimes try to excuse a flat, dead performance on the grounds that an effort to relax is responsible. Ease of speech is not incompatible with a lively, energetic voice. The ideal is relaxation without limpness, energy without strain.

The characteristics of voice and speech that are particularly important in radio have been reviewed above in two different groups. In the first group are the general attributes of individuality, flexibility, energy, and presence, essential to outstanding success in any type of radio speaking. In the second group are the specific requirements of correct articulation, acceptable pronunciation, and a good voice, which must be founded on proper breathing habits, an optimum basic pitch, and relaxation in performance. Although a few performers in special fields, such as comedy, can attain success without manifesting all the virtues in this second group, for the vast majority of radio performers they are as essential as the qualities in the first group.

Speaking from a Script

Even if we assume that an individual has all the vocal attributes necessary for success as a speaker, there is still no assurance that he will be effective when broadcasting. The basic challenge of radio is to retain these qualities while speaking from a script. The necessity of reading very often transforms a lively, colorful speaker into a dull, expressionless word sayer. The script becomes an insur-

mountable obstacle to an effective performance, because the speaker so obviously sounds as if he is reading it.

The outstanding characteristics of a 'read-y' performance are sameness, monotony, and evenness. The voice flows along without variation, one word succeeding another at a steady pace. Pitch inflection is reduced to a narrow range that, in effect, cuts off the top and bottom of the voice. The unimportant words and phrases receive the same treatment as the significant ones—a practice that obscures meaning because it does not place the spotlight of emphasis on the important ideas. The speaker's failure to taste his words, to be a part of what he is saying, deprives the reading of all emotional force. Finally, a stilted, unnatural quality colors the whole performance, because words are pronounced separately instead of being blended and elided in the manner of ordinary speech.

Superficially, it would seem that the presence of a script would simplify the speaker's problem by eliminating the necessity of any searching for an effective way of expressing an idea. But the fact that ideas in a script are already in existence in complete and polished form is the fundamental cause of dull, monotonous presentation. When we speak extemporaneously, ideas are brought into being in their final form while the process of expression is actually going on. This, in contrast to reading, is a creative, dynamic activity in which the ideas themselves exert direct and immediate control over the speech mechanism that is expressing them.

Concentrating on the Meaning

One approach toward making the listener forget the presence of a script is to present its ideas as if they were being realized for the first time. The only way to do this is actually to re-create the meaning in the mind. The thoughts behind the words of the script —the context of meaning and emotion that gave rise to them— must come to life.

Re-creating the meaning is by no means a simple task. It is easy for black marks on a page to set the vocal organs in motion while the mind remains aloof. One technique for getting the sense of a script is to read it over, then try to ad-lib it in your own words. This paraphrasing often helps to make the meaning an integral part of your understanding. But whatever technique is used, if the mind can be kept concentrated on the expression of meaning,

many of the faults implied by the term 'read-iness' will automatically cure themselves.

Concentrating on Communication

In those cases where no studio listeners are present, the microphone performer faces very real difficulty in speaking with maximum effectiveness without the stimulation provided by a visual audience. The unresponsiveness of the microphone may be more frightening than inspiring in its effect, and the few people in the control room, busy with their tasks and bored with a program they have heard many times in rehearsal, are not likely to provide the kind of reactions necessary to enkindle a speaker to his highest efforts. Letting oneself go with abandon in such a cold, forbidding atmosphere may actually induce a feeling of silliness.

In such circumstances the speaker can think beyond the microphone to the listener by concentrating on the communicative situation of which he is a part. The speaker who creates a vivid picture of a person who is to be impressed with meaning and emotion cannot remain a mere mechanical instrument whose vocal apparatus is being used to say words in which he has no interest. The urgency of communication developed by this means should help to imbue the reading with the variety necessary to reveal meaning with clarity and emotional power.

Concentrating on the Techniques of Expression

A third approach to the curing of 'read-iness' is to concentrate on eliminating the technical failures of expression through which the fault is manifested. It is generally recommended, however, that specific techniques be brought into focus only during drill periods, since emphasizing them may lead to artificiality and insincerity. When actually reading to an audience, most speakers attain their fullest effectiveness by concentrating on the meaning to be communicated to the listener.

1. *Pitch.* Lack of sufficient pitch variation is one of the major factors contributing to monotony in script reading. Even veteran performers may sometimes compress their pitch variation within too narrow a range; a speaker in this condition is often described as being 'in the mud'—a term meaning that the form of expression is correct so far as it goes, but it simply is not complete enough. This fault can sometimes be eliminated by forcing the pitch far

above or below the limits being used until a satisfactory amount of variation is realized. In this way a performer lifts himself out of the mud by his own boot straps.

Another common pitch defect is the overuse of the falling inflection, a pitch change that suggests finality. When a thought or sequence of ideas has been completed, the downward curve is perfectly appropriate, but if a falling inflection interrupts a thought, the meaning is obscured, and the reading acquires a stilted, artificial quality. This flaw is often due to the tendency of readers to drop their voices when a sentence comes to an end, whether the idea has been completed or not. In everyday speaking, rising inflections are likely to be much more numerous than they are in the reading of beginning radio speakers. This suggests one reason why the beginner's performance sounds plodding and unnatural.

2. *Rate.* Because a beginning radio speaker usually experiences nervous tension, he has a general tendency to read too rapidly. The fact that the eye, reading the words of the script, tends to pull the voice along, while the ear and the mind take a back seat, also contributes to this error. Excessive speed not only inhibits effective expression, but also deprives the listener of an opportunity to react to what is being said. Although no specific rate can, of course, be established as correct for all programs, the student should compare his speed with the 150 words a minute that is generally accepted as a good average rate. He will probably discover that he must consciously force himself to speak more slowly. Many students who sound to themselves as if they were just dragging along are actually still going too fast.

In addition to excessive speed, an outstanding characteristic of a 'read-y' performance is a rate that is unvaried from beginning to end. In ordinary speech we speed up on phrases that are unimportant or parenthetical, and slow down on the important passages in order to draw attention to them. This element of variety must be present in reading over the radio if the speech is to sound meaningful, natural, and professional.

3. *Phrasing and Emphasis.* The revelation of meaning depends to a large extent on the adequacy of phrasing and emphasis. Phrasing refers to the arrangement of words into thought groups, separated by pauses. Emphasis is drawing attention to the significant syllables or words in a thought group by introducing a pause at

those points, or by varying pitch, rate, force, or quality either alone or in combination. An important corollary to the emphasis process is to leave unimportant words unstressed.

Pauses play a major role in accomplishing both phrasing and emphasis. A major distinction between a professional and an amateur performance is the presence of a great many meaningful pauses in the speech of the professional. The beginner, obsessed by the thought that no blank spaces must occur in a radio program, is likely to rush on and on with never a pause to give emphasis, to show relationships, or even to give his ideas an opportunity to sink into the minds of his listeners. Even if pauses are used, they are likely to be dictated not by the demands of meaning, but by the existence of commas in the script. Punctuation should never be depended on as a guide to pausing, since the use of the symbols is often required by convention rather than by expressional demands. A pause is frequently improper even though a comma seems to call for it, and pauses are often required where there are no punctuation marks at all. Pause, but pause in the right places!

As far as emphasis is concerned, the average individual, when asked to make a particular word stand out, will almost always concentrate on increasing the loudness with which the word is uttered. While some changes in pitch and rate generally accompany this form of emphasis, the major focus is on a force change. It is a perfectly proper means of spotlighting important ideas but should not be used to the exclusion of other kinds of variation. Making the major change a rise in pitch or a variation of quality is equally effective in focusing the listener's attention. Furthermore, too great dependence on force changes introduces a plodding, artificial note into speaking. On the other hand, the use of pitch and quality changes for emphasis adds subtle variations that enhance interest value and permit the suggestion of delicate shades of meaning, which can be revealed in no other way.

If attaining proper phrasing and emphasis is an especially difficult problem, some help may be obtained by marking all emphases, pauses, and variations ahead of time. The objection to marking is that it introduces a mechanical element into reading. When this is carried to its most exaggerated use, the mind can almost drop out of the process of reading so far as concentrating on the meaning is concerned. Whether a system of marking is to be used is strictly an individual matter. Some very experienced performers do nothing

but indicate in some obvious manner the place in the script where each of their speeches begins. Others, equally experienced, mark, in addition, every pause and variation.

4. *Avoidance of a Pattern.* When variations are worked into speech in a mechanical way merely for the sake of introducing changes, a condition that we shall call 'automatic variation' arises. The changes are automatic because they have no definite relation to what is being said but occur in a regular, routine sequence. As a result, meaning is obscured instead of being revealed. A common form of such a pattern is one in which every sentence is ended with a strong emphasis on the last word. Distortion of meaning occurs in the many cases where the word should not have that emphasis. If a listener can predict ahead of time just where a speaker is going to pause or change his pitch, then automatic variety generally exists.

Announcers in non-network stations, where program after program must be produced with no opportunity for adequate preparation, are likely to exhibit this fault, which is sometimes called a 'small-station pattern.' If continuity and newscasts must be put on the air without perusal ahead of time, the microphone speaker can get the sense of what he is reading only through what he can 'catch on the fly.' Realizing that he should vary his reading in order to hold attention, the announcer introduces changes that are unrelated to the meaning, because he has had no opportunity to become acquainted with it. Whether automatic variety is worse than no variety at all is a debatable question, but certainly the exaggerated, artificial pattern that confuses rather than clarifies should be avoided.

5. *Developing Fluency.* The term fluency, generally used to describe a quality of smoothness and flow in extemporaneous speaking, can also be used in reference to the same characteristic in speaking from a script. The greatest hazard to this quality is a malady known in radio as 'fluffing.' It may be a momentary hesitation or stammer; a mispronunciation; a reversal of word order, as when an announcer begins a program with 'Good ladies evening and gentlemen'; or the transposing of syllables, known as a 'spoonerism'—a mistake that can have very humorous results. Milton Cross, famous announcer of classical-music programs, once introduced the noted conductor, Arturo Toscanini, as 'Ortosco Turanini.'

The major effect of fluffing is to destroy the illusion the speaker is trying to create by focusing attention on the mechanics of program presentation. A scene of high emotional intensity in a radio drama loses much of its force when stumbling makes the audience aware that a character is merely an actor trying unsuccessfully to read from a script. The illusion is completely spoiled if the actor goes back to repeat the line.

Often, fluffing is a by-product of the nervous tension that afflicts beginners when they face a microphone. Experienced radio performers seldom stumble or transpose sounds, although even the best is occasionally guilty of an outstanding error. Worrying about avoiding fluffing tends to increase the incidence of the fault by accentuating nervous tension. The best way to cure the ailment is to become absorbed in the material being presented and in the process of communicating it to other people. It should be remembered also that fluffing is a perfectly normal characteristic in the performance of the beginner, which will gradually become less frequent with practice and experience.

Another problem, also brought about largely by nervous tension, is the presence in the voice-producing mechanism of the impediment known generally as a 'frog.' A slight increase in force may permit one to talk through the obstruction without too much difficulty, but if it continues to obscure the voice, obviously the throat must be cleared. Sometimes a convenient switch permits the speaker to turn off the microphone momentarily, or an alert engineer, noticing the difficulty, can do this in the control room. If this is not possible, the cough or clearing of the throat should be done away from the microphone, and, when the speaker is addressing the audience directly, a brief 'pardon me' may be desirable. In drama programs, a clever actor can often work the clearing of his throat into his interpretation of the role.

Three approaches have been suggested for developing effectiveness in speaking from a script: concentrating on the meaning, concentrating on communication, and concentrating during drill periods on the techniques of expression. Very few will find a complete solution to their problem in the utilization of just one of these approaches. They should be used together, working in co-operation, to attain the greatest communicative effectiveness of which a speaker is capable.

Microphone Technique

Microphone technique, a fairly ponderous term, suggests to many people a whole system of esoteric rules and regulations known only to insiders whose years of experience have made them acquainted with all the secrets involved in the mysterious art of broadcasting. Actually the term refers to a few simple adaptations that must be made in the practices of good speech in order to attain maximum broadcasting effectiveness. These adjustments are necessary because of the nature of radio equipment and the conditions in which listeners hear programs.

Radio Projection

The term projection refers in general to the carrying power of the voice. Some people, when they speak into a microphone, visualize a vast radio audience stretching from coast to coast. This kind of image is likely to result in a type of speaking that seems to ignore the fact that very efficient equipment stands ready to transport the words for them. Many directors faced with projection of this sort must feel like turning off the microphone and letting the speaker do his yelling while standing at an open window.

No one needs to shout into a microphone. The broadcaster should think of his audience as being in the same room with him; in fact, in some ways the microphone takes the place of the listener's ear. At least, the listener should be imagined as sitting on the other side of the table or relaxed in an easy chair across the room. With this picture in mind the speaker is most likely to achieve the intimate, conversational projection that should characterize most radio speaking.

The demands of radio contrast with those of the stage, where the voice must reach many people who are seated far from the speaker. There the problem becomes one of expanding projection almost to the point of shouting, while still maintaining the fiction of a conversational manner. In radio the conversational style not only is possible but must be used for maximum effectiveness in most instances.

Maintaining proper radio projection frequently becomes a problem in those cases where the expression of high emotion seems to call for high volume. The solution is to substitute, as much as possible, intensity of expression for loudness. Intensity, a rather difficult

quality to describe in words, is manifested when every sentence vibrates with meaning, when there is an impression that the words, based on great reserves of emotional power, are coming from a source deep within the speaker.

In any medium the performance of persons whose expression lacks intensity has a shallow, superficial character deficient in emotional strength. But the ability to express strong feeling through intensity rather than loudness is particularly important in radio because of the limitations of broadcasting equipment. In order to prevent blasting and distortion, the volume must be turned down when sounds become too forceful. This reduction in the gain at which the program is carried has the effect of restricting the space in which the voice can move. The resultant loss of flexibility and range detracts from color and expressiveness. In addition to being more effective than loudness in revealing emotion, an intense manner of speaking permits the volume to be left at a normal level.

Adapting to the Microphone

With a form of projection appropriate to radio achieved, the next step in microphone technique is to adjust this speaking to the microphone. This problem is considered in three parts: taking the proper position, maintaining it, and adapting this position to vocal changes.

1. *Taking a Proper Microphone Position.* Most radio speaking should be done directly into the 'beam' of the microphone, that area of the instrument designed to pick up sound with greatest clarity and volume. The only exceptions to this rule are loud or high-pitched tones, which must be delivered out of the beam, and words intended to have a 'distance' effect. Taking the proper position depends, of course, on a knowledge of the varying characteristics of different microphones, discussed in chapter x. Some microphones, it will be remembered, are 'live' all around, while others are bidirectional or unidirectional in their pickup characteristics.

The next step in positioning is to assume that distance from the microphone that will transmit the speaker's words with maximum effectiveness. Too close a position may cause blasting or give the microphone a good opportunity to pick up and transmit irrelevant articulation and breathing sounds, which are distracting to the listener. When the voice reaches the microphone from a position too far away, the additional reverberation, which this distance per-

mits, gives the tones a remote quality instead of the intimacy they should have.

A proper distance for all occasions cannot be stated, since, as conditions change, the distance must be varied. The studio, the type of microphone, and the amount of voice projection used by the speaker are all important factors. In almost all cases, however, the best distance is somewhere between 6 and 18 inches from the microphone.

When the microphone is shared with someone else, the distance problem becomes more complicated, inasmuch as the two voices must be balanced in order to broadcast each with equal volume. The individual with a heavier than normal voice, for example, may find himself farther than usual from the microphone when broadcasting with someone else.

Before broadcasting begins, the director usually tests for proper distance by asking each speaker to say a sentence or two into the microphone. Even experienced people often make the mistake of reading these test words in a casual, routine manner, a far cry from the delivery they will use on the air. When broadcast time comes, the speaker 'pours it on,' throwing the balance attained in rehearsal completely out of focus. Obviously, a microphone test should be marked by all the energy and enthusiasm that will characterize the reading on the air.

2. *Maintaining Proper Position.* Once the proper position has been determined, the speaker must maintain it continuously, unless adjustments are necessary to indicate a character's movements or because of a change in the type of projection. Weaving back and forth in front of a microphone causes a constant rise and fall in the volume of the voice, which detracts considerably from a speaker's effectiveness by irritating the listener.

The difficulty of maintaining position is heightened when two or more people must share one side of a bidirectional microphone—frequently the case in drama programs. Effective co-operation requires that the actors stand shoulder to shoulder, with one adjusting his position to permit the actor actually reading a line to stay in the beam of the microphone. When a cast is large, movements to and from the microphone must also be co-ordinated to avoid the unintended sound effects resulting from collisions.

3. *Adapting Position to Vocal Changes.* While it is important to maintain position as long as projection remains unchanged, it is

just as important to increase the distance from the microphone for every marked increase in volume or rise in pitch, sometimes dramatically necessary to express great anger or fright. The feminine scream that enlivens many of our horror programs is so high-pitched and forceful that it must frequently be made on the dead side of the microphone with the face of the actress turned entirely away. Failure to accommodate for this extreme change would cause blasting and consequent unpleasantness for the listener; moreover, a station can be knocked off the air temporarily by too forceful a sound. When the dramatic demands of a program call for a considerable lowering of projection instead of an increase, a movement toward the microphone is necessary. The distance must be decreased or the listener will be unable to hear comfortably without turning up the volume of his radio.

Some people believe that the engineer, by turning the volume knob on the control board up or down, is entirely responsible for making the adjustments necessary to compensate for changes in the loudness of various program elements. The engineer is only partly responsible. It is far better for performers to make all the adaptations they can in the studio than for the engineer to try to balance everything mechanically in the control room. In any event, a sudden increase in loudness without a distance adjustment will be on the air for the amount of time that it takes the engineer to react and turn the volume down. The performer is obligated to help the engineer 'ride gain' by increasing or decreasing his distance from the microphone for every marked vocal change.

4. *Executing Fades.* In drama programs actors are frequently required to walk up on the beam of a microphone while speaking, or to leave in the same way. Since the listener is given the impression that someone is entering or leaving the scene, this type of movement is called a perspective fade. Another type, called a transition fade, is to walk out of the beam of the microphone around to the dead side—an action that causes the voice to attenuate until it virtually disappears. The effect is to dissolve the existing scene into the next one. This technique can also be used to achieve a sharp perspective fade. Another way of securing a transition fade is gradually to turn down the volume at the control board while the speaker continues to talk into the microphone from his regular position. A transition accomplished in this way is called a board fade.

Executing fades in the studio presents no complicated problems, yet directors frequently experience difficulty in getting their actors to perform them properly. The most frequent error is to walk on but fail to begin speaking until normal distance from the microphone is reached, thus producing no fade at all. Remember that when a fade is required, it is the voice that must be faded, and this can be accomplished only by walking on or off the microphone *while speaking.*

Directors find also that they must often specifically tell beginning actors to execute each fade even though it is plainly marked in the script. A great deal of time can be saved if the actor will perform fades without special instructions. Although the distinction between perspective and transition fades will not be stated in so many words, the actor can usually tell which is required from the context of the script; the director can always modify the effect in any way he wishes.

Handling Script

The principal problem in handling script is to proceed from page to page without making a noise. The illusion of ad-lib delivery, which radio strives to maintain, is completely destroyed if listeners can hear paper rattling. This noise is particularly damaging to the effect of drama programs.

The most frequently heard solution to the script problem is the suggestion that pages be dropped quietly to the floor when completed. If this practice were indulged in by the members of a large drama cast, however, the floor would become so littered with papers that the actors would sound as if they were tramping through dry corn husks as they came up to the microphone.

The secret of eliminating paper noise is never to turn a page over. A completed page can be slid off the top of a script and placed on the bottom without any sound whatsoever. Another advantage of this method is that the beginning words on the next page are visible as the current page is pulled down, and so it is possible to proceed from page to page without a break in reading. Of course, this method of handling script requires that the clip or staple be removed from the corner at the beginning of the rehearsal.

Another problem with script is to hold it in such a manner that the speaker will be helped, not hindered, in maintaining his optimum position before the microphone. The best place for the script

is at the side of the microphone (see Fig. 22). Not only can it be read from this position with the voice directly in the beam, but,

Fig. 22. Frank Goss, CBS announcer, with Irene Dunne at his side, awaits a cue from the control room. This picture illustrates proper microphone position and handling of script. Note also that Mr. Goss, while maintaining a dynamic, alive attitude, appears relaxed. (Courtesy CBS)

if the microphone is bidirectional, the possibility of broadcasting any occasional paper rattles is eliminated, since the script is in the mike's dead area.

Common faults in script placing are to get it between the microphone and the speaker and thus muffle the voice, or to hold it so far down that the voice is pulled out of the beam, with the additional possibility that full, free tone will be hampered by a cramping of the throat muscles. When two or more people are using a microphone, some agreement must be reached ahead of time regarding where scripts are to be held to prevent one from interfering with another.

Rarely, if ever, does a script go through rehearsal without undergoing at least minor changes. This fact makes a pencil an essential item in the equipment of the radio performer. Changes should be noted in the script at the moment they are made, whether the speaker is directly concerned with them or not. The individual who depends on his memory for corrections will eventually force the director to use valuable time in repeating them.

Just before a broadcast begins, make sure that the script pages are in proper order. Nothing in radio is more frightening than to pull down a page and discover that the next page is not the one it should be.

On the air the eyes should be raised to look at the control room at every opportunity rather than being glued to the script. The director may wish to indicate an adjustment in microphone position or signal that a program needs slowing down or speeding up. Nothing is more frustrating to the director than the necessity of getting a vital message to a performer who obstinately refuses to look at him.

In this section we have discussed the main essentials of microphone technique: achieving radio projection, adapting to the microphone, and handling script without noise. As stated before, these techniques are simple to describe and easy to understand. Putting them into practice in actual performance, however, is a slightly more complicated problem. In order to focus the mind on the major task of script interpretation, it should be possible to make the movements required for proper microphone technique without having to think consciously about them. The achievement of this kind of reflex action can be attained only through diligent and extensive practice.

Forms of Radio Speaking

Thus far we have been discussing principles that apply to all kinds of radio speaking. Each of the various forms, however, has its own distinguishing characteristics, which are reflected in certain special demands on the speaker. When speaking in each form, he must keep these special requirements in mind along with the general requirements for effective radio speech.

Announcing

The job of the radio announcer is a many-sided one. When he announces the station's call letters, he is a mere purveyor of information. As a reader of commercials, he becomes a salesman. On many shows he performs the duties of a host, greeting and receiving listeners and guiding them through the program. Sometimes he takes part in skits, thus becoming an actor. He may interview interesting personalities or become the eyes of his radio audience as he describes an athletic contest or a special event. Frequently he reads the narration on a drama program. Often a number of these functions are performed on the same program. The announcer on a daytime serial, for example, acts as the host, presents the commercials, and serves as a narrator.

1. *Reading Commercials.* The announcer's ability to deliver a sales message convincingly is the foundation for the entire advertising support of radio. For this reason the effectiveness with which commercials are read is often the key to the announcer's success in his profession.

The various styles for reading commercials range from the homey style, characterized by an intimate approach and a gently persuasive manner, to the high-pressure, driving style in which the attempt seems to be to bludgeon the listener into buying goods. This latter method often abandons the direct, conversational mode used in talking to one or two people in favor of the more generalized approach and louder projection used in addressing a large group of people gathered in one place. The fact that so many commercials are actually delivered before studio audiences tends to lead the speakers away from a strictly radio style.

The sponsor's desires determine the approach to be used in a particular program; announcers auditioning for a show usually try to find out ahead of time what kind of delivery is desired, since

the tendency is to pick the announcer who exhibits the desired manner, rather than to try to teach it to him after he has been selected. But whatever the style, the essential attribute of commercial announcing is absolute sincerity. Enthusiasm cannot be forced; it must sound completely genuine. The announcer is a salesman whose every inflection should carry complete assurance that the product is what he says it is. Sometimes the commercial is presented in a jocular manner, as in the programs of Arthur Godfrey, but although the commercial may be 'kidded,' the product itself never is.

Another important consideration for the announcer is the selling theory underlying the commercial message. Since people tend to buy goods whose names they recognize, a fundamental technique in most radio advertising is to repeat the product name so often that it becomes familiar. The announcer of commercials must contribute to this objective by giving the name special emphasis every time it appears in the script. Copy writers usually point the way by typing the product name in capital letters each time it occurs.

2. *Announcing Music.* Except for the fact that the announcing style should be appropriate to the type of music being presented, the introduction of music makes no special demands. Obviously, the symphony concert calls for a more formal, dignified approach than the introduction of dance music does. This does not mean, however, that the voice should ostentatiously drip with reverence; classical music is to be enjoyed just as any other kind. It has already been pointed out that an authentic pronunciation of foreign terms is required, since the audiences for classical music are composed largely of people acquainted with the correct forms.

A challenging responsibility in many musical programs, particularly those of the recorded variety, is that the announcer must not only announce but also determine what is to be said, ad-libbing his introductions. In the case of broadcasts presented from night clubs, the announcer may even have to add the duty of program production to his responsibilities.

3. *Newscasting.* Because the newscaster (see Fig. 23) often occupies 15 minutes all by himself, the need for sufficient variety to hold attention is especially urgent in his case. This variety must be expressed particularly in a change of treatment for the diverse items that make up a newscast. The death of a prominent person demands a method of presentation different from that used in giving the baseball scores. A change in manner is important, more-

over, not only because it establishes the proper mood, but also because it helps to indicate the transitions from item to item. Concluding each item with a pause will also suggest that a new subject

Fig. 23. Edward R. Murrow, CBS newscaster and commentator, receives a bulletin while on the air. (Courtesy CBS)

is to be introduced. Frequently newscasts are read at a slightly faster rate than that used in other types of radio speaking.

Since many newscasts are not timed ahead of broadcast, toward the end of the program the newscaster must be able to keep his

eye on the script and the clock at the same time in order to bring his program to a close at the exact second he is supposed to finish. Some newscasts, featuring reports from other parts of the world, must be switched to other points at various times during the program. This means that in addition to concluding the whole broadcast on time, the news announcer must see that items within the program end at a precise instant.

4. *Narrating.* Conveying the impression of sharing the material with the audience is the essential quality that should distinguish narrative reading from other forms of radio speaking. The announcer has the twofold responsibility of telling the story and at the same time reacting to it. A mere pronouncing of words is particularly damaging to a storyteller's effectiveness. When the task is description, for example, he must actually seem to see what he is describing.

The differences in style between the reading of commercials and of narration can be noted in the performance of announcers who carry out this double function on daytime-serial programs. When the narration introducing the drama begins, the announcer's voice usually drops the generalized approach used for the sales message and becomes intimate and direct, with dramatic excitement replacing enthusiasm for a product.

5. *Interviewing.* The reading of an interview from a script presents no special problem except that of attaining naturalness and spontaneity. Even the best announcers find a stilted, artificial quality creeping into an interview read entirely from a script. To avoid this, most interviews are broadcast today, in whole or in part, as ad-lib presentations. The amount of preparation may vary from a complete agreement between the interviewee and announcer regarding the material to be covered, to virtually no preparation at all. Notes covering both questions and answers may or may not be used.

The functions of an announcer in an ad-lib interview obviously extend to the task of program preparation. By deciding what questions are to be asked, he wields a major influence on the material covered by the program. In carrying out this responsibility, the announcer is likely to stumble into certain pitfalls unless he is especially careful to avoid them. The following suggestions indicate the nature of these common faults.

Keep the spotlight on the person being interviewed. Since the

purpose of an interview is to reveal his personality, opinions, knowledge, or history, the focus of attention should be on him, not on you as the interviewer.

Do not put all the interesting questions at the beginning. If you do, you will lose your audience before the interview is over.

Make questions specific, not general. An authority on international affairs might have difficulty formulating an answer to the question, 'What do you think of the United Nations?' A specific query on the record of the United Nations with regard to Palestine would be much easier to answer.

Do not put the interviewee on the spot. Any questions carrying implications of possible embarrassment should be checked with the interviewee ahead of time to make certain that he is willing to answer them.

Ask questions requiring comment and interpretation. You will soon run out of material if all your questions can be answered with a simple 'yes' or 'no.'

Avoid reacting in the same way to every answer of the person being interviewed. A repetitious 'I see' or a parroting of the interviewee's replies can become monotonous and irritating. Instead, invest the presentation with conversational quality and continuity by weaving a transition from each answer to the next question.

Do not interrupt the interviewee. When the time for the program is about to run out, you, as the interviewer, should be certain that you are the one speaking. Having to break in on the interviewee to get the program off the air on time is awkward and unprofessional.

6. *Ad-lib Description.* The announcer describing a special event or a sports contest has two general obligations to his audience: (a) He must unfold the events in a meaningful sequence, with description that is clear, accurate, and vivid. (b) He must enhance the listener's sense of participation in the event by responding appropriately to suspenseful, exciting moments without at any time losing the control necessary to transmit a lucid description.

Special qualities required for the ad-lib describer are powers of keen observation, a background of knowledge about the event, and a sufficient command of language to be able to describe in different terms a series of what may be very similar happenings.

As far as knowledge is concerned, the announcer must usually supplement his general background with a detailed study of the specific situation. Football announcers frequently arrive at the scene

several days in advance of the game in order to become acquainted with the place, the plays, and the players. When broadcast time comes, the information acquired in this manner can be used for interesting fill-ins while there is inactivity on the field.

Developing variety of language and fluency of expression is a task demanding constant practice and concentration. An incident of the last war illustrates the kind of situation an ad-lib describer may face. An announcer was sent up in an airplane to describe what happened when Honolulu turned out all its lights. The blackout was so successful that all he could see was utter darkness, yet he was expected to hold the air for 15 minutes. Although this kind of experience represents a supreme challenge to one's powers of description, even when the situation has more aspects of variety, the announcer must guard against a constant repetition of the same words or phrases. Bill Stern, one of the nation's outstanding sportscasters, makes out a list of expressions for describing each of the different things that can happen on a football field. Each time he uses a certain phrase he checks it, eliminating from his vocabulary for the remainder of that broadcast any expression that has acquired too many checks.

Because the listener cannot himself maintain an over-all picture of what is going on, another responsibility of the announcer is to signify the relation of what is happening at the moment to the general situation. In football, for example, this calls for giving the score and the time left to play at frequent intervals.

Finally, the announcer must exhibit no favoritism in his description, particularly in the case of sports broadcasts. No matter how extreme his prejudice, he should present a strictly nonpartisan report of the events in order to avoid offending those in his audience who are cheering the other team.

Radio Acting

Acting differs from the announcing forms of radio speech in two ways. First, except for those occasions when he addresses the listeners as a narrator speaking in the first person, the actor does not make a direct audience contact as does the newscaster or the reader of commercials. In a sense, the listener merely overhears what the actor says to someone else on the program. Secondly, the actor abandons his identity to adopt a personality other than his own, while most other radio speakers maintain their own identities.

One might assume that because radio acting requires only the use of the voice, with no need even for memorizing lines, this form is simpler than acting for the stage or movies. Rather than making it easy, the total dependence on the voice for suggesting a complete character provides the radio actor with his greatest challenge. No costume or make-up can assist; no special handling of the body can help convey the impression of a character. That is why a high-school student who can portray the character of an old man on the stage quite acceptably is likely to sound inadequate in a broadcast version of the same role.

A second major difficulty of radio acting is that the dramatic situation in its physical aspects must exist entirely in the realm of the imagination. Even though the scene may be an eerie location in a haunted house, the actor sees only a microphone, other actors holding scripts, and a sound truck playing a record of a ghostly sounding wind. To react vocally to the demands of that situation, he must transport himself imaginatively to that haunted house and see himself in it.

A third problem of radio acting is that the special characteristics of broadcasting activity provide no long period of time in which to grow into a part. In many cases an actor is required to develop a full-fledged characterization within the brief period of two hours. Under such conditions even the first reading of the script must approach the polished perfection that should feature the broadcast. An unfortunate by-product of the speed with which broadcasts are produced is that actors must of necessity fall back on 'type performances' instead of developing an individual characterization specifically adjusted to the demands of a particular role.

The suggestions we have given for developing variety of expression and eliminating 'read-iness' in working from a script apply especially to radio acting. Drama makes the most urgent demands of all so far as the conveying of emotion is concerned—a fact that calls for the utmost in flexibility and responsiveness, reflected in pitch, rate, force, and quality changes. Any taint of stiltedness or artificiality in the reading of lines will destroy the illusion of a character experiencing emotions in a dramatic situation. Some of the suggestions made earlier are now reviewed with specific application to the radio actor's problems.

First of all, act! It is not enough merely to read lines. You become a character first, and the words in the script become a revelation

of that character's reactions to the events of the drama. To become a character you must at least simulate the emotions that character is supposed to feel. This calls for abandon. You cannot remain a reserved, inhibited human being and still convey the spirit of a highly emotional scene. Let yourself go! This does not mean abandon to the extent of losing control, of course. You must remain

Fig. 24. Joseph Schildkraut and Barry Kroeger, two actors of wide experience, demonstrate how professionals react bodily to a scene in order to achieve adequate vocal expression. (Courtesy NBC)

the master of yourself in order to utilize the proper techniques for the expression of meaning and emotion.

Remain in character! Many beginners assume the character only while lines are being read. Unfortunately, they do not quite get into character until after the line begins, and they slide out of it before the line ends. This fault can be avoided if you retain the feeling of the character whether you are reading a line or not.

React to other actors' lines! Your individual performance as an actor is part of a unified effect. Every line is the result of what has gone before and helps in turn to motivate the lines that are to

come. This pattern of reaction should be a definite part of the actor's performance.

Use bodily action! Observation of professional and beginning actors working together in a scene usually reveals that the professional reacts vigorously, through bodily action and facial expression, to what is supposed to be happening, while the amateur remains almost completely inactive. The result is manifested in performance. The professional is a vivid part of the dramatic situation, while the beginner remains calm and unaffected. Bodily action cannot be seen by the radio audience, but it has an important effect on the vocal interpretation of the role (see Fig. 24).

Slow down! Give yourself time to act. Do not rush through a meaningless maze of words. Take time to feel the situation. Pause. Give your audience a chance to react. Most beginners speak far too fast because they are reading instead of acting.

The Development of Proficiency

In this chapter we have summarized the major problems facing the radio speaker and have listed the essentials of effective oral expression in the various radio forms. Space limitations have permitted a reference to little more than the important factors. Other sources must be utilized for specific drills and exercises. In fact, the best preparation for those planning to be microphone speakers is a program of training leading to general speech improvement. Courses in voice and diction, public speaking, oral interpretation, and acting provide a foundation on which instruction in the special techniques of radio can be based. Even those contemplating the development of a style that has no need for a conventionally good voice and perfect diction should not scorn such a program. Those who successfully deviate from standard practices are usually those who have first mastered them.

The attainment of effectiveness in the various forms of radio speaking is no simple task. In fact, some people with normally expressive voices can never master the problem of reading with naturalness and ease from a script, because they lack the necessary inborn talent for it. On the other hand, experience and practice, intelligently exerted in the proper directions, can effect enormous improvement in the performance of most persons. In very few instances, however, can definite rules be laid down that are guaranteed to insure success. The practices of professionals indicate that

many different methods may be used to reach the same objectives. We have seen, for example, that some find marking the script a definite aid to effective expression, while others consider this device an actual hindrance. The practice followed by any one person must be an individual formula, tested and improved by experience, that fits that person's particular needs and idiosyncrasies.

The first step toward improvement of radio speaking is a diagnosis of your particular faults and problems—a project that should be undertaken with the help of an experienced and discerning teacher. Merely being told how good you are (the most likely response of friends to your performance) will contribute nothing to your improvement. Intelligent practice can be founded only on a thorough understanding of both bad and good points.

The use of a recording, giving you a chance to hear yourself as you are heard by other people, provides the best opportunity for analyzing your own performance. Be sure, however, that the recording is of sufficient fidelity to reflect your voice faithfully. Do not listen to it immediately after a program, when your emotions may be in such a state that the analysis cannot be objective. If you have fluffed, for example, you are likely to wait fearfully for that part of the program, writhing in horror as the recording accurately re-presents your error, with the result that possible good points may be overlooked.

Finally, do not become discouraged. The attainment of effectiveness in radio speaking is a venture in which the objective often seems tantalizingly elusive. Frequent plateaus and some actual regressions may imply that professional expertness is beyond your reach. Remember that most successful radio speakers served long periods of apprenticeship before developing their present proficiency. You cannot hope to attain the same skill without a comparable period of preparation.

Projects and Problems

1. Construct an evaluation scale through which you can obtain a rating on each of the factors in good speaking and reading discussed in this chapter. Place the factors to be considered down the side of the chart (individuality; flexibility; energy; presence; articulation; pronunciation; breathing; basic pitch; relaxation; revelation of meaning; communicative quality; changes in pitch, rate, force, and quality; phrasing; emphasis;

and fluency). List the rating indications along the top (excellent, good, fair, poor). Leave room on the chart for general comments and suggestions for improvement. Then obtain a rating from your instructor or from some other qualified person.

2. To get a comparison of your performance with that of a professional speaker, record an outstanding newscaster on a tape, then record one of your own readings right next to it and compare the two. This exercise should be done not for purposes of imitation, but to evaluate your own performance in terms of professional standards.
3. Listen to a number of programs featuring classical music to see whether variations in the pronunciation of musical terms and names exist among the nation's outstanding announcers. From this survey determine your own standards of pronunciation.
4. See whether you can detect any differences in the projection employed by the announcer who performs before a studio audience and the announcer whose only audience is the radio one.
5. In a volume of radio scripts find several examples of perspective fades and transition fades. Practice these techniques under the guidance of your instructor.
6. Using either a regular radio commercial or a magazine advertisement that will serve the purpose, practice three types of delivery: (a) the intimate, confidential approach; (b) the homey, 'just folks' style; and (c) the driving, high-pressure method. From this and similar experiments determine the style you consider most desirable.
7. For general reading practice:
   a. To develop facility in sight reading, pick up a magazine at every opportunity and read the articles or advertisements aloud without preliminary study.
   b. Glance over the front page of your newspaper and decide which stories you would use for a newscast. Then, without practice ahead of time, read your newscast, bringing it to a close in exactly 4 minutes and 30 seconds.
   c. Experiment to determine whether you are helped or hindered by marking your script for pauses and emphases.
8. From among your classmates outside of radio, select: (a) a student who has attained distinction as a leader on the campus, and (b) a student who is an expert in some field of knowledge.

Using the ad-lib method, interview these students for your radio class, making the first a personality interview, the second an informational one.

9. For practice in ad-lib description:
   a. Take a tape recorder to a sports contest and record your description of a portion of the game.
   b. In a picture magazine find the record of an event that is covered in a series of photographs. Using these pictures as a basis, describe the event to the class as if you were actually watching it happen.
10. For acting practice: in a volume of scripts find scenes that present special problems for the actor and practice them; e.g. (a) a scene containing casual conversation and throwaway lines; (b) dialogue with action such as running, riding, and fighting; (c) stream-of-consciousness narration; (d) a scene that ends with a tag line; and (e) a scene that builds steadily to a climax.

TWELVE

Sound Effects

When an outsider makes a tour of a radio station, the equipment used to create sound effects will usually arouse his greatest interest; in fact, the average layman is likely to think of the sound effect as a unique property that distinguishes radio from the other media. Though scarcely deserving this special status, sound effects, by adding clarity, realism, and emotional impact, do play a vital part in many radio programs.

In considering sound effects, we usually think first of the type specially created in a studio for the drama or comedy program; but the sound already existing in the situation in which a broadcast takes place should not be overlooked. Examples of this type of sound are the crowd noise at a sporting event; the reactions of studio audiences; the chair scrapings and rustlings emanating from a discussion; and the traffic noise of a man-on-the-street broadcast. In cases such as these the broadcaster's problem is not to create sound, but to decide which of the sound effects already present are to become part of the program, and to what degree.

Pictures through Sound Effects

The most important function of sound effects is to stimulate the listener into seeing a picture in his mind, and thus help to compensate for the lack of the visual element in radio broadcasting. By suggesting scenery, business, properties, and action, a sound effect can use the listener's imagination to create images that become a vital and integral part of the program. In addition, images having

their source in senses other than sight can also be evoked by appropriate sounds.

Locale Sound

A large proportion of sound effects, both the created and the already existing types, help to give an impression of a program's setting, telling the audience where the events are taking place. The sound of harbor noises and construction work at the broadcast of a ship launching, either real or fictional, suggests the background to the listener. Other examples of locale sound are crickets for a night scene; rolling surf for the beach; the clackety-clack of typewriters for an office; a howling wind for a scene in a storm. The program 'Famous Jury Trials' effectively used the coughs of spectators, the squeak of chairs, and the shuffling of feet to suggest a courtroom panorama. In addition to picturing the scene, many locale sounds can also be powerful aids in getting the audience into the mood and atmosphere of the program.

A locale sound, as the manifestation of a background, is generally suggested to the audience as existing continuously throughout a scene. A common practice is to feature it at full volume at the beginning, then fade it down and hold it at a very low level under the scene until the end, when the sound may be brought up again to recall the setting to the audience. Another technique is to establish the sound and then take it out altogether, bringing it back only at intervals as a reminder of the background.

Action Sound

This important class of sound effects tells the audience the specific things that are happening at a given moment—thus supplementing the 'where' of locale sound. To use the ship-launching illustration again, the crash of the champagne bottle as it breaks against the bow of the ship helps the listener see the action as it takes place. Among other types of action sound are footsteps suggesting movement; opening and closing doors to indicate exits and entrances; shots, the thud of a falling body, a skid and crash, all of which conjure up pictures of a specific incident.

Action sound, in contrast to the continuous nature of locale sound, usually has momentary existence. Generally, it must be brought into the program at an exact instant—a responsibility that calls for precise cueing.

Character Sound

Sound that suggests a character trait or helps to differentiate one character from another, although relatively rare, can help to indicate the 'who' of a program. For instance, the nature of a person's walk, provided it has sufficient unusualness, can be represented by sound; examples are the tapping of a blind man's cane or the clumping of a peg leg. In one program the sound of a dragging foot not only helped to signify the appearance of the character, but, combined with music at the climactic moments, also added materially to the suspense and excitement of the program. A current example of ingenious character sound is the dropping of a penny into a scales to introduce the 'Fat Man' detective dramas.

Time Sound

The most obvious example of this small category of sound effects, indicating the 'when' of an event in a program, is the striking of a clock to show the hour. The howling of a wind, if used to suggest wintertime, and the crowing of a rooster to denote an early-morning scene are other examples. Time sounds can also accentuate the suspense of a program. An outstanding example of this was the broadcast of the atom-bomb dropping at Bikini in which a metronome's monotonous but insistent ticking gradually created a feeling of almost unbearable tension during the period preceding the explosion.

Symbolic Sound

Sounds in this category are called symbolic because (1) they may represent something that does not exist in real life; (2) they may have no causal connection with the real-life happening that is being depicted; or (3) they may stand for an entire idea or sequence of events.

Symbolic sound appears most often in fantasies and children's stories. The slide whistle is one of the most versatile pieces of equipment used to create it. Employed in varying ways, it can indicate disappearance, reappearance, a swift flight through the air, a fall, or the successive lengthenings of a character's nose, as in the dramatization of *Pinocchio,* the children's classic. Another example of symbolic sound is the use of a high-frequency tone increasing in volume and topped by a thunderclap to represent the escape of the genie from the small copper vessel in the *Arabian Nights'* story,

'The Fisherman and the Genie.' With speech and music to complete the suggestion, sound can be used to denote a great many different things. For instance, lightly tinkling chimes have been employed successfully to depict sunlight coming through a window or the rising of bubbles in a carbonated drink. In a sense, the gunshots and screaming sirens that introduce the 'Gangbusters' program symbolize the nature of the drama that is to come. Music, like sound, can be given a symbolic function on a radio program. Certain rhythms can produce a metronome effect; others sound like a knock on a door or the whistle of a train. Music was used in an adaptation of H. C. Bunner's 'Zenobia's Infidelity' to suggest the wobbly gait of an intoxicated elephant.

We have seen that sound, whether created or already existing, can be used in five different ways on a program: it can suggest locale, action, character, or time; or it can symbolize something. Most of the sounds of radio fit into these categories, although there may be a few exceptions. Our classification has dealt with sound in terms of its function and not in reference to the nature of the sound itself. A specific sound can often be used to perform several of the functions we have described, and may actually perform them together on the same program. In an Alaskan story, for example, the barking of husky dogs can suggest the background and at the same time help the listener to see a moving sled. A door sound on Norman Corwin's documentary 'Citizen of the World' depicted a character's leaving the scene and simultaneously signified the closing of the discussion dealing with that aspect of the subject.

When to Use Sound Effects

Most life experiences take place in a complex of many sounds, some of which are significant and interesting, while others are extraneous and unimportant. The sounds occurring within the hearing range of a man eating dinner, for instance, might include the clatter of dishes and silverware, an automobile motor, a distant factory whistle, and the conversation of his fellow diners. As far as the man's conscious perception is concerned, however, it is likely that he attends only to the conversation of his friends, despite the existence of the other sounds around him. He has eliminated everything but meaningful sound; the other pulsations might just as well not be striking his ear drum.

This ability of the individual to immunize himself from sounds of no consequence has an important implication for the broadcaster. Of all the sounds that could occur in a given situation, he need present only those that are significant and important. In fact, if he transmits nonessential sounds, he is not only complicating his own task needlessly, but he is also likely to confuse the listener. The microphone cannot isolate itself from insignificant sounds as a person can, but generously broadcasts everything that strikes its vibrating element. The listener, with nothing else to guide him, will assume that all the sounds coming from his loudspeaker are important, since the broadcaster has taken the trouble to transmit them. If some of these sounds are actually immaterial, the listener will be misled. The broadcaster must therefore choose from the large number of sounds that may exist or be created in any given situation only those that have particular significance and meaning for the radio audience, and eliminate all others. For special events, this involves the placing and shielding of microphones to avoid picking up unnecessary sound. The problem in drama programs is easier, for unimportant sounds are simply not created.

Most beginners, seeming to feel an obligation to duplicate all of the sounds that can potentially exist in a given situation, tend to overdo the use of sound effects. If they had their way, for example, the radio audience would hear footsteps on soft carpet, in situations where ordinarily other sounds would drown them out, or when, even though footsteps might conceivably exist, their sound has no significance whatsoever. Although footsteps may add immeasurably to the effectiveness of a program when they are used in the proper places, amateur writers tend to be too generous with this and other effects. Consider the pen-scratching sound that usually accompanies the writing of a letter or the signing of a check in a radio program. If you can hear anything when you take your pen and write a sentence across a piece of paper, you probably need a new pen. One writer even included in his script the sound of a pillow's 'squeaking.'

Sometimes a sound effect, temperately used, clearly belongs in a program, but exaggerated or overdone production defeats its purpose. When a writer indicates 'dish noises' as a background to a dinner conversation, he risks having his carefully prepared dialogue drowned out in a continuous bang, crash, and clatter,

instead of securing the subtle suggestion of setting that the occasional discreet placing of a cup upon a saucer can add to his scene. In the same way, an overenthusiastic sound man can turn a direction for a few street noises into an overwhelming traffic jam.

Dropping out or lowering a background sound after first definitely establishing it, the proper procedure in most cases, duplicates what the ear does in real life. At the beginning of a ride on a train we are very conscious of the clattering wheels, but after a few minutes the sound recedes so far that only occasionally are we aware of it. Background sound should never be permitted to interfere with the radio listener's comprehension of what is usually the most important element in the program, the dialogue.

We have already pointed out that sound can be used in radio to reveal locale, action, character, or time, or to stand for something. The decision whether sound should be used, however, must be based not on its ability to perform one or more of these functions in a given situation, but on whether the revelation accomplished by the sound is of any significance to the listener. Sound, in other words, should never be used for its own sake, but only if the use of the sound serves a worthwhile purpose.

1. *Sound is purposive if it helps to make something clear.* Many times sound can reinforce the work of dialogue or narration by adding clarity to a program and, in some cases, may be more effective or economical than either of them in making something clear. This is true of many sounds that establish setting. The rattle of clicking typewriters can suggest an office scene more quickly than dialogue or narration. The howl of an eerie wind can transport an audience instantly to a lonely moor. The action sound of an opening or a closing door is of particular value in denoting exits and entrances. In a scene where three gossipy women are conversing, a 'good-by' from one of them followed by the sound of a closing door informs the listener that the two remaining gossips are now free to concentrate on the reputation of the one who has just left. Even the placing of a door where it does not usually exist, as between the living and dining rooms of an average home, can be justified when it helps to clarify action.

2. *Sound is purposive if it adds realism.* Even though a sound effect may not be necessary for purposes of clarity, its use is legitimate if it helps to add realism and authenticity to a scene. The

sound of ships' whistles and bell buoys in a water-front scene, the puffing of locomotives in a railroad yard, or the quick coughing of a machine gun in a battle drama all help a listener 'feel into' the situation. We might mention that when realism is the objective, the burden on the sound-effects department to produce a sound completely faithful to the natural one is particularly heavy.

3. *Sound is purposive if it adds dramatic impact.* Presenting a scene by concentrating the attention of the audience on the sound elements of the situation often achieves more emotional power than the same scene presented in words. Consider, for example, a script that has gradually built up to an ambush scene. As two men lie in wait, we hear their heavy breathing, then two chilling clicks as their guns are cocked. The microphone focuses on the footsteps of the intended victim, and a gradual increase in their loudness indicates that he is approaching. A roar from the two guns provides an exciting climax in sound. Other examples of sound's contributing to dramatic effectiveness are the slam of a door to top an angry speech, the scream of a siren, and the unrelenting tread of marching feet. Some sounds carry with them a conventional emotional meaning; for example, a writer seeking to develop a mood of loneliness or nostalgia can employ the wail of a far-off locomotive whistle.

In view of our previous warning against the overuse of footsteps, we might say that their use needs no defense when they are presented either to heighten suspense, thus aiding dramatic effectiveness, or to clarify a scene by indicating the movement of a character from one place to another. To achieve these purposes, the footsteps are usually presented in full microphone focus without any competition from dialogue.

4. *Sound is purposive if the audience expects to hear it.* The use of sound effects in certain situations is inescapable if the radio audience is likely to expect sounds to accompany a given sequence of events and would miss them were they omitted. The dramatization of a scene in which a prisoner is walked down a corridor to be locked in a cell need not have footsteps but can scarcely avoid the inclusion of key sounds and the clang of the cell door as it opens and closes. To cite another example, a situation set in a newspaper plant would require the roar of presses in the back-

ground to get the radio audience to accept the scene as an authentic one.

With the exception of scenes like these in which the use of sound is mandatory, however, sound effects should be left out unless an analysis of the script's needs indicates that they can serve a specific, clear-cut purpose. A scene on a seashore may or may not include the sound of surf; a meadow scene may or may not include the sound of crickets; a scene in which a man leaves a room may or may not include the sound of the opening and closing of a door. In each of these instances the question must be asked: Will the addition of the sound clarify, add realism, or heighten dramatic impact? If not, the sound should be omitted.

Identifying Sound

In everyday life the nature and origin of sound are often explained only because we see the situation in which the sound occurs. Since the radio listener cannot be aided by any other influences in determining what causes sounds, the broadcaster must frequently provide assistance in identification. For example, a scene in which a man enters a house, trips on the rug, and falls flat on the floor would be an unintelligible jumble for the audience if only the noise of his entrance and fall were presented. To avoid confusion, the circumstances causing the sound must be made clear to the audience. The following excerpt shows how this can be done.

HOST: Good evening, Mr. Johnson. So glad ... (EXCITEDLY) Look out ... the rug ... you'll trip...

SOUND: THUMP OF BODY ON FLOOR

HOST: Are you all right, Mr. Johnson? Can you get up?

GUEST: (BREATHING HEAVILY) All right? Yes, I guess so ... but I think I'll just lie here a minute.

Notice that the dialogue suggests what causes the sound just before it happens and further clarifies the situation after the sound has been heard. Usually, the audience should be informed ahead of time what kind of sound to expect, although identification after the

sound may be satisfactory if it follows immediately. A 'double-take' comedy effect may be the result of this latter method.

HUSBAND: Something's happening outside.
WIFE: Look out the window. See what it is. I can't leave the stove.
HUSBAND: (FADING) Yeah... Sounds like a beautiful fight. Got to see what's going on...
SOUND: (OFF MIKE) BREAKING GLASS ... MANY TINKLES (PAUSE)
WIFE: What happened?
HUSBAND: (OFF MIKE) I forgot to raise the window.

Fortunately for the broadcaster, certain sounds possess characteristics so individual that they are instantly recognized. Among these self-identifying sounds are opening and closing doors, sirens, crying babies, wind's howling, and horses' hoofs. Except for these and a few others, however, sounds must be identified before the audience will know for certain what they are. The nature of the problem facing the broadcaster was illustrated when a sound-effect record of a waterfall was played before a college class. With no clues except the sound itself, various students listed it as a landslide, an earthquake, a street car, a subway, a train, and an aircraft; a very small group correctly identified it as a waterfall. Although this experience points up the importance of identification, it also indicates that a given sound may be put to a number of different uses, provided the imagination of the listener is cued in the proper manner. Crackling cellophane has the versatility to suggest rain, bacon frying, or a raging four-alarm fire. With the imagination predisposed in one way, the opening of a drawer in a filing cabinet suggests a window's opening; when another situation is projected, it indicates the sliding of an elevator door.

The initial responsibility for making certain that the source of sounds will be clear to the radio audience falls on the writer of the script. For every sound that is not recognizable by itself, he must see that the audience has been provided with sufficient cues to identify it. These cues can be made available in four different ways: (1) through dialogue; (2) through narration; (3) by using

a self-identifying sound to introduce one that might be misunderstood (a siren explains the noise of a fire truck that follows it); and (4) through the development of the situation itself. The objective should be to make the audience aware of the nature of a sound effect without being obvious and awkward about it. The use of subtle suggestion and implication is a more artistic technique than explaining a sound effect in so many words.

Although the writer is primarily responsible for identifying sound, the director of the program must be alert to see that the job has been done properly. The rehearsal of a program often reveals potentialities for confusion that are overlooked in the writing process. To insure clarity, script revision may be necessary at some points.

The Production of Sound Effects

Thus far we have been discussing sound effects of two different types: those that must be created in a studio especially for a broadcast, and those that already exist as part of a special event. The production problem with sound effects in this latter class is primarily one of locating microphones where they can pick up the sounds the broadcaster wishes to transmit. In a football broadcast, for example, microphones are usually placed to catch the cheers from the two rooting sections as well as band music from the field. To get a good pickup under these conditions, it is sometimes necessary to place a parabolic shield around the microphone to focus the sound on the vibrating element. In general, however, the broadcasting of existing sound is a comparatively simple production problem. It is the generation of sound effects in the studio that makes the greatest demands on broadcasting equipment and ingenuity; accordingly, we devote the rest of this chapter to a discussion of the problems involved in producing this type of sound.

General Considerations

In the early days of broadcasting, microphones distorted sound to such an extent that radio people rarely tried to create a sound effect by using the equipment responsible for that sound in real life. The problem was to generate an artificial sound that, after being subjected to the broadcasting process, would emerge from the listener's receiver as something recognizable and lifelike. The sign that a new era was approaching came one day when a technician, defeated in

Fig. 25. A technician about to create the sound effect of a man eating an apple, illustrating the principle that, where possible, natural effects are used. (Courtesy CBS)

Fig. 26. Since a horse cannot be brought into the studio, the technician must resort to synthetic means to achieve the sound of hoof beats. (Courtesy CBS)

Fig. 27. A sound truck and an auxiliary truck. Note the isolation booth to the left. (Courtesy CBS)

every attempt to produce synthetically the sound of a man's eating an apple, finally fell back on the desperate procedure of actually eating an apple in front of a microphone. The result was perfect. (See Fig. 25.)

Because today's microphones are accurate reporters of what they hear, the sound man is most likely to solve his problem either by obtaining a recording of the sound as it occurs in real life or by bringing the real-life apparatus into the studio. When the sound of an opening door has to be reproduced, the sound man opens a door—not just any old door carelessly thrown together, but a door with solidity and firmness built into it. The advent of FM with its improved fidelity has increased the necessity for realism in sound effects even beyond that required for AM broadcasting. On AM the crushing of a berry box close to the microphone gives a realistic impression of the sound occurring when vigorous men break down a door, but on FM the sound may appear to be just what it is—a berry box being crushed. The means for achieving other effects of this nature, still satisfactory for AM, must be re-evaluated for FM.

The growth in the fidelity of broadcasting equipment does not mean, however, that all synthetic devices will be eliminated from the production of sounds (see Fig. 26). Consider such a big and progressive effect as the noise an automobile would make smashing through the guard rail of a highway, rolling down a hill, and breaking through the ice of a lake before sinking into the water. Obviously, the sound man cannot reproduce the actual sequence of events in the studio, nor is he likely to find a recording that will give him everything he wants. His only recourse is to apply his inventiveness and ingenuity to the devising of equipment that will synthetically achieve the simulation of the sound.

The Sound Truck

As previously mentioned, many effects are produced by playing recordings of the sounds as they occurred in real life; in fact, 75 per cent of radio's sound effects are now created in this manner. As a result, the equipment for playing these recordings has become one of the most important units in the sound-man's array of paraphernalia. The basic instrument is the sound truck, so called because it is usually mounted on wheels to permit easy mobility. Although sound trucks can range from the expensive and complicated mechanisms built by networks to the smaller and simpler types suitable

for college groups, certain requirements must be met in all of them if satisfactory and flexible service is to be realized.

1. *Tables.* The sound truck should have more than one table (see Fig. 27), to permit the blending and combining of various sounds. For example, the effect of an automobile being driven in a high wind would require that two records be played at the same time. A third table would be necessary for whatever sound was coming next. To provide easy accessibility, these three tables should be set in a line. Although most sound records are of the 10-inch variety, which revolve at 78 revolutions per minute, greater flexibility is introduced if the tables can accommodate larger records and be revolved at varying speeds. For one thing, the music transition often played from sound trucks is sometimes recorded on 16-inch records at 33⅓ r.p.m.

2. *Pickup Arms.* At least one of the tables on the truck should be accessible to two pickup arms. When only one arm is available, a noticeable break is caused as the needle is lifted and moved to the beginning of the record to continue a background noise that does not last long enough for a particular sequence. With two arms, the second one can be placed at the beginning of the record as the first arm nears the end, and thus the sound can be continued without interruption.

3. *Controls.* The volume controls and switches for all of the tables should be placed where they can be easily reached. The sound man has the complicated job of placing and removing records, cueing records in, and turning the volume from table to table up and down, all in rapid succession. He can fulfill these responsibilities only if the controls are at his finger tips.

4. *Racks and Shelves.* A rack to hold the script should be placed just above the truck so that the technician can easily follow the program. The rack should be wide enough to permit his pulling the used pages to one side as the program progresses. A handy shelf for records is also needed.

5. *Earphones.* The truck should be provided with earphones to make it possible for the sound man to hear the entire program as it goes out on the air, so that he may keep the volume of sound properly balanced with other parts of the program. To facilitate the cueing of records, a second set of earphones may be necessary at times. With these earphones the sound man can listen to records

just before they are used on the broadcast to determine the exact place for the pickup needle.

Improvements in the basic sound table described can be made by increasing the number of tables, by adding filters to take out high or low frequencies, and by giving each table two pickup arms. Some of the more elaborate sound trucks have as many as eight tables.

There are two methods of getting the sound from the sound truck to the control room. One is to take it by wire directly to the control board. The other is to provide the truck with a speaker of its own, which is placed before a microphone leading into the control room. If this latter method is used, the speaker should occupy a unit separate from the sound truck. When this is done, the loudspeaker and its microphone can be isolated in a corner of the studio to prevent transmitting the unavoidable little bangs and noises made by the sound man in moving records back and forth.

The great advantage of taking sound from the sound truck to the control room by direct wire is that it eliminates the distortion and reverberation that occur as the sound goes from the truck's loudspeaker into the microphone. The big disadvantage of the direct wire is that, because actors are unable to hear the sound, they cannot by themselves synchronize their dialogue with it, as they can when they hear the sound coming from a loudspeaker in the studio, but most depend entirely on signals from the control room.

Cueing Sound and Music Records

A primary requirement for satisfactory sound work is accurate timing; a sound that comes in even a fraction of a second late may seriously damage a program's effectiveness. The same applies to music records, which the sound man is often called on to play for transitional or background purposes. To bring in sound or music at the instant it is needed, the sound man must master a 'close' cueing technique. The essential problem is to bring up the volume control just as the needle reaches that place in the record where the required sound is, with the further requirement that this point be reached at the exact moment when the sound is wanted on the program.

The first step in cueing is to discover through a preliminary tryout the location in the record of the particular sound or music desired. Even if it is at the beginning (the usual situation), on most

records the sound does not come in until several grooves, varying in number from record to record, have been passed by the needle on the pickup arm. Bringing up the volume while the needle is in one of these 'blank grooves,' as they are called, results in nothing but surface noise. The number of blank grooves at the beginning of the record must therefore be determined. When the desired sound is in the middle of a record, it must be located; then the record must be marked in some way to identify the groove. China pencils, chalk, or even scotch tape have been used for this purpose; unfortunately, they all involve the danger of damage to the record.

The second step in cueing is to set the record up just before the sound or music is to come on the program. With the volume control at zero, the needle of the pickup arm is brought to within half a revolution of the point where the desired sound comes in, and then the record is stopped and held. The half revolution is needed to give the record time to pick up to proper speed once it is released. There are several ways of 'setting-up' the record, depending on the equipment. Sound trucks on which the pickup needle meets the record at an angle require the following procedure: If the desired sound is at the beginning, the needle is placed in the first groove, and the record is permitted to revolve until the needle passes all but the last half revolution of the previously counted blank grooves. The record is then held, but the table continues to revolve beneath it. When a groove within the record has been marked, the needle is brought to within a half revolution of that point before the record is stopped. At no time can the record be turned back against the needle, or gouging would result.

On turntables where the needle meets the record in a vertical position, a simpler method of cueing can be used. In this case the record can be revolved by hand with the table stopped until the desired sound or music is heard either through earphones or a special loudspeaker; then the record is turned back until the necessary half-revolution pickup space has been provided. This method of 'back' cueing is employed by announcers in small stations, who alone must announce, ride gain, and cue up records.

The final step in cueing is either to let the record go or to start the table just before the sound or music is due, then to snap the volume up to proper level as the record completes the remaining half revolution before the sound comes in. Obviously, the sound-effects technician must have an excellent sense of timing to judge

when to let the record go. If he waits until the sound is needed, it will come in late because of the amount of time required for the table to turn the half revolution. Another hazard to be avoided is the possibility that the half turn will not be sufficient to bring the record to its proper speed by the time the sound comes in; the result is a gradual rise in the pitch of the sound until normal speed is reached. This phenomenon, called a wow, is a bugaboo to all sound men, for it can damage the rendition of any sound effect, and in the case of music, the result is disastrous. If the half revolution does not provide sufficient time for the record to reach normal speed, more must be allowed.

Larger stations and networks have now developed automatic cueing devices, which, on the throwing of a switch, can drop a pickup arm onto a record so accurately that a word can actually be split into syllables. Another switch resets the mechanism to permit repeating the process. Even with this equipment, however, the sound man must anticipate the sound by the amount of time required to throw the switch and set the mechanism in motion.

The cueing technique described above brings in sound or music with full volume level at a precise instant. In the case of music transitions and background sounds such as wind, the use of a 'fade-in-fade-out' technique is often equally effective. To illustrate, just a few seconds before a scene reaches its end, the music is gently faded in under the last few words, then is brought up to full level for the duration of the transition, and is faded out under the first few words of the next speech. Sometimes music can be brought in on a 'close' cue to start a transition, followed by a 'fade-under' to conclude it.

Handling the Volume Control

The sound-effects technician exhibits much of his artistry by the manner in which he handles the various volume controls. Sometimes his movements must be marked by quickness and precision, at other times by deliberation and steadiness. When sound or music is to be brought in at full level, the volume control must be swept up rapidly enough to prevent a fade-in effect. On the other hand, when fading is actually desired, changes in volume must be made so subtly that the audience is scarcely aware that they are taking place. This requirement applies, for example, to the fading down of background noises that are featured at the beginning of a scene at full

volume level. It applies particularly to those cases in which one effect is faded in while another is faded out—a technique called cross-fading. When a wind effect is being cross-faded into music, for instance, the sound man must fade down the wind and fade up the music in such a way that one sound unobtrusively replaces the other, without an abrupt change. Equally to be avoided is a gap when neither sound is present. Another test of the sound-man's skill comes when a second pickup arm must be placed on a record in order to continue a sound that has run to the end of the record with the first pickup arm. The change from one arm to the other must be made so deftly that the audience is not aware of it.

A Basic Sound-Record Library

During a period of broadcasting activity, a need for certain sounds can be expected, many of which are available in recorded form. Experience has indicated that recordings of the sounds listed below are most often required.

Airplane: Motor's idling, take-off, continuous flight, landing—for both single-engine and multiple-engine planes; different planes diving and zooming; airplane fall and crash.

Animals and Birds: Dogs; cats; horses; cows; domestic fowl; a few singing birds; lions or tigers.

Automobiles: Motor's idling, start, continuous running, stop; skid; light and heavy crashes; police car and fire truck with siren.

Baby's Crying: Brief crying; continuous crying.

Battle: General warfare, including shells, naval guns, machine guns; rifles; pistols; group firing and separate shots.

Bells and Chimes: Chinese gong; Big Ben chimes; clock striking; church or school bell.

Boats: Boat whistles of various types; motorboat; ship engine room; tugboat.

Communication Sounds: Radio; telegraph; teletype.

Crowds, Applause: Small, medium, and large crowds both quiet and excited; applause for medium and for large groups; children at playground.

Explosions: Successive and single.

Harbor Sounds: General background; foghorn; bell buoy.

Horses' Hoofs: Single horse's stamping, starting, galloping continuously, stopping; comparable walking and trotting effects; same effects for two horses and for group of horses.

Horse and Wagon: Starting, continuous, stopping.

Machinery: Newspaper presses; general factory background.
Marching Feet: Starting, continuous, stopping.
Night Noises: Crickets; frogs and crickets combined.
Office Effects: General background of typewriters and adding machines; single typewriter.
Traffic: General background; busy street; quiet street.
Trains: General yard background; train standing, starting, continuous running, stopping; train bells and whistles.
Water Sounds: Surf, mild and heavy; brook or river; waterfall; ship at sea.
Weather: Wind; rain and wind; rain; storm with thunder; separate thunderclaps.

As the need arises, many other records must be added to those listed. To provide the ultimate in flexibility, these categories might be expanded by securing, for example, train effects recorded both inside and outside the train. Airplane and automobile records are also made with the sounds recorded in a variety of situations.

The first step in establishing a library of sound records is to secure catalogues from the various companies that manufacture them. These companies, with their addresses, are as follows:

Carl Fischer Records, 165 W. 57th St., New York 19, N. Y.
Gennett Records and Speedy Q Records, South 1st and B Sts., Richmond, Ind.; 67 W. 44th St., New York 18, N. Y.
Major Records, Thomas J. Valentino, 1600 Broadway, New York 19, N. Y.
R.C.A. Records, RCA Victor, Camden, N. J.
Silver Masque Records, 1790 Broadway, New York 19, N. Y.
Standard Records, 1 E. 54th St., New York 22, N. Y.; 360 N. Michigan Ave., Chicago 7, Ill.; 140 N. La Brea, Hollywood 36, Calif.

Most of the sound records made by these companies are 10-inch, double-faced records with a different set of sounds on each side. The sounds on the two sides may be related, or they may be quite different. In a few instances one side is a duplicate of the other.

The listing of the specific records in the catalogues sent out by various companies varies from a complete description to a mere naming of the sound. In almost all cases the length of time consumed by each effect is indicated, however, so that a record containing a sound of sufficient duration for a particular need can be selected. If two or more companies seem to have satisfactory sounds, the selection may depend on what is recorded on the other side of

the record. If possible, the sound on the reverse side of the recording should augment the library with a new effect rather than duplicate one already owned. The best test of whether a record should be purchased is to listen to it ahead of time, but this may not be possible unless the home-town radio station owns the records being considered.

Manual Sound Effects

This is a term usually applied to sounds produced by methods other than the playing of a record on a sound truck. It is not a strictly accurate term in every application; for example, footsteps are usually considered a manual sound despite the fact that the sound man uses his feet to produce them. However, the term 'manual' has gained wide acceptance to indicate nonrecorded sound effects. As is the case with records, certain basic manual equipment is needed to meet the regular requirements of broadcasting. These needs are indicated now as we describe the methods and equipment for producing the most frequently used sounds.

Airplane: Hold a stiff cardboard against the blades of a whirling electric fan.

Arrow Flight: Whip a thin, reedlike stick rapidly through the air.

Bells and Chimes: Construct an electrically operated bell box equipped with door and telephone bells, and a buzzer; other requirements are chimes of various types; town-crier, sleigh, cow, and bicycle bells. A brake drum hung free to permit vibration makes a good bell.

Body Sounds: For a body fall from a height, drop from a ladder a melon or a bag filled with sand; for a short fall, stand over a table, then permit one arm and the torso to drop loosely onto the table, letting the second arm hit last—a sequence that gives a two-stage, realistic effect to the fall. Stab or strike cabbages or melons for other variations. Actors should pummel themselves for many fight sounds.

Brush and Bush Noises: Crackle broom straw in the hands or walk on it.

Chains: Various sizes and types are needed.

Construction Noises: The needed equipment includes lumber, hammers, a saw, nails, and a hatchet.

Crashes: Obtain large and small berry boxes, small panes of glass, and dishes for breaking; turn over a box filled with glass and metal for a general smashing effect.

Doors: Both a house and an auto door are needed. Hang a house door of normal size in a sturdy, well-constructed frame to give the sound proper substance. A screen door or a sliding window may be hung

on the other side. A baffle of celotex installed down the middle of the frame may be moved up and down to vary the acoustic effect. The door should have a good closing mechanism with a key and lock and a sliding bolt. Mount the whole arrangement on a base with rubber-shod wheels to permit easy movement. Hang an auto door with a good closing mechanism in a wooden frame.

Elevator: Slide a roller skate back and forth on a wooden frame equipped with steel tracks for the opening- and closing-door effects; turn on a vacuum cleaner for the elevator motor.

Explosion: Shake a rubber basketball bladder containing BB shot close to the microphone to give explosion and thunder sounds.

Fire: Crackle cellophane of various kinds; combine with a wind record to give the effect of a roaring fire.

Footsteps: Stairs, a wooden platform, and a gravel and dirt box are needed for various effects; squeeze cornstarch in a sock to give the crunch of footsteps on snow.

Gavel: Small and large gavels should be available.

Horns: Both auto and novelty horns are needed.

Horses' Hoofs: Strike rubber plungers or halves of cocoanut shells on the chest or in boxes filled with gravel and dirt; click cocoanut shells together to suggest a horse on cobblestones.

Ice: Crush electric-light cartons to give the effect of ice breaking.

Keys: Place some keys on rings so they will jangle.

Marching Feet: Hang 20 to 40 pegs loosely from a wooden frame. When moved back and forth on a table, this device suggests marching feet.

Metronome: This instrument is needed to give clock-ticking effects and to suggest the passing of time.

Shots: Fire a revolver loaded with blank cartridges; a rectangular box lined with asbestos helps to deaden the sound when the shots are fired into it.

Sirens: Blow a small siren for disappearing effects.

Squeaks: Twist a peg in a tight-fitting hole.

Telephone: French, crank, and coin phones are needed.

Water: Line a water tank with canvas to eliminate metallic sounds, and equip it with a paddle wheel for making splashes.

Window: Install a window in a frame.

Whistles: Obtain a slide whistle for providing symbolic effects in fantasies; police whistles are also needed.

Other equipment that can be added for obvious uses are the following: billiard balls, playing cards, clocks, bottles, glasses, rocks, siphons, an air tank with compressed air, a megaphone, a cigar box

for muffling voices, motors, vibrators, and steel bars and pipes for jail-door effects. Some equipment need not be kept on hand continuously but can be borrowed when needed, e.g., typewriters, adding machines, saws, and hammers.

Special Effects

Many of the sounds required in broadcasting cannot be supplied merely by going to a sound record or a manual device and using it in the conventional way. A new and unusual use of regular equipment is often necessary before certain sounds can be produced. To suggest what can be done, we summarize a few of the ways in which sound men have responded to special demands.

Sometimes a problem can be solved by running a record more slowly than its regular speed, thus causing the sound, whatever it may be, to become lower and heavier. A slowed-down airplane engine, for example, suggests a ponderous dirigible. Sound records may also be speeded up to give higher and lighter effects than the normal ones.

An unusual use of the volume control may supply the answer to a sound need. In one case a director wanted the sound of a splash as a man fell from a raft, but no water tank was available. The sound technician tried sweeping the volume control rapidly up and down while playing a record of river noise that was being used as background to the scene. The result was a very satisfactory simulation of a splash.

Several records may often be combined to produce completely new effects. If the sound truck has the refinement of filter controls, high or low frequencies may be subtracted to change the quality of sounds. By placing two pickup arms on one record with normal volume for both, the effect of a single record can be doubled; thus, one horse can become two horses.

In one program the flight of Admiral Byrd over the South Pole was being dramatized. As the plane struggled to get over the last mountain barrier, the engine was supposed to miss and sputter with the strain, but only the record of a steadily running motor was available. The effect was finally produced by gently moving the pickup needle up and down on the record as it played. The record suffered, but the program gained.

Frequently, a broadcast requires an echo or hollow effect. Where the luxury of a special reverberation studio is not included in the

facilities, an echo can be simulated quite successfully if there is a grand piano in the studio. With a microphone placed face down over a hole in the sounding board of the piano, the damper pedal is held down to permit a free vibration of the strings, while the voice or sound effects are directed onto the strings through the half-open top. The vibration of the strings produces the echo effect and is particularly successful in giving a big or 'genie' quality to an actor's voice.

Manual equipment has been used in unusual ways for special sounds. The sound of a bird caught in a chimney was suggested by rapidly opening and closing an umbrella. Tearing an old window shade produces a very authentic ripping sound. The opening of a champagne bottle can be indicated by placing two rubber plungers together until suction is created, then pulling them apart. A cow-milking effect is obtained by squeezing two ear syringes alternately into a pail. A sound man working on a horror show was once asked to produce the noises made by a man walking on spiders in a gloomy cave. The proper squashy effect, a spine-chilling success, was secured when the sound man stepped on a bunch of grapes in a box.

Often the best solution to a problem, particularly in the case of an animal sound, is to get an actor to produce the effect vocally. An actor can bark with better dramatic emphasis than a record or a manual device would give, and the cueing problem is much simpler. One college, broadcasting a program about yellow fever, needed the high-pitched whine a mosquito makes as it circles a prospective victim's face. After trying all kinds of mechanical devices, the sound technician finally achieved a realistic whine by getting an actor to force air at high pressure between his upper teeth while they were clenched on his lower lip. This suggests that no possibilities should be overlooked in trying to solve a difficult sound problem. One of the greatest satisfactions in broadcasting comes when a challenge of this nature is met by an exercise of creative ingenuity.

The Sound-Effects Routine

The first task of a sound man after receiving a script is to evaluate it carefully in terms of the sound requirements. To avoid overlooking anything under the pressure of a broadcast, he usually encircles with colored pencil all of the effects for which he is

responsible. He studies the perspective situation to determine how far from the microphone each sound should be heard. He draws lines down the sides of the script to indicate the duration of background sounds. He determines when fades are needed and clearly indicates them. A sound technician can simplify his job greatly by clearly and carefully marking his script.

The next problem is to decide how each sound effect is to be achieved. In most cases he has merely to decide which of several existing methods is best suited to produce exactly the sound needed for a given situation. Let us suppose that the script calls for horses' hoofs, which are available either on a sound record or through the use of cocoanut shells or rubber plungers. In choosing between the recorded and the manual sound, the relative advantages and disadvantages of each should be clearly in mind. The decision should be based on the following considerations.

1. The recorded sound is more inflexible; it is difficult to modify what is on the record, although a clever technician can do wonders with 'close' cueing or by changing the speed of the turntable.

2. The perspective on the recorded sound may be out of keeping with the demands of the situation.

3. Manual sound, which is subject to very subtle modifications, can be more easily cued into the action and synchronized with what is happening.

4. Records have the advantage of authenticity, since most of them these days are recorded in real-life situations.

5. For continuous sounds, like the steady plod of a horse and wagon, recorded sound is best.

6. For momentary sounds, like the stamp of a restless horse or the opening of a door, manual sound is most satisfactory.

Although it is true that in some cases almost any sound will do if the proper suggestion is given, in other cases nothing but an exact, precise sound will serve a particular need. Furthermore, when an exact sound is needed, the sound-man's responsibility is much greater in radio than it is in the arts that involve vision. The movie viewer, for example, sees the picture with his eyes, and sound plays an accessory function. If the sound is wrong, his eyes make a correction, and he does not notice the distortion. It was discovered early that many of the recorded sound effects found satisfactory for movies were completely unsuitable for broadcasting.

In radio the success of an entire sequence may rest on sound. The wrong kind may confuse or distort the picture the broadcaster is trying to create in the mind of the listener.

Sound can become so important in some instances that the success with which a particular effect is achieved may make or break a script. This was true in a radio adaptation of Nathaniel Hawthorne's 'The Ambitious Guest,' the story of several people in the height of their ambition who were crushed in the onrush of an avalanche. To attain full dramatic effect, this avalanche had to be completely earthshaking and overwhelming, but when produced, it was a mere puerile trickle—a failure that completely destroyed the impact of the story.

In some cases, the difficulty of producing exactly the right sound may justify cutting it out of the script entirely. When this is not possible, the sound man and the director must carefully consider the effort required to perfect the sound and the necessity for getting it exactly right. Sometimes the best solution is to get by with whatever sound is available, even though it is not quite right. Time, expense, effort, and the significance of the sound in the script must all be taken into account in making this decision.

After the methods for producing all the sounds have been devised, the sound-man's next task is to practice the sounds ahead of the regular rehearsal, in order to avoid keeping a cast standing around while he perfects his technique. For sounds about which there is some question, he should have alternative methods of production ready in case his first effort does not satisfy the director. Often the director and the sound technician get together before the regular rehearsal to go over the sound routine (see Fig. 28).

In rehearsal and on the air the technician must be constantly alert to make certain that he will be ready for every sound as it comes due—an achievement that requires careful planning. Among the details involved in running the sound truck are stacking records in the order in which they are to be used; cueing up each record in time for the effect; and whisking the records off the truck as soon as they are played, to provide a place for the ensuing effects. The same principle of being prepared ahead of time applies to manual sounds. Relaxation is impossible until everything is in readiness for the next effect. If the script has many sound cues, the technician will be on the move continuously; yet he must make

his changes and preparations quietly to avoid creating sound effects that are not supposed to be on the program.

Fig. 28. A director checks a sound effect with the technicians before rehearsal starts. (Courtesy CBS)

With a sound routine complex enough to require the services of more than one technician, the chief sound man must be absolutely certain that his assistants know their responsibilities. A door will never be opened on cue if everyone thinks the other fellow is

going to do the job. If two men are working on the sound truck, rehearsal ahead of time is often necessary to synchronize their movements.

In addition to the responsibilities just listed, the sound technician must be alive to what is happening in the rest of the studio and in the control room. Signals from the director frequently cue his activities or call for a modification in the effects. For those sounds that come in without cue from the director, he must follow the script and listen to the actors. He is also required to keep his recorded sounds in balance with other elements by making adjustments in terms of what he hears of the entire program as it comes to him over his earphones.

The Sound-Effects Artist

Thus far we have referred to the person in charge of sound as a technician or a sound man, yet there are very real reasons why he should be recognized as an artist. The American Federation of Radio Artists, a labor union, gives him this status by including him in its organization along with the other artists of radio: announcers, singers, and actors.

The sound technician must certainly be creative and imaginative in order to meet the demands made on him. Like an actor, he should be able to visualize the situation in which a scene is taking place—a demand that calls for a real feeling for drama. A door may have to be closed angrily, softly, or in a sinister manner. The sound man should execute this effect according to the dramatic requirements, without having to be told what to do by the director. A technician who fails to visualize can slow down rehearsal by committing such obvious errors as opening and closing a door without giving anyone but a very fast-moving sprite time to get through.

In addition to an artistic sense, it is obvious that sound men must be gifted with considerable manual dexterity, particularly the ability to make quick, precise movements. A cool head and the ability to look ahead are also essential. Above all, sound work requires an outstanding sense of timing that can function under high pressure.

Projects and Problems

1. Devise and rehearse sound effects to establish the following settings: (a) a busy office, (b) a tropical jungle, (c) a railroad station, (d) a department store at Christmas time, (e) an automobile factory, (f) a busy street.
2. Work out a series of sound-effect routines that tell a story or part of a story by themselves. Rehearse these routines and present them for the class. For instance: a man drives up in a carriage, gets out, walks across the sidewalk and up some steps, and goes into a country store.
3. Listen to a drama broadcast, paying particular attention to the background sounds, and note how they are introduced and the general level at which they are held behind the scenes.
4. Play a series of sound records for a class, asking each member to identify the sound with no clues but the sound itself. From this experiment, reach conclusions regarding which of your recorded sound effects are self-identifying and which are not.
5. Listen to a half-hour radio drama, noting the various methods used to identify sounds.
6. For practice in 'close' cueing, find or devise sequences in which recorded sounds must be brought in at an exact instant. Examples of sounds usually requiring this treatment are gunshots, explosions, automobile skids, and telephone rings.
7. Find or devise sequences in which sounds or music are blended together, as in the following examples: (a) a horse starts off, the sound of galloping blends into music, which blends in turn into the sound of the horse's coming to a stop; (b) wind into music into wind; (c) automobile into airplane into ships' whistles, to indicate a journey. Practice these transitions until you can blend the sounds perfectly.
8. How would you produce the sound of the beating heart in a radio version of Poe's 'The Tell-Tale Heart'? How would you produce the sound of the giant's footsteps in 'Jack and the Beanstalk'?
9. Play some of your sound records designed to be played at 78 r.p.m. at 33⅓ r.p.m. to see how the sounds are changed.
10. Devise three dramatic situations each requiring a door knock of a different type; then rehearse these sounds.

THIRTEEN

Writing for the Ear

To satisfy the prodigious program appetite of the more than 2500 American radio stations, millions of words a day must be put together to form scripts and continuities. The writers who turn them out play key roles in the business of broadcasting. Without minimizing the importance of other factors in production, we can state categorically that no program can attain the quality level without the foundation of a good script.

The people who do radio writing are as varied in type as the programs they create. There is the staff writer for a station, network, or advertising agency, whose output for a single day may include a half-hour drama, a continuity for a music program, several commercials, notes for an interview, and an outline of stunts for an audience-participation show. Contrasted with him is the writer working under contract to a network or advertising agency, who writes one script a week for a series such as 'Mr. District Attorney.' Such organizations as the United Press and the Associated Press employ news writers who grind out copy for transmission by teletype to radio stations throughout the nation. Sometimes scripts are written at home by free-lance writers for such programs as 'Suspense' and 'Grand Central Station.' The awesome responsibility of making an audience laugh four times a minute is usually too much for one writer to face alone, so comedy scripts are generally turned out by teams. As many as ten people may contribute to a single program. A somewhat different type of co-operation is common in the daytime-serial field. One person may con-

ceive and outline the plot, while another writes the actual dialogue. Some of these plot conceivers keep as many as four different serials going at one time.

The product of these writers' efforts becomes either a script or a continuity. Script is the term generally applied to the written material that is the primary basis of the program; thus, we have drama-scripts, comedy scripts, and talk scripts. Continuity material comprises only a part of a program; introductions to music and commercials fall in this category. This distinction between the two terms, however, is not always consistent. Both are sometimes used to refer to anything written for radio. NBC, for example, names the department responsible for passing on all material broadcast by its network the Continuity Acceptance Department.

Despite the diversity in form of program and type of writer, there are certain general demands that apply to all. To be successful, the 40-dollar-a-week continuity writer in a small radio station must satisfy some of the same prerequisites faced by the 1000-dollar-a-week network-drama creator. Proficiency in the radio field is founded, first of all, on a grasp of basic writing techniques. Some innate talent for writing; a wide and flexible vocabulary; style; inventiveness; keen observation; the ability to write with unity, coherence, and proper emphasis; a mastery of the tools of expression —all are essential ingredients in the radio-writer's art, and with respect to these attributes he is no different from any other writer. The radio dramatist, for example, in creating the story line for a detective drama, faces much the same problem as a writer devising the plot of a short story.

But success in the air medium demands more than general writing skill. The unique characteristics of radio call for certain adjustments and modifications before material for effective broadcasts can be prepared. Though the various accommodations are absolutely necessary, the person with writing ability usually finds no difficulty in making them. Archibald MacLeish and Stephen Vincent Benét, for example, after outstanding work in other fields, immediately distinguished themselves in radio with some of the best scripts ever written. Possessing the knowledge and talent for good writing in general, they found the adjustments required by broadcasting easy to make.

General Requirements for Radio Writing

The fact that he is writing for the ear alone is, of course, the major consideration to be kept in mind by the writer of material for the radio. Other factors affecting his techniques are the extreme differences among listeners to a single program and the conditions that distinguish the usual listening situation. The important implications for writing deriving from these radio characteristics, discussed with reference to various types of programs, are summarized now in terms of five major principles.

Write material that is clear when only heard. The necessity for this rule is perfectly obvious, yet some of its connotations are occasionally overlooked. By remembering that meaning can be communicated only through sound, the radio writer will avoid such errors as the use of words and constructions that are understandable when seen, but confusing if only heard. The homonym, a word alike in sound to another word but different in meaning, can be a pitfall. The following sentence, although clear to a reader, might perplex a radio listener: 'The young man got his girl a ring, and thus he got her too.' Another sentence subject to possible misinterpretation is: 'She gasped in surprise at the bear keeper.' Consider the following construction: 'While we were drinking, the river, previously quiet, began to eddy and swirl.' The employment of carefully planned pauses might make this clear to a listener, but the writer would do well to revise it. Other potentialities for misunderstanding, much less obvious than those cited, can lurk in the pages of a script that a writer fails to subject to the test of the spoken word.

Reading material aloud can also assist the writer to detect sentences that, while satisfactory in print, may confront the radio speaker with unnecessary hazards. Try this line from a commercial: 'The Schick Sixty-Six insures shaving satisfaction.' If you can say it without a flaw, you are more successful than the network announcer who read it on the air. The writer of such material must shoulder part of the blame for getting the announcer's 'tang all toungled up.' 'Statistics say' invites trouble; use 'figures say' instead. The word 'inimitable' in a continuity is likely to lay the groundwork for a nasty stutter. The letter *s*, being one of the most common in the language, cannot be left out of copy, but too many in a series should be avoided. The same applies to the letter *p*,

which some microphones transmit with an unpleasant popping sound.

The radio writer must also remember that the programs he writes exist in time rather than in space. This means, first of all, that programs cannot be studied or reviewed; as we noted in chapter IX, the radio listener has no second chance. Clarity of style is therefore an absolute essential. The listener has no opportunity to unravel a long, involved sentence, nor can he take the time to look up the meaning of a word he does not know. Complex sentences containing a number of dependent clauses can easily lead to audience bewilderment. The simplest word that can express a given meaning is usually the best choice. Pronouns, however, should be used with care, since they can be confusing if their antecedents are not clear. If there is any possible doubt, the word itself should be repeated. Listeners cannot look back to determine the reference of an ambiguous 'it.'

It should not be inferred from this that the writer is restricted to one-syllable words or to a choppy succession of sentences unvaried in length or type. Smoothness as well as clarity must be sought. A sentence can be of considerable length and still be understandable, provided it deals with one idea in such a way that the meaning flows clearly from the beginning to the end.

A comparison of the same story written for newspapers and prepared for a newscast frequently reveals differences in the two styles. The Associated Press and the United Press, for example, write the same story in two different ways—one for their radio wire, the other for their press service. Newspaper reporters often cram the essential information into the first few sentences to avoid losing anything vital if the story is cut. Transferred to radio, this technique would result in a construction so long and unwieldy that the listener would become lost before the announcer had arrived at the end of the first paragraph. Newspaper coverage of an event can also be much more extensive than the radio version, which, because of time restrictions, can relate only the main details.

The second important consequence of radio's existence in time is that listeners who tune in late or are called away during a program are likely to miss a vital part. The confusion that may result cannot be completely avoided; there are, however, some precautions that can be taken. The best example of how misunderstanding can be created by the listener's inability to look back in a program was

the 'Invasion from Mars,' presented by Orson Welles. Despite the fact that the broadcast was identified as fictional at least four times, the employment of a realistic newsflash technique led one million people who missed those announcements into believing that they were hearing the description of an actual event. The same program broadcast in South America created an actual riot. The newsflash presentation of a fictional event is now barred from the air waves in the United States.

An individual who tunes in in time to hear just part of a sentence can also receive a totally erroneous impression. The radio item 'Paris . . . France's chief of state, the French counterpart of Harry Truman, died today in a hospital' could lead a listener who heard only the last part of the sentence into believing that our President had passed away. The safeguard against such misunderstanding is to place the qualifying phrase or clause ahead of the item it modifies—never after. Quoted material may cause similar trouble. A statement by a leading statesman that 'War is imminent' must be clearly indicated as someone's opinion, both before and after it is made. If the statement is a long one, the expression 'Senator so-and-so continued' helps remind the listener that he is hearing opinion, not facts.

In general, the radio writer should summarize frequently, to let new listeners know where the program has been and where it is going. In drama writing, for example, a brief review between the acts helps orient new listeners. The frequent repetition of participants' names on interview and discussion programs accomplishes the same objective by helping listeners identify the speakers contributing to the program.

Consider the varied audience. The radio writer must never forget that his audience is the most diverse and haphazardly selected of any audience. All classes and kinds of people may be represented. This does not mean that he must necessarily try to interest all of them equally; in fact, we have said previously that radio needs more programs appealing to minority interests. But he must remember, for example, that a program designed for adults may include many children in its audience. Considering the desire of advertisers to avoid offending any of this diverse array of listeners, the development of stringent taboos in radio is easily understood. The writer is restricted in the words he can use, the plots he can construct, and the characters he can portray.

Many of these taboos constitute chains that should be broken. Some of them have been; for example, the barrier against the mention of venereal disease on the air has recently been lowered. It has been recommended, furthermore, that the late-evening hours be devoted to programs on an adult level that might not be suitable for children. Many of the taboos, of course, are criticized by no one. But whether right or wrong, they do exist, and the radio writer must be familiar with them.

Profanity, obscenity, and indecency are obviously out of place on the air and are expressly barred by federal statute. Any writer dealing with sex, marriage, or religion must use the greatest delicacy and good taste in his treatment. Stringent restrictions, similar to those in the movies, surround the presentation of crime stories. A criminal should not be presented as a sympathetic character, nor can the writer permit him to escape punishment for his misdeeds, although retribution need not be at the hands of the law. In the same vein, law-enforcement agencies and personnel should receive sympathetic treatment. The technique of crime should not be presented in such detail that imitation is possible. The use of drugs by characters can never be suggested as acceptable or desirable, nor should suicide ever be indicated as the proper solution to a problem.

Any affronts to special groups or established institutions are avoided by broadcasters. This means that the radio writer must be especially careful in choosing his villains. Programs that portray bank presidents as the heartless persecutors of widows, Mexicans as criminals, or pawn-shop owners as scoundrels will offend members of these groups. Whenever possible, the villain's origin and type should be so vague that he cannot be identified with any particular class or race.

To illustrate how easily offense can be given, there is the case of a radio program that depicted the history of dentistry. It began with an imaginary episode in which the world's first dentist, an Egyptian, started his work by assuring his patient that 'this won't hurt you a bit.' The intent was in the best of humor, but several sensitive dentists wrote letters complaining of what they considered to be ridicule of their profession. Another subject about which people are sensitive is that of deformities and infirmities. Jack Benny's wisecrack that Fred Allen was suffering from extreme anemia drew protesting letters from actual victims of this ailment.

Affronts to minority religious and racial groups, particularly those that might reinforce long-standing prejudices, are understandably prohibited.

Adapt to a solitary listener. The housewife alone at her tasks or the person listening by himself in an armchair does not want to be talked to as if he were a crowd. Moreover, the impersonal, indirect style, sometimes appropriate for material to be read, is out of place in a medium in which one person talks directly to another. For most types of programs, radio demands a writing style that is conversational, informal, and direct. The achievement of the naturalness and ease characterizing everyday speech should be a principal objective.

How can these qualities be attained? One simple method, often overlooked by beginning writers, is to use contractions consistently, as people do when talking. 'Let us look at the record. What has been done?' sounds stiff. 'Let's look at the record. What's been done?' is much better. The use of contractions can make any script sound more conversational. In writing dialogue for drama, it is an absolute must.

Another technique for achieving informality and directness is to ask questions that appeal to the listener as an individual rather than as a member of a mass audience. Relative pronouns should be used with care, since too many of them give speech a stilted, literary quality and can result in long and complex sentences. The active voice should be used whenever possible to maintain the vigorous, up-to-date quality of everyday speech. In talking, furthermore, thoughts are not consistently expressed with all the grammatical essentials usually considered necessary for material to be read. The quick break from one idea to another, omitting perhaps a subject or predicate, can sometimes help a writer to gain naturalness. Informality of construction is particularly important in writing dialogue.

Write to seize and hold attention. No radio writer can achieve success unless his scripts win the battle for listeners against competing programs and household distractions. The necessity of getting and retaining audience interest is one that can never be forgotten for a moment. A review of some frequently used techniques will serve to indicate how broadcasters approach this problem.

Writers often use a 'teaser' technique at the beginning of a program to catch attention. In a newscast the announcer may start

with a series of headlines that pique the curiosity without satisfying it, and thus hold the listener for the rest of the program. A few interest-rousing questions at the beginning of a talk or interview can accomplish the same objective. The announcer who says 'Stay tuned to this program to hear the most exciting gift offer ever broadcast,' is using a teaser technique.

Sometimes a scene is snatched from its normal place in the development of a drama and placed abruptly and arrestingly at the beginning of the program. 'The Big Story' starts in this way. The objection to this type of teaser, however, is that it is too obvious and artificial a method for seizing attention. A more common practice is to concentrate on getting the story started immediately by introducing an interesting character already in the middle of a compelling situation. The expository scenes that frequently begin movie and stage dramas can be fatal in radio. The dramatist who expects to hold his air audience must plunge his characters into action at once.

The writer of advertising copy faces a particularly difficult problem in gaining attention, since many people tend to stop listening when the commercial begins. This has been one reason for the flood of singing and sound-effects techniques; whether we like them or not, they do make us listen. One of the most arresting of such commercials was the one that began with the sound of a grinding automobile crash followed by a soft voice inquiring, 'Have you had your brakes tested lately?' Many times, the opening commercial is deferred until the story, newscast, or comedy routine is well under way. When the listener has had his appetite whetted by laughs or excitement, he can usually be expected to stay at his radio through the commercial, on the promise of more entertainment to come.

Once a listener's interest has been gained, other techniques must be used in order to hold it. The absence of visual stimuli usually calls for a faster pace in radio than is required in other media. Variety is also essential. The writer of documentaries, who may lack story value to hold his audience, usually depends on a swift interchange of speech, music, and sound effects to keep listeners intrigued. Norman Corwin, for example, is a master of this technique. The writer of music continuities must, in the same way, use diversity of approach in introducing various numbers. Sometimes

he places the spotlight on the performer, sometimes on the music, sometimes on still other aspects of the presentation.

The writer of talks should seek as much supporting material as he can get to maintain interest. Stories, analogies, and examples can all help to revive faltering attention. In the editing of newscasts, the addition of local angles to national news items can do much to make the events more vital and meaningful to listeners. An example would be to report the attitude of a local senator or representative on a measure that has just come before Congress. The news editor should also spread the important news throughout the program instead of concentrating it all at the beginning. He will probably start with his most interesting story to catch attention, but from that point the focus should shift constantly between important and less important news in order to keep interest high until the end.

A prime motivator of interest, which should characterize all programs, is the quality of authenticity. People will tend to listen to a person who sounds as if he knows what he is talking about. A drama program about truck drivers should realistically reflect the speech mannerisms and background associated with that occupation. One of the best routes to this objective is deliberately to insert into the script terms and expressions that are peculiar to the particular characters, background, or business involved in the drama. Thus, one of a writer's first tasks in writing about a special field is to acquire the vocabulary necessary to give every speech, character, and situation the ring of authenticity.

Write in terms of a clearly defined purpose. The importance of this requirement should be obvious to everyone, yet many beginning writers start scripts without any clear idea of what they are trying to accomplish. This fault can be especially harmful to drama. For example, this type of program can aim either to illuminate a particular character or to tell a story that will reflect a general comment on human nature. A writer confused in regard to which of these ends he seeks is likely to wind up by accomplishing nothing. Lack of a well-defined purpose can be equally damaging to the effect of other types of scripts. Let us cite three examples.

The function of most music continuity is to identify the numbers and add whatever information may enhance appreciation or enjoyment. It plays a role strictly subordinate to that of the music. Occasionally, however, the continuity takes its place as an integral

and outstanding feature of the show, becoming almost as important as the music. The 'Chamber Music Society of Lower Basin Street,' which featured jazz music presented in a burlesque of the style used in announcing symphony orchestras, was an example of such a program. Before he can do an acceptable job, a writer must certainly decide whether his continuity is to serve a mere connective and introductory function or whether it is important in itself.

In the same way, the writer of an interview should clearly understand the function of the announcer or interviewer. Is he merely to ask questions, or is he to be presumed to know something of the subject as well? If the latter is the case, he must be given an opportunity to comment interpretatively on the replies of the person being interviewed. The decision on this point will affect the writing of the entire program.

In the field of advertising, two types of commercials are generally recognized. Although the ultimate aim of both is to sell the product, the immediate purposes differ to some extent—purposes the writer must have clearly in mind in order to turn out effective copy. Sometimes commercials concentrate on making the audience remember the product name, on the theory that buying will eventually result as sort of reflex action to something well known. The writer of this type of copy must repeat the name over and over again, using sound effects, music, and rhythmic language to create an effect so 'catchy' that the listener cannot possibly forget it. The second approach is designed to secure an immediate sale rather than an ultimate one; the listener must instantly feel an uncontrollable urge to buy the product. When this is the objective, the copy writer must make the listener feel a need, argue the merits of the product in satisfying that need, and end with a call for action with 'buy-it-tonight' or 'don't wait—the supply is limited.' Many times, of course, both the 'remember-the-name' and the 'buy-the-product' techniques are used in the same commercial. But whatever the approach, the writer must have his purpose clearly in mind before he can write satisfactory copy.

In the preceding section we have discussed five imperatives that apply to radio writing in general. Some of them reflect the special adaptations required by the air medium, while others are rules that, while important in writing of any kind, assume special significance in broadcasting. To summarize: the radio writer must write ma-

terial that is clear when only heard, consider his varied audience, adapt to the solitary listener, seize and hold attention, and write with a clearly defined purpose.

Now we direct our attention to some of the special problems involved in writing drama. Drama is given this additional consideration not only because it is one of the most common types of programs, but also because the individual who can solve its problems can usually face the technical demands of other forms with ease and assurance.

Writing Radio Drama

Drama writing is, of course, a much larger field than its application in radio. We shall restrict ourselves, however, to the problems that arise directly from the fact that the radio writer, deprived of the use of visual stimuli, must achieve all of his effects in terms of what the listener hears. The proper use of sound effects is one important factor that concerns him. A number of his responsibilities in that respect have already been discussed in the chapter dealing with sound effects. We turn now to several other specific technical problems.

Setting

One of the first challenges faced by the writer is to create in the mind of the listener a picture of the setting or locale in which his play takes place. This can be done in three ways: (1) a sound effect can suggest the background; (2) the opening narration or the announcer's introduction can include a description of the setting; (3) the dialogue can refer to important aspects of the scene. When dialogue is used, care must be taken to avoid a stilted and unnatural quality in the conversation. A beginning writer might write something like this:

JIM: This looks like the place, all right. It's an old house with green shutters closed across the windows. Nobody's lived here for a long time. This is the place, all right.

This sounds awkward and forced. The following is better:

JIM: Wait a minute ... slow down.
BILL: What's the matter?

JIM: That house ... look!
BILL: What a wreck ... Hey! It's got the green shutters.
JIM: Right ... and it's deserted. This is the place, all right!

Dialogue, even though it serves as the eyes of the listener, must sound like normal, natural conversation.

An important point to remember is that the setting need not be pictured in detail for the radio audience. Early radio writers often began dramas with a complete description of the color and position of every piece of furniture in a living room. Actually, it may not even be necessary for the listener to know that a scene is taking place in the living room at all, much less that a brown buffet stands at stage right. Only the information that is absolutely pertinent to the story need be included; from that point on, the listener's imagination takes over the job of providing a setting.

Perspective

Every situation the writer devises must be visualized as occurring in a place that has a certain length, width, and breadth. Determining perspective in a scene—that is, deciding what illusion of space relationships should be projected—is a vital responsibility of the writer. Since sound is the only medium through which the listener can be reached, the problem of establishing perspective is approached primarily through the manipulation of volume levels in the scene.

The first step is to decide what part of the scene or what person in it is to be closest to the microphone. Generally, this 'on microphone' position is given to that element in the drama that is the center of interest. The volume level of the other sounds in the scene is then varied in relation to their distance from this center of interest. The voice of a person approaching the center of interest rises in volume until it reaches the loudness level of the person on microphone. The voice of a person leaving the center of interest fades down. Background sounds are kept at a level reduced in volume proportionate to their distance from the center of interest. All of these relationships must be perceived by the writer and be indicated by him in the script. The usual practice is to designate

sounds away from the center of interest as 'off mike' or 'faded.' When no direction of this type precedes a speech or sound effect, it is assumed that it is to be given in the full-microphone position.

Let us assume that a scene is being dramatized between a young lady at an upstairs window and a man speaking to her from the street below. Obviously, both of these characters cannot be heard with equal volume without destroying the illusion of perspective existing in the situation. The writer must decide which of the two characters deserves the focus of attention provided by the on microphone position; the other character's speeches must then be indicated as 'off mike.' One factor affecting this decision would be the number of lines spoken by each person. In general, when the interest is equally divided, the character who has the most to say is given the 'on mike' position.

The perspective problem in a courtroom scene involves more difficulties than the one just described, because of the many different places in which the microphone can be placed. The writer may put the judge, the jury, the spectators, the lawyers, or the witness with the microphone, but he cannot place all of them 'on mike' and still preserve the sense of space relationships so vital to the listener's visualization of the scene.

Having determined the relative microphone positions of various elements in the drama, the writer must be consistent in maintaining these positions; or, if he decides a shift in the focus of attention is necessary, as from the witness stand to the spectators, he must make the change so deliberately and clearly that the listener cannot possibly be confused. Alteration of the microphone position within a scene can be accomplished by an astute manipulation of fades and a careful identification of speakers when the new position has been assumed. Generally, however, for any given scene the writer should plan on establishing one center of interest, which retains the on microphone position throughout.

Another phase of the writer's perspective problem is the responsibility of projecting an illusion that people are moving about in a scene. The fade technique is the most usual method for accomplishing this objective, as illustrated in the following scene. This example also shows one method for switching the microphone from one character to another.

SOUND: (OFF MIKE) DOOR OPENS ... CLOSES

HARRY: Well, Eddy... Glad to see you.

EDDY: (FADING ON) Hello, Harry. I finally got here.

(FURTHER CONVERSATION)

HARRY: You'd better get going.

EDDY: Yeah, or I'll be late... So long, Harry.

SOUND: DOOR OPENS

HARRY: (OFF MIKE) Let me know what happens.

SOUND: DOOR CLOSES

This scene begins with Harry at the center of interest. His speeches are given 'on mike,' since there are no directions to the contrary. The movement of the other character toward him is indicated by the 'off mike' directions for the door sounds and the 'fading on' direction for Eddy's first speech. Notice, however, that as the scene ends, the center of interest switches from Harry to Eddy, as the microphone follows Eddy going out the door. This is indicated by the fact that the door sounds are now 'on mike' and Harry's last speech is 'off mike.'

The problem of indicating Eddy's further movement, now that the microphone is with him, becomes more difficult than it was when his voice could be simply faded up to full-microphone position. Instead of his moving toward us, we are now moving with him. One technique for conveying this impression is to bring in the sound of Eddy's footsteps as he walks out to his car. The introduction of street noises as the door opens, which become louder and louder as he approaches his car, can also contribute to the illusion of movement.

Another method for indicating the movement of characters from one place to another is to use a combination 'fade off' and 'fade on' technique, as illustrated by the following example. As the scene begins, two men are talking on microphone in the middle of a room.

1ST MAN: What's going on outside?

2ND MAN: I don't hear anything.

1ST MAN: (FADE OFF) I'm going to have a look. (OFF MIKE) Ralph ... Quick ... Come over here to the window!

2ND MAN: (FADING ON) What's all the excitement ... did someone commit a murder?

1ST MAN: Take a look at that, will you.

The radio audience, which began the scene with the characters at the center of the room, has now been taken to the window. Another way of indicating this movement would be to focus on the first man's footsteps as he walked to the window, and then have the second man fade on just as he does in the example above.

The problem of establishing space relationships is not a particularly difficult one, but the writer must be continuously conscious of his perspective responsibilities or the result may be a scene that is clear to no one but himself. In any event, the writer's failure to perform this function places the burden of figuring out relative microphone positions on the director. The steps to be followed in indicating perspective are as follows:

1. Visualize the space relationships existing in each scene.
2. Decide which person or part of the scene is to be at the center of interest.
3. Indicate by 'off mike' or 'fading' directions all sounds or speeches that do not take place at the center of interest.

Characters

A principal technical problem of the radio dramatist is to keep the identity of the character speaking clear to the audience. This is usually a prerequisite to the understanding of a scene, but in radio the identification is difficult to make, because the distinctions between people must be made on the basis of sound alone. The casting of actors whose voices are so different that they can be easily distinguished is, of course, a major necessity, but the writer can also assist in character identification if he follows these practices:

1. Have the characters use one another's names a little more often than is customary in stage or movie dramas. For any one character, use one name only; do not vary between a full name and a nickname, or the radio audience is likely to think that two people are involved.
2. Keep the number of characters on microphone at any one time to the smallest number necessary for an adequate telling of the story. The number of characters throughout the script should

also be kept as small as possible, but if care is taken to bring characters to the microphone in small groups, a fairly large number can be introduced without confusing the audience.

3. If a character is to be kept in a scene, give him something to say at frequent intervals, or the audience will forget he is there. If a person is not needed, he should be removed from the scene by means of an exit line rather than be permitted to languish into nonexistence.

4. Whenever possible, construct scenes involving persons whose voices normally contrast, such as a man and a woman.

Action

The portrayal of action presents many of the same problems that face the writer in picturing the setting. The listener must be given eyes to see what is happening; dialogue, sound effects, and narration can all serve this end.

If sound effects are used to picture action, the writer must be certain, of course, that the sounds either are self-identifying or are identified by something else in the program. When dialogue describes action, the problem is to include the necessary information without making the conversation completely unnatural and stilted. People involved in an exciting scene do not usually explain what is going on for one another's benefit. The narrator can give a clear picture of action, but his description must often come after the scene has been interruped or ended. Action presented in retrospect lacks the dramatic punch of action described as it takes place.

Remember that in radio only the action essential to the plot needs to be portrayed for the radio audience. A character may stretch his legs or scratch his chin during a scene, but unless these movements advance the story in some way, it is not necessary to tell the audience about them.

Dialogue

The first commandment for any dialogue writer is to write as people talk—an injunction calling for close attention to the rhythms and mannerisms of everyday speech. The following speeches, taken from student scripts, would be an impossible challenge to even the best actor trying to achieve a natural delivery.

'They told me to tie the horse to a tree, get out of sight, and then

come back to the tree to get Mary and the baby when they signaled with a horn. With reluctance, I and the horse followed directions.'

'While helping me in the barn, please be careful.'

'After much dickering, the thieves agreed to procure a horse for me, which they brought to the barn.'

'I lost the book which my father gave to me.'

'I do not understand what you mean.'

In order to convert this dialogue into realistic-sounding speech, the writer must shorten sentences, remove inversions, substitute informal words for 'literary' ones, drop the relative pronouns, and use contractions.

A specific dialogue problem in radio is to keep characters 'alive' for the audience by giving them something to say as often as possible. This requires a constant dialogue interchange; hence, speeches are generally restricted to sentences or parts of sentences, rather than polished, finished paragraphs. If an examination of a script reveals speeches appearing in big, thick chunks, it can generally be assumed that a breaking-up process is in order, to create more interchange among the characters.

Narration

From the very beginning, radio dramatists have employed narration as a principal technique for helping to relay a story to the audience. Used effectively and consistently, it is one of the most helpful tools in the professional writer's array. In the hands of beginners, however, it is often awkward and obtrusive, becoming, in some cases, a mere crutch used to prop up a sagging script after other resources have broken down. Thus, a drama with no narration at all in half its length will suddenly call on the announcer for a page of narration to extricate a writer from a hole into which he has worked himself. Faults like this have caused some people to frown on the use of narration. Narration properly belongs in radio, but to be effective it must be employed intelligently and, above all, consistently.

1. *Third-Person Narration.* The narrator who tells the story in the third person stays 'outside' the drama, explaining directly to the audience what is happening to other people. Most daytime serials use the announcer in this way. In documentary programs the function of narration is often divided among several voices, with the

change from voice to voice helping to add variety to the program. A further adaptation of the third-person technique is to include not only a storyteller but someone to whom the story is told—a practice often followed in children's programs. An 'Uncle Ned' tells the story to a 'Little Jane,' who helps out by making comments or asking questions. The mechanics involved in this type of interchange, however, consume a considerable amount of time. Narration delivered by one person can relay the same information in a shorter period.

2. *First-Person Narration.* As contrasted with the third-person narrator, the first-person narrator is very much a part of the story. In fact, he is often the main character, who describes situations in which he plays the major role. Sometimes the narration represents the thoughts or 'stream-of-consciousness' of the speaker, rather than a story told directly to the audience.

The use of a first-person narrator adds a great deal of flexibility to the dramatic form by permitting transitions from dialogue to narrative portions without the often awkward break that marks such transitions when the third-person technique is used. The presentation of narration in the third person usually requires that the current scene be ended and a new one be started at the conclusion of the narration. The first-person narrator can break out of a scene, present a thought or comment to the audience, and then continue with the scene. The following example illustrates this:

ROBERTS: Nice to see you again.
JEFFERS: Yes, it's been a long time.
ROBERTS: Seen Bertha lately?
JEFFERS: (NARRATING) There it was again. I'd just met him and here he was asking about Bertha. Was it just a casual question or did he guess... Did he know? I tried to be casual when I answered...
JEFFERS: Come to think of it, I haven't seen Bertha lately... Have you?

This type of narration also solves the awkward problem of providing the audience with essential facts without placing a strain on dialogue. Another advantage of the first-person technique is that it can invest a script with a completely dramatic quality throughout,

since the narrator is a character in the story directly experiencing the impact of the events.

Sometimes a beginning writer is guilty of permitting a character, who up to that point has talked only with others, to burst abruptly into a long soliloquy, during which the situation is explained to the radio audience. This fault, akin to the one in which the announcer is called on suddenly for narration, usually comes when a writer finds it essential to get certain information to the audience and can think of no way to do it except through a long monologue. This practice is awkward and amateurish and does not constitute first-person narration. Proper use of the first-person technique demands that a character be established as addressing the audience from the beginning of the program.

3. *Second-Person Narration.* Although rarer than the other two, the second-person narrator can perform unusual and distinctive service in the hands of a clever writer. In its general effect, the second-person method stands between the third- and first-person techniques, being more subjective than the third, but not so subjective as the first. A current example of the use of this technique is 'The Whistler' series, in which the narrator, invested with the faculty of omniscience, including the power to forsee the future and to peer into men's minds, addresses the leading character, taunting him with his mistakes and weaknesses and exulting in his final defeat. 'The Big Story' program places its stories in the present tense through the use of the second-person technique, which thus enhances the suggestion that the events are actually taking place at the moment of listening.

Of these three narrative techniques, the writer usually adheres to the use of only one in any given script. When first-person narration is used, consistency in point of view is also important. The story should be told by just one of the characters in the drama, although this rule, like most, can be broken by a writer skillful enough to compensate for the resultant loss of unity.

Transitions

A change in the action of radio drama in time, in place, or in both constitutes a transition. The essential requirement is that the nature of the change be completely clear to the audience. This does not mean that in every case the exact lapse of time or the precise location of each scene must be explained, but the audience must not be

permitted to become lost or confused. Usually, a transition comes between scenes, although an occasional change in place may occur without bringing the scene to an end.

The several techniques that may be used to effect transitions are described now in terms of what takes place between the scenes.

1. *The Pause.* The simplest transition device is a brief cessation of sound between scenes. The nature of the change in time or place must be made clear either as the current scene concludes or as the next one begins. Although the pause is simple and easy to produce, it has the disadvantage of sounding awkward and abrupt.

2. *The Fade.* Of the various types of fade transitions, a combination of a fade-out and a fade-in, separated by a pause, is very common. The following example illustrates this:

HARRIS: It's a quarter to one now. I'll get the information for you and see you at the corner at three o'clock.

MAXWELL: See that you do. This thing's gone far enough. (FADE) For your own good, don't be late. (PAUSE)

MAXWELL: (FADE IN) Right on time, I see... It's just three... All right, Harris, what's the story?

Emphasizing the time element in both the closing and the opening scenes helps to make the transition completely clear. Other possibilities for this transition would be to fade only the lines of the closing scene and start the next scene in full volume, or to do just the reverse. When the fade technique is used, the writer should assume that the faded lines will not be heard by the audience; consequently, these lines must be composed of unessential words that the audience does not need to hear in order to follow the program.

3. *Narrator.* The advantage of the narrator transition is that it provides the writer with the clearest and most straightforward method of indicating exactly where and when the next scene begins. The narrator transition is particularly suitable in programs desgined for children, since youngsters are likely to become confused by more subtle techniques.

4. *Sound Effects.* The sound effect can, if used properly, make clear exactly what kind of transition in time or place is occurring. Sound may become dangerously confusing, however, if the audi-

ence has difficulty identifying it—a hazard arising when the writer devises too complicated a sequence. An example of a simple sound-effect transition that effectively indicates a change in both time and place is indicated below. Note the assistance of dialogue in making the nature of the transition clear.

SOUND: AUTOMOBILE ENGINE IN BACKGROUND

GUIDE: You've seen the sights of every day San Francisco, sights you might have found for yourself. But settle back now, ladies and gentlemen. In five minutes you'll be in a different world ... the mysterious world of the Orient.

SOUND: AUTOMOBILE UP FULL 12 SECONDS, THEN FADE DOWN UNDER

GUIDE: And here we are, ladies and gentlemen, San Francisco's Chinatown!

5. *Music.* The most familiar of all transition devices, the music bridge, acts as a curtain to close a scene. However, because the music itself can do little to explain the nature of the transition, this information must be conveyed by dialogue, sound, or narration. The big advantage of music is that it can reinforce the mood or atmosphere of the situation just ending and prepare the audience emotionally for what is to come. The line immediately preceding a music transition is usually loaded with emotional power and meaning to provide a dramatic 'tag' for the scene. This is in contrast to the faded line, which must be deliberately written to include ideas the audience can afford to miss.

While on the subject of music, we might list some other functions it can perform in drama. In addition to providing transitions, music can (a) open a program, (b) serve as a final curtain, (c) be kept in the background to enhance the mood or atmosphere, and (d) be brought in briefly to emphasize a line or idea with a sharp chord. Musical punctuation of this last type is usually called a 'sting' or 'stab.' One word of warning is needed with regard to the use of background music. Beginning writers, conscious of its profound emotional effect, often put music into the background of any scene in which there is the slightest suggestion of mood or emotion.

Such overuse implies that the writer either does not trust his dialogue to create the effect he is seeking or else has no confidence in the actors. Although occasionally a scene may benefit by the addition of appropriate music in the background, the main dependence should be on speech and sound effects. No listener should have difficulty in distinguishing a drama program from a musical concert.

We have described five different means of denoting transitions: the pause, fade, narrator, sound-effect, and music. These techniques may be used separately or, as is frequently the case, in combination. Many scripts employing narrators, for example, end each scene with music. Sound and music are often used together. The only two techniques not often encountered in combination are a speech fade followed by a music cue, since by its very nature the fading of a line prevents the dialogue 'tag' that usually precedes a music transition.

Special Devices

The filter microphone and the echo chamber can often be used to create special effects impossible to attain by ordinary means. The Sonovox, a device that permits sounds such as train whistles or fog horns to be articulated into words, has been frequently used in commercials, but it has limited use in drama. The effects possible through the use of these special devices can be divided into those which create a realistic sound and those which create a nonrealistic one.

1. *Realistic Uses.* Since the filter microphone removes certain frequencies normally heard in the human voice when broadcast with a regular microphone, it is commonly used to suggest a voice being heard over a telephone or over a radio of the police-call type. The echo chamber is used in those dramatic situations taking place in areas where the voice receives more than ordinary reverberation. Scenes in such places as mines, barns, and tunnels commonly receive this treatment.

2. *Nonrealistic Uses.* The thinning out of the tone accomplished by the filter microphone helps to endow the voice with a supernatural, eerie quality. Examples of dialogue that often benefit from filter treatment are speeches from the voice of conscience, a spirit from the other world, the Deity, or the expression of a character's

thoughts. The echo chamber can perform somewhat similar functions. The voice of a character portraying a genie in an *Arabian Nights* story, for example, can acquire the desired impression through the addition of an echo.

These special devices, when used temperately, can contribute materially to a program, but overuse blunts their effectiveness. Keeping a character who talks continuously throughout a script on a filter microphone would destroy the contrast with normal dialogue, which is one of the filter's major advantages. Both the filter and the echo chamber, when overused, merely suggest bad radio reception.

Writing Adaptations

One of the most common types of radio drama is the adaptation of material that has originally been prepared for another medium. Books, plays, movies, short stories, poems, history, even essays—all have found their way into the radio medium. The fundamental problem of the adapter is to translate the material written for another medium into the radio dramatic form, faithfully retaining the qualities and purpose of the original, while making the adjustments called for by the demands of radio. This means, first of all, that the adapter will make only those changes dictated by the necessities of translation into radio. It means, secondly, that he will be certain to make all the changes required for effective rendition in radio; any failure to do everything he can to make the radio version as effective as the original work would be as inexcusable as unwarranted changes.

Although the task of the writer differs somewhat depending on the nature of the material to be adapted, certain general problems arise very frequently. If the work is copyrighted, he would, of course, have to obtain permission before the script could be broadcast.

One of the major problems facing the adapter arises from the time limitation of radio. Almost always, a shortening and speeding up of the original work is required. Usually, the program can include only the main plot—a restriction that eliminates the subplots and digressions indulged in by the original author. In some cases it may be possible to present only a small part of the main plot. A writer faced with the problem of adapting *David Copperfield* into a half-hour radio program obviously could not present the entire book.

There are three things he might do: (1) dramatize high points throughout the book, tying the various scenes together with narrations; (2) take only one incident and dramatize it completely; (3) restrict the adaptation to one thread or phase of the story—as, for example, the marriages of David Copperfield.

In the same way that subplots are eliminated, the adapter must usually cut out all characters not absolutely pertinent to the part of the story he is telling. In some cases the functions performed by several characters can be combined in one person. In a few instances, however, new characters may have to be added. The adapter of 'The Pit and the Pendulum' found it necessary to invent a wife for the hero in order to tell a story that Poe had presented entirely in terms of what went on in the man's mind.

In the case of stage plays and movies, dialogue must be condensed, particularly the dialogue that does not directly advance the story, or dialogue that is meaningful only when the visual aspects of the presentation are available. When the original work is a short story or novel, however, the adapter may have to replace narration and description with new dialogue. He should also be acutely and continually conscious of his responsibility to make everything clear to an audience that can only hear. Dialogue must often be invented to indicate those essential aspects of setting and action that are seen in a movie or play, or described in a novel or story.

Because of the relative freedom of other media as compared with radio, the material being adapted is quite likely to transgress in some way the restrictions that surround broadcasting. Whether he likes it or not, the adapter cannot argue an effort to be faithful to an author's work as justification for a violation of radio's taboos. For this reason, changes in plot, in dialogue, and sometimes in the entire approach are often unavoidable. The radio adaptation of the play, *O Mistress Mine,* for example, belied the title by revealing that the two main characters had been safely married from the beginning of the story.

Sometimes the adapter finds it expedient to include a scene not existing in the original work as part of the radio presentation. This may be necessary because an idea that has sufficient impact when read as a sentence or two in a story requires an entire scene to impress it on a radio-listener's mind. Sometimes, also, it is more

effective to present as an actual scene a situation merely talked about in a play or movie.

We have learned already that the necessity of getting started immediately, so urgent in radio, is often not shared by the other media. The stage and movie can afford to employ exposition at the opening, and a novel may take 30 pages to get the story going. The adaptation, like any radio drama, must catch the attention of the audience immediately. To accomplish this objective, a dramatic and attention-getting scene that occurs late in a play may have to be shifted to the beginning. Furthermore, the requirement that a play be divided into acts taking place on a limited number of sets may force the playwright to present events somewhat out of their natural order. A rearrangement of the order of scenes is perfectly justified if a more natural flow of the story is gained thereby. The limitations of the original medium should not be carried over into radio.

The adapter should realize that some damage to the author's original may be inescapable because of the nature of the radio medium. The slow development of a character, for example, which can be portrayed so well in a two-hour movie, is virtually impossible in the half-hour radio program. Unfortunately, many characters are reduced to skeletons in radio drama, and the emphasis is predominately on plot. It should also be understood that the effectiveness of some material is so completely the result of characteristics that are uniquely the property of the original medium that no successful adaptation can be expected.

The Drama Format

The term 'format' refers to the appearance of the script on paper. The ideal format in radio is one that includes all of the necessary information set forth in such a manner that the responsibilities of each participant are clear at a glance. The reason for this requirement becomes obvious when we consider the brief rehearsal period characteristic of radio production. The script must be set down so clearly that the middlemen between the writer and the ultimate consumer—the sound technicians, actors, and musicians, who are reading the script through for the first time—can see exactly what is required of them. The sample format below illustrates some of the common methods for achieving this essential clarity.

(MUSIC: TRANSITION ... TUMULTUOUS, EXCITING ... TO FINISH)

NARRATOR: This is it, Jim Ryan. Can you stop that crowd? It won't be pleasant if they break in and take your prisoner, will it, Jim? Your own careless words started that mob... Listen to them, Jim. They're outside your window, yelling for blood.

SOUND: FADE IN EXCITED CROWD, HOLD IN B.G.

NARRATOR: As you sit there with your deputies, you know you must stop that mob or face ruin. Will you stop them with words or bullets, Jim?

SOUND: CROWD UP, THEN UNDER, HOLD IN B.G.

HARKNESS: Sounds bad, Sheriff. They're getting nastier by the minute.

JIM: Any chance of them talking themselves out? If I thought ...

SOUND: (OFF MIKE) DOOR OPENS ... CLOSES

JIM: Holmes, what's the news?

HOLMES: (COMING ON) (BREATHLESSLY) Bad, Sheriff... There's a bunch coming this way with a battering ram.

JIM: How long before they get here?

HOLMES: Three minutes at the most.

JIM: This is it... Hand me my gun and open that door.

HARKNESS: Careful, Sheriff.

SOUND: DOOR OPENS. CROWD NOISE UP

There are several things to be pointed out in this format.

1. Sound and music notations are indented and underlined to differentiate them from character designations, with parentheses around the music to distinguish it from sound. Sound directions are kept completely separate from dialogue, to aid the sound technician in following his cues. A contrary practice is to put the sound directly into the dialogue. This method shows exactly how sound and speech are to be co-ordinated, as the following excerpt indicates.

```
JIM:        Any chance of them talking them-
            selves out? If I thought ... (OFF
            MIKE DOOR OPENS ... CLOSES) Holmes,
            what's the news?
```

With sound inserted into dialogue in this manner, the actor can see that his speech is not finished just because a sound intervenes, but the sound man's responsibilities are not nearly so obvious as complete separation between dialogue and sound directions makes them.

2. The script is double-spaced. A single-spaced script virtually invites an actor to skip an entire line. A further refinement is to number each line along the margin—a practice that permits the director to indicate quickly the location of portions to be cut.

3. Dots are used to indicate pauses. If a speech runs over one page to the next, it is a good idea to write (MORE) under the last line to remind the actor that his speech continues.

4. Character designations in the actor's column are consistent. The Sheriff is not called Jim once and the Sheriff another time.

5. Everything not read into the microphone is typed in capital letters to differentiate it from speeches. This applies to character designations, music, sound effects, and directions to the actors.

The details of format differ to some extent from situation to situation, but the example above represents a good method for preparing a clear, easily followed script. In addition to following these practices, the writer can contribute to efficiency in production by summarizing on a title page the characters, type of music, and sound effects required for the program.

Common Mistakes of the Beginning Writer

An examination of many student-written scripts has indicated that beginners in radio writing are prone to commit a number of common mistakes. Many of the main points considered in this section, as well as some others, are referred to in this list of faults to be avoided.

1. The writer fails to think only in terms of sound. This lack is often evidenced in sound-effects directions. Does the direction, SOUND: WALK DOWN STREET, mean footsteps or automobile horns?

2. The sound designations in beginners' scripts frequently become catch-alls for information meant for the participants in the program. The following item was culled from a student script: SOUND: VOICES ARE SILENT. Obviously, this is a direction that belongs anywhere but under sound.

3. The script is too complicated in its use of sound, music, and special devices. Do not splurge in filters, echo chambers, and elaborate music and sound effects unless your group has the facilities to produce them. The director will have to rewrite a script that is beyond the reach of his production facilities.

4. Changes in time or place are made without indicating the nature of the transition.

5. Characters make speeches to each other in big, massive chunks of dialogue. Break up speeches to achieve a quick interchange.

6. So many characters are put into a scene at one time that it is difficult for the radio audience to distinguish among them.

7. A character is permitted to 'die' as far as the audience is concerned, because too great a time elapses between his speeches.

8. Characters suddenly start talking to themselves as they describe what is happening in a scene. Such unmotivated monologues should be avoided; so, too, should a long narration suddenly and inconsistently brought into a script to get information to the audience.

9. The writer fails to use contractions, and the result is literary, stilted dialogue.

10. The writer does not complete his job, leaving part of his work to the director. A frequent deficiency is a failure to indicate the perspective in a scene, and therefore the director must figure out which characters and sounds are 'off mike.'

The Radio Writer's Challenge

In this chapter we have restricted ourselves primarily to a discussion of the writing techniques required as a result of radio's special demands as a medium. A consideration of writing in general, though beyond the scope of this book, is nevertheless of the greatest importance to the radio writer. We repeat the statement with which we began this chapter—that, to be a success in radio, a writer must first of all have command of basic writing techniques.

The accommodations required by radio, as discussed in this chapter, have sprung from an analysis of radio's unique claims as

they are reflected in current writing practices. The real challenge facing our writers of the future, however, is not to follow current methods slavishly, but to expand the power of the medium by introducing new ideas and techniques. Many of today's scripts are smooth and slick; very few of them are notable. Radio's voracious appetite for material has encouraged writing according to a formula, which becomes so rigid in many cases that every twist and turn of the program can be predicted ahead of time. Our great writers of the present are men like Morton Wishengrad, Norman Corwin, Archibald MacLeish, and Arch Oboler, who have escaped the stultifying influence of the formula by doing things that have never been done before. In the same way, our great writers of the future will extend radio's reach by inventing new techniques. The only limitations are those inherent in the nature of radio itself. Beyond that, the good writer can virtually make his own rules.

Projects and Problems

1. For class discussion: What are the essential differences between first-person narration and the unmotivated monologue in which a character in a drama suddenly starts talking to himself?
2. Analyze the methods used to gain attention on the radio programs of a single evening, and report your findings to the class.
3. Compare the newspaper and radio coverages of the same event, noting what in the newspaper report was not included in the radio broadcast.
4. Listen to a radio drama and prepare an analysis of the various types of transition techniques used.
5. The following exercises illustrate various types of problems met in adapting material for radio use.
   a. Read 'The Great Stone Face' by Hawthorne and 'The Bet' by Chekhov, two stories that present problems for the radio writer in that they are primarily 'idea' rather than 'action' stories and cover a long span of time. In class discussion consider the following questions: (1) From whose point of view would you tell each story? (2) How would you introduce sufficient movement and action into the stories to hold the attention of the radio audience? (3) What devices would you use to indicate the passage of time?
   b. In adapting *Pinocchio* for a 15-minute radio program, would

you try to cover the whole story, to present just one scene, or to follow one theme through the book?

c Read *Hansel and Gretel* and *Bluebeard,* considered by many to be classic fairy tales, and decide whether you would make a literal adaptation of the stories for an audience of young school children. If changes are decided on, what would they be?

d. Read the short story, 'Two Bottles of Relish,' by Lord Dunsany and decide in class discussion whether it is suitable for radio dramatization.

6. Compare the radio advertising and the magazine advertising of a company that uses both media, and analyze the differences between the two types.

7. The following exercises present problems in the writing of continuity for music programs.

   a. Select several songs and orchestral selections from a popular light opera or from grand opera, and for a half-hour program write continuity that will outline the story and provide a setting for each of these numbers.

   b. Write continuity for an hour program featuring the following numbers:

      1. Overture to *The Barber of Seville*—Rossini.
      2. *The Siegfried Idyll*—Wagner.
      3. *Symphony No. 7,* First Movement—Sibelius.
      4. *First Piano Concerto,* First Movement—Tchaikovsky.

8. For a program featuring either Beethoven's Third Symphony, the *Eroica,* or Tchaikovsky's Sixth Symphony, the *Pathétique,* write a brief episode dramatizing events connected with the writing of these compositions.

9. Arrange the items on the front page of your newspaper for a five-minute newscast, and explain your reasons for the sequence you select. Rewrite these items for actual radio presentation.

10. For class discussion: What can be done to raise the standards of radio writing? Consider the following questions: (a) Are monetary rewards high enough? (b) Do radio writers receive sufficient recognition? (c) Is an attempt to raise the standards of the radio audience the proper approach?

FOURTEEN

Directing Radio Programs

After a broadcast has been planned and the script written, the show must be rehearsed and put on the air. The aim of this production process, as it is called, is the realization, to the fullest extent, of every potentiality inherent in the program. This objective can be gained only by a complete and harmonious co-ordination of all the elements composing the broadcast—a responsibility that rests on the director. He takes his place, therefore, with the writers and the performers as a key person in the success of a radio program.

Production Personnel

Radio is still too young for the evolution of nomenclature to have reached the stage where complete uniformity exists throughout the industry. People who perform similar functions are given different titles from network to network and station to station. The names below, however, are the most frequently employed terms and will serve to distinguish the various functions even though the exact title may not be used in every situation.

The Producer

In a sense the producer does not belong in this discussion at all, since he begins playing a part in program presentation long before any direction is necessary. But considering the fact that many producers carry out the function of direction in addition to their other duties, it will be well to get their contribution clearly in mind. The

radio producer, like his counterpart in the motion-picture industry, is the person assigned full responsibility for an entire show; in fact, he may have conceived the idea for the program or series in the first place, writing the script himself in some cases, in others commissioning someone else to do the job. In any event, the producer is almost always the final authority on the selection of the script. In addition, he may assign a budget to the program and determine how much is to be spent for each item. He may negotiate for the appearance of important guest stars. He assigns a director to the program, unless he decides to carry out that function himself. In short, the producer supervises all phases of program presentation from the time the idea is born to the actual broadcast.

The Director

The task of the director is to rehearse the program and put it on the air. Obviously, this is a much more limited responsibility than that of the producer. The director usually has no authority over program content; in extreme cases he is not even permitted to change a line of script without getting permission. The choice of actors is usually the director's job, although this task may be performed by a casting director, who selects the actors for all the programs presented by a particular station or advertising agency. Despite these limitations on his authority, however, the director plays a vital role in production. In rehearsal he is the absolute boss, telling participants what to do and how to do it, with the objective of coordinating everyone's efforts in such a way that the best possibilities in the script are realized. When broadcast time comes, he guides the cast through the performance. As stated before, the producer of a program may also direct it. In some stations the terms 'producer' and 'director' are used synonymously, but the two different functions we have outlined should not be confused.

The Production Man

In complicated productions the director often needs an assistant, who takes over responsibility for such details as the timing of the show. This person is usually called the production man. The term is also used in various situations as a synonym for director, or to refer to those directors whose work is restricted to the production of nondramatic programs. When a show is produced on a network by an advertising agency (a very common occurrence), the director

is assigned by the agency, while the network assigns a production man whose primary duty is to prevent violations of network policy. He may also assist with details of production.

The Engineer

The engineer, though not strictly a member of the production department, plays such a vital role in putting a program on the air that it is well to consider him as carrying out a production function. The engineer sits at the control board during rehearsal and broadcast, regulating, under the instructions of the director, the over-all volume of the show and the relative volume of its various elements. It is interesting that in England the actual handling of the controls is left to the director, who 'rides gain' in addition to his other duties. In the case of programs produced in more than one studio—a frequent practice in England—the director must also flash cues to the performers by means of lights, and switch the various studios into the broadcast at the proper time.

The Assignment of Production Personnel

The tendency, mentioned in chapter 11, toward specialization of activity as a radio enterprise gets larger is illustrated in the directing field. In a station, a director might in succession produce a talk program, a five-man musical ensemble, a drama, a discussion, a newscast, and a football broadcast, all on one day. In the network he is likely to specialize in certain types. Some directors, for example, become experts in the production of drama programs, while others make music broadcasts their particular interest. Specialization becomes most complete in the advertising agency, where a director's or producer's job often depends on the continuance of the particular program with which he is associated.

The Director's General Responsibilities

Before examining the specific routine to be followed in preparing programs for presentation, let us consider some general qualifications of personality and performance that are necessary for the highest directing achievement. These qualifications are itemized now in terms of the general obligations a director must fulfill in conducting rehearsals and guiding programs on the air.

The Director Must Lead

The basic function of the director—that of correlating the various elements of a program into a unified whole—obviously calls for a high degree of leadership. Nothing will start unless he motivates it. Like the general in command of a group of forces, he must decide on the objective to be gained and organize the effort necessary to achieve it, assigning each person a particular function and supervising the exercise of it. This calls for the creation of a precise production plan that proceeds undeviatingly from the formlessness with which most rehearsals begin to the polish of the finished product. The watchword of the director must be initiative; he cannot hang back waiting for someone else to take the lead. Indecision and hesitation or deficiencies in planning will squander valuable rehearsal time. Even more damaging, a failure to exude confidence and trust in his own judgment (the result of timid or overcautious leadership) will cause him to lose the respect of his performers.

The function of leadership does not imply that the director should employ dictatorial ruthlessness in rehearsal. Getting the best effort from each performer depends on a subtle, psychological handling of people whose emotions, temperamental by nature, may be further strained by the pressures of broadcasting. The best performance will be inspired by the director who knows when to drive, when to let up, when to criticize, and when to encourage and praise. Above all, he must be careful to avoid working his actors so hard that by the time the broadcast arrives they are too tired to give their best performance. A sympathetic handling of people is in no way inconsistent with crisp, firm direction; in fact, it is a manifestation of the finest leadership possible.

The Director Must Set the Proper Pattern

By virtue of his leadership, the director sets the tone for the entire rehearsal and broadcast process. A lackadaisical and careless directorial approach will generate a similar attitude in performers. A director obviously willing to accept second-grade work can never hope for more than a second-rate production. On the other hand, a serious note in the director's manner and an unceasing demand for the best performance the participants can give will be reflected in a response on the part of the entire cast that can only benefit the program.

One very important factor in this problem of setting the tone is the director's reaction toward the script or program he is required to produce. During a week of broadcasting a director may be called on to work with many programs that do not excite him from an artistic point of view. That feeling does not alter his obligation of producing the best possible program out of the material he is given. An almost fatal hindrance to the attainment of this objective is to start a rehearsal with the words, 'This is a bad script, but we'll do the best we can with it.' Actors cannot be expected to give their all if they are told at the beginning of the rehearsal that in spite of what they do, their efforts will not be worth while anyway. One famous director made the statement that before he begins producing a program, no matter what it is, he says to himself, 'This good script is going to take the best I can give.' Certainly, this kind of approach is conducive to achieving the full potentialities in a given program, which is the director's basic responsibility.

The Director Must Be a Master of Detail

The ability to keep track of a great many different things all happening at the same time is an essential requirement for the director. On the air, for example, he may be faced with the problem of picking up 30 seconds in a 15-minute program—a task he must do without neglecting his other duties of giving cues, keeping the various sounds balanced, and listening to the program as a whole. In rehearsal a multiplicity of details faces him: actors must be coached on the reading of lines; music must be dovetailed with the rest of the program; the sound effects must be evaluated and co-ordinated with lines; and all of these matters must be taken care of in the atmosphere of continual crisis which characterizes most rehearsals and broadcasts. Only those people who can remain coolly alive to their many responsibilities in such circumstances, executing each of them with precision and timeliness, should ever consider the occupation of production directing.

The Production Routine

The major principles and techniques of direction, which we now consider, are explained in terms of drama production, since the drama confronts the director with one of his most complicated and challenging problems. Anyone who can do an effective job in this area can usually apply the techniques to the production of other types

of broadcasts. Moreover, drama, as we have pointed out before, is one of the most frequently heard radio forms. The various steps in production are considered in the order in which they generally appear. For those matters, such as timing, that come up more than once during the production process, a discussion of the problem as a whole will be included, as well as references to each of its phases as it occurs in the sequence.

Studying the Script

In order to determine the requirements for a production, the director must precede any rehearsal with a careful analysis of the script. Failure to carry out this preliminary study in a conscientious manner may result in a waste of rehearsal time while the director ponders decisions he should have made long before; it may even cause a rehearsal to start minus vital equipment, the necessity for which the director has overlooked. The fully prepared director, on the other hand, can spend every second of rehearsal in actually putting the show together. This preliminary study of the script should be undertaken with several questions in mind.

1. *What is the purpose of the program?* Is the program designed to educate or merely to entertain? Is it serious in nature, or is the primary objective to produce laughter? Into which of the various drama categories does the program fall; should it be handled as a farce, satire, comedy, or tragedy? The determination of the essential purpose of the show becomes the basis for many future decisions regarding treatment, casting, and general approach.

2. *Is the script producible and complete?* Primarily, this question involves a check on the work of the writer with reference to a number of different factors. The music and sound-effects requirements of the script must be evaluated by the director in terms of the need for the various effects and the possibilities of producing them. The writer may have indicated unnecessary background music or called for sound effects that serve no essential purpose. Some of the effects listed may be impossible to produce. A director depending on music from records, for example, can produce music 'stings' or 'stabs' only with great difficulty. In such conditions, he is usually wise to revise the script. The same is often true of sound-effect demands. It is obviously a waste of time to turn a script over to a sound technician without eliminating or rewriting those effects that are too complicated for the facilities available. An additional

responsibility in regard to sound is to make certain that each of the effects is clear and identifiable.

The perspective situation must also be studied in this preliminary period. A careful writer will have indicated all 'off mike' positions, but when this has not been done, it is up to the director to decide which element will 'have' the microphone in each scene. (See the discussion of perspective in chapter XIII.) Even if the writer has been definite in this matter, a good director will think through each situation to determine whether he agrees with the writer's decisions. Sometimes he will discover that greater clarity or dramatic effectiveness can be gained by making changes.

In the preceding chapter we said that lines designed to be faded must not contain any information essential to an understanding of the play, inasmuch as the audience will not hear the entire line. Often directors must add words to lines for fading purposes, because careless writers have designated as 'faded' words that the audience must hear. Another habit of writers is to leave the devising of lines in certain situations up to the actor, e.g. scenes of meeting and leave-taking, or reactions from a crowd. Sometimes this practice is acceptable, but if the director does not wish to put quite so much faith in his actors, appropriate lines must be prepared for these scenes.

This editing of script is of a fairly minor nature when the program has been prepared by a professionally competent writer. If the script has come from less experienced hands, a thoroughgoing revision, amounting in some cases to complete rewriting, may be necessary.

3. *Is the script of proper length?* By merely glancing through a drama script, an experienced director can tell about how long it will run on the air. If it is obviously too long, he should begin thinking about cuts immediately. Potential cuts should also be indicated in those scripts that appear to be the proper length; then if a cut does become necessary, the director will not have to use rehearsal time in deciding what can be eliminated. A greater emergency exists if the script is too short, since additional material will have to be written.

4. *What will the program require?* With the script evaluated for completeness and length, the director is in a position to determine what he will need for the broadcast. The acting requirements are, of course, a primary consideration. A study of the types of charac-

ters in the drama is an essential preliminary to the important task of casting the show.

The music and sound-effect needs must be evaluated in the same way. An orchestra provides the most flexible and satisfactory music, but because of budget restrictions, the director may have to be satisfied with an organist or recorded music. While he is deciding on the musical demands of the script, the director should determine the manner in which the music is to be introduced. For example, will the music used for transitions be faded in under a line, or will it be brought in full with a short pause, usually called a 'beat,' intervening between it and the dialogue?

Finally, the director must estimate the time needed for rehearsal and the type of studio required. A simple, straightforward program with a small cast and no particular production problems needs less rehearsal time than a program involving a large orchestra, a chorus, a big cast, and intricate sound sequences. Budget is also a factor, of course, in deciding the length of rehearsal. Actors, musicians, and sound technicians are permitted by union rules to rehearse a specific period, proportionate to the length of the program on the air, for which they are paid a specific lump sum. Any extension of rehearsal beyond this minimum calls for extra pay. Many times a director has no choice in determining rehearsal length but is given a certain period during which he must prepare his show.

The evaluation of studio needs must take into consideration not only the type of regular studio required but also the question of whether special facilities, such as an echo chamber or chairs for a studio audience, are needed. Usually, of course, a director is assigned a studio appropriate to the production at the time he is given the script.

Marking the Script

As a result of studying the script, the director should arrive at a clear understanding of the effect he desires to achieve with the program. His next step is to mark the script for guidance in rehearsal and broadcast in accordance with the decisions reached on the various points just discussed. This marking will indicate where certain definite actions are required on the director's part, and may include warnings of actions to come. For example, each place in the script where the performers are to wait for a signal before continuing should be clearly indicated as a 'cue.' Another

example of helpful marking is to indicate, by drawing lines, exactly where background music or sound is to accompany dialogue. When microphones are to be turned on and off during a broadcast, the director can remind himself to warn the engineer ahead of time by placing a mark just ahead of the place where the adjustment is due.

In addition to these routine markings, the director may also show where the drama is to reach a climax, where the pace is to be slow, where subclimaxes are to occur. Whether he actually marks his script at these points or not, the director should, of course, have come to a decision about these matters before rehearsal time.

Casting the Program

The selection of actors can be carried out by two different methods. A special audition may be held for the program, in which a number of actors are tested for the various roles; or actors may be chosen on the basis of information assembled from previous general auditions. Since the latter method is the more common one, a few suggestions about holding these general auditions are in order.

To test the voice as it is transmitted by radio, tryouts should always be conducted on microphone. Furthermore, most directors listen to auditions in a place where it is impossible to see the actor, in order to eliminate the unconscious influence that appearance may have on decisions. Some data about physical appearance may be of importance, of course, when programs are to be produced before studio audiences, but this information can be gained through an interview following the audition. For these tryouts the actor usually brings his own material and can be depended on to choose script that will reveal what he can do to the best advantage. Modern radio or dramatic selections are generally best for this purpose. If certain specific character types are needed, additional material may be provided by the director to test the actor's ability to play these roles.

Among the questions that should be in the director's mind as he listens to an actor read are the following: What types can he play? How good an actor is he? Does he sound flexible? Does he show the ability to change his voice and mannerisms sufficiently to permit using him in more than one role on the same program? What dialects can he do? Does he have command of any special effects, such as baby cries or animal sounds? What is his experience? The

manner in which this information is indicated on the audition record is a matter of individual taste. Some directors create elaborate lists that require little more than checks in the appropriate places to classify an actor completely. Others prefer to write individualized descriptions for each potential actor. The point to remember is that when the problem of casting eventually comes up, the director is not likely to recall the actual audition; consequently, his method must indicate the facts completely enough to permit accurate casting on the basis of the audition record alone.

A very important factor in casting is the actor's ability to take direction and to develop with rehearsal; this is difficult to determine in an audition, unless the period is extended to permit an actual test of the actor's response to rehearsal. Because time does not usually permit this procedure, directors protect themselves by casting new people in small roles at first, and using only known, experienced people for the leading roles.

In actually casting actors for a specific program, either by a special audition or from a file of information gained from a general audition, the following considerations must be kept in mind.

1. *Fitness for the Role.* The most important factor in casting is the ability of the actor to convey, through his acting talent and inherent vocal characteristics, an illusion of the character to be portrayed. Again we emphasize that the question of aptness for a role must be decided entirely on the way the actor sounds on the air, not on the way he looks. A woman, for example, can frequently play a preadolescent boy to perfection, despite her appearance; and some young actors specialize in playing very old characters. Generally speaking, of course, an actor will sound about his own age—but the director cannot depend on it.

2. *Contrast in Voices.* The talent of two excellent actors may be wasted if the radio audience cannot distinguish between them. The avoidance of this kind of confusion must always be in the forefront of the director's mind as he casts actors who are to appear in the same scenes. Sometimes the need for contrast may dictate the choice of an actor who does not quite fit a role, simply because his voice is different from others in the scene. During general auditions directors often make special note of voices that, because of their unusualness, will obviously provide good contrast with other voices.

3. *Doubling Actors.* As a money-saving measure, directors with a large number of characters to cast frequently assign actors to

more than one role—a practice called doubling. The rules of the actor's union, the American Federation of Radio Artists, restrict doubling within certain limits, but the director can employ an actor to do at least two major roles, and one person is permitted to read several unidentified 'voices.' The following factors should govern the doubling assignments: (a) Generally, no actor should play two characters in the same scene, or even in scenes that occur in succession. (b) An actor will have less difficulty in hiding the doubling if the two characters he plays are sharply different from each other. (c) Some very good actors, because of distinct individuality of vocal timbre or mannerism, find it impossible to change their voices sufficiently to permit doubling.

After the participants have been selected, the director must be certain that the information regarding the time and place of rehearsal and broadcast is sent to them; usually, the actual contact work is done by a clerk in the production department. When participants do not have to be present for the entire rehearsal period, it is the director's responsibility to decide how long he wants these people, and to make sure that the precise information gets to them correctly. Announcers, for example, often come in only for the dress rehearsal and broadcast, and the orchestra in a drama program is usually scheduled for just part of the rehearsal time.

Selecting the Music

The selection of music, in which the director of a drama program is the final authority, must be made in terms of the specific uses to which the music is to be put. As previously stated, music can open or close a program, provide a transition, serve as background, or punctuate a line. When the budget permits the use of a 'live' orchestra or organ and someone to compose music specifically tailored to the needs of the drama, the music problem is a comparatively simple one. When the necessity for economy compels the director to depend on recorded selections, the problem becomes one of finding records appropriate to the various demands of the script. The selection of recorded music should be carried out according to the following criteria.

1. *Uniformity in Type.* If possible, the same kind of ensemble should play any music that is accessory to the drama. The mixing of piano, organ, and orchestra effects from transition to transition would probably jar the listener. This restriction does not apply, of

course, to music that is a basic part of the dramatic action, as when a musician in a scene plays a piano or violin.

2. *Dramatic Fitness.* The most important criterion in choosing music is to find sequences that fit the particular episode in the script. Since music is generally used to reinforce the effect, the necessity for appropriateness is obvious; any hostility between the music and the mood of a scene will detract from the dramatic impact rather than enhance it. Music should be listened to with the nature of the scene firmly in mind; frequently, a large number of selections must be auditioned before music consistent with the mood can be found. The final test of any selection, of course, is the moment when music and dialogue are heard together for the first time in rehearsal. Transition bridges specially recorded by some of the companies that make sound effects are a helpful source of music for dramatic use.

3. *Avoidance of the Familiar.* Well-known music should not be employed in drama programs for two reasons. First of all, attention will be drawn from the play as the music is recognized; secondly, familiar music may call up different images for different people—images that may be quite out of keeping with the mood of the drama. This fact usually removes classical music from consideration for dramatic purposes. Because of its fast-developing themes and general unfamiliarity to the ordinary listener, the work of modern composers is the best source of transitions. The only circumstances in which familiar music may contribute to a scene are those cases where the music has a topical reference so definite that it is virtually certain to inspire the same images in all listeners. A drama about baseball, for example, might very well begin with a few measures of 'Take Me Out to the Ball Game.'

Running through the Sound Effects

When the sound effects in a script are of the routine type performed successfully every day, a preliminary meeting between the director and sound man is not necessary. If, however, there are unusual sounds or a complicated sequence, the director and the sound man should check the effects together before the regular rehearsal time. It is obviously wasteful to keep actors waiting while the director ponders decisions about sounds and the methods of producing them; the only problem that should properly be left

to the regular rehearsal is the matter of synchronizing the sound with the rest of the program.

Setting up the Studio

The first problem in determining the studio setup is to decide on the number and types of microphones to be used. As far as number is concerned, the director usually restricts himself to the fewest microphones consistent with a production of maximum effectiveness. Having too many open microphones introduces the hazard of adding an unwanted reverberation effect to a program; moreover, an involved microphone setup complicates the jobs of both the director and the engineer in the control room.

A dramatic program usually requires at least two microphones—for the actors, one of the bidirectional variety to permit transition fades; and an omnidirectional microphone, small enough to be put into confined places, to pick up sound. If 'live' music from an orchestra or organ is involved, another microphone will be needed, and filter and echo effects may require two more. A large cast may call for more than one microphone for the actors.

The next step in planning the studio setup is to decide where each of the microphones is to be located. Three important factors should be taken into consideration. (1) Each microphone must be placed so that the person using it can clearly see the control room and be seen from it. An actor with his back to the director can see signals only by awkwardly turning his head, and after he has seen the signal, the turn back to the microphone will cause either a delayed start or a fade-in on the line. (2) The microphones assigned to speech, music, and sound should be separated sufficiently to prevent an actor from thinking that a cue is for him when it is meant for the sound man or the orchestra leader. (3) Microphones should be placed so as to eliminate the reverberation that results when one microphone picks up a sound a little later than another. One way to prevent this, of course, is to keep all microphones turned off except the one actually being used; but when more than one must be open at a time, each microphone should be located so that sounds intended for other microphones strike it on the dead side.

In chapter x it was pointed out that some studios are built with one end more 'live' than the other, so far as the reverberation of sound is concerned. When the director has a studio of this type

available to him, he must decide which location is best adapted to the various elements in his program. A common practice is to place the actors at the dead end of the studio and the orchestra at the 'live' end.

Timing the Show

An ever-present responsibility in radio production is the problem of timing, which must concern the director from the moment he first picks up the script until the program has been signed off the air. A half-hour network program beginning at 7:00 P.M. must end at 29 minutes and 30 seconds past 7. The remaining 30 seconds of the period are used by stations to identify themselves and to present commercials. When the entire network is taking just one program, there can be a three-second leeway in this time requirement. However, when two or more programs are going out to different stations on the same network—a procedure called split-network operation—the timing must be exact to the second.

1. *Before Rehearsal.* As stated previously, examination of the script will tell an experienced director approximately how much time it will consume. He should cut or add to bring it reasonably close to the proper length and then indicate where further cuts can be made if his estimate is not accurate. Marking provisional cuts ahead of time not only will save rehearsal time but will permit the contemplation necessary for an intelligent job of cutting. When unplanned cuts are needed during rehearsal, the rush and pressure of the situation are likely to result in the elimination of vital information instead of unimportant material, which more leisurely consideration would have indicated as the part to cut. Sometimes a hurried cut, just before a broadcast goes on the air, removes material to which references are made later on in the program, and the result is audience confusion.

Cuts can be made in two different ways. The simplest method is to eliminate entire sections or scenes from the script; the director must be certain, of course, that a clear transition is made from the material before the cut to that following it. Cuts of this nature can be made fairly rapidly and are quickly given to the cast. Sometimes, however, scripts are so tightly knit that no scene or large section can be cut without removing something necessary to an understanding of the story. In such a case, the director must laboriously find lines or parts of lines that contribute nothing vital. Enough

such cuts can save the required number of minutes or seconds, but both making them and giving them to the cast consume a great deal of time.

2. *During Rehearsal.* The second check on timing comes at the beginning of rehearsal, when the cast reads a script through for the first time to get acquainted with the characters and situation. By timing the spoken part of the script and estimating the time to be consumed by sound and music, the director can get an accurate check on the over-all length of the program. The provisional cuts that are obviously necessary to bring the script to the proper length should be made at the end of this first reading, to avoid rehearsing portions that will not be used.

During the dress rehearsal the director or his assistant carefully records the timing by marking the margin of the script at least every minute. In situations, requiring greater precision, the time may be indicated every 15 or 30 seconds by placing a check over the word being said at the particular moment and adding a time notation in the margin.

After the dress rehearsal, the director must bring his script to exactly the right length. This may call for further cuts or the reinsertion of material previously eliminated. To avoid confusion when on the air, it is well to read through each adjustment in the script after the dress rehearsal.

The decision on what is to be included in the final script should be governed by three considerations.

a. It is better to take the air with a script that may run a few seconds short than to begin a broadcast without cutting one that has run overtime in dress rehearsal. On the air a script can be lengthened a little without injury, but the rushing needed to get through one that is too long seriously impairs the dramatic effect.

b. Professional actors, who in rehearsal may run through their lines fairly lightly, on the air are likely to 'milk' their parts for all that is in them. For this reason the director should not be surprised to find the air performance of professional actors running a little longer than dress rehearsal.

c. Beginning or amateur actors, on the other hand, are likely to tighten up when the broadcast actually begins. This added nervousness may cause them to read more rapidly on the air than in rehearsal, with a consequent shortening of the script.

3. *On the Air.* During the broadcast the director must constantly

refer to the time marks on his script to see whether the show is falling behind or speeding up. Even though this task is delegated to an assistant, the director must keep himself completely up to date on the timing situation, since he is the one responsible for making adjustments. If timing errors are permitted to multiply through 15 or 20 minutes, the error may become so large that nothing can be done except to break the show sharply and give the network or station identification; in the case of a show that runs short, the theme must be played again and again to fill up the period. When either of these situations occurs, the director has failed so far as timing is concerned.

When a show lengthens or shortens while on the air, there are several adjustments that may be made to bring it to the correct time again. Most programs have flexible portions that can be compressed or prolonged to some extent. (a) Theme music may be cut or lengthened to take up a few seconds. (b) Transition music between scenes can be changed in the same way to add or lose a few seconds. (c) The same treatment can be given to those sound effects used as transition or as the introduction to a scene. (d) To add length, cues from the director to the actor can be delayed a second or two. (e) The announcer can be provided with closing announcements of different lengths.

In cases where directors are not sure about timing as the show takes the air, an optional cut may be given the actors, to be used or not depending on the timing situation when that point in the script is reached. Of course, the actors must be absolutely clear on what material is optional and know exactly what signals are to be given for cutting or retaining it.

The last resort of a director facing a timing crisis is to call on the actors for a general speed-up or slow-down. This device should be used only if it is the one way to avoid disaster; all other possibilities for adjustment should be explored first, since maximum dramatic effectiveness in a scene calls for a certain speed and no other. Changing that rate for timing reasons may get the show off the air on time, but it is bound to have an unfortunate effect on dramatic interpretation.

The Rehearsal Routine

Except for timing, the steps in program preparation discussed thus far all take place before the cast is assembled. In this preliminary

period the director studies the script, marks it, casts the show, selects the music, runs through the sound effects, and decides on the studio setup. He is then ready to put all elements of the program together during the period of actual rehearsal.

1. *Microphone Tests.* To check casting assignments, particularly the possibility that voices in the same scenes may be too similar,

Fig. 29. Table rehearsal for 'It Pays To Be Ignorant'; left to right: Lulu McConnell, producer-director Herb Polesie, Harry McNaughton, Tom Howard, and George Shelton. (Courtesy CBS)

the director often begins rehearsal with a microphone test of each scene. This may not be necessary if the actors have previously been heard together in a special audition; but when casting has been done from audition cards, the director's first opportunity to hear actors together is the beginning of the rehearsal. If the microphone test does reveal confusing vocal similarities, it may be possible to shuffle the parts to secure better contrasts.

2. *Table Rehearsal.* The next step in rehearsal takes place with both director and actors in the studio (see Fig. 29). Before the actual reading begins, certain general directions need to be given to the performers.

First of all, they should be informed of the cuts already decided on so that they can correct their scripts accordingly. When character assignments are given, it is generally advisable to remind actors to identify the speeches for which they are responsible by underlining or encircling the character's name each time it appears. This will help keep the actor from overlooking a speech.

Next, all 'cues' should be indicated. The term 'cue' refers to a signal given by the director for which performers must wait before beginning or proceeding with the program; the director will have decided ahead of time which parts of the script require cueing. The usual policy is to instruct an actor to wait for a cue only if he cannot tell when to begin a speech. For example, a line following an automobile sound effect played on a sound truck must be cued when the actor cannot hear the sound. On the other hand, a line following a door effect can proceed without a cue if the door is right in the studio where the actor can see it. Cues usually follow all music fades, since the director is the only person who is in a position to know when the music has subsided sufficiently for the actor or announcer to begin.

Finally, in order to get the program started in the right direction, it is a good idea to inform the actors at the beginning of the rehearsal what kind of a general approach is desired—whether broad, restrained, or whatever it may be. Some suggestions about characterization will also help the actors to begin immediately on the track the director has in mind.

3. *Establishing Characterization and Line Interpretation.* After the first read-through, a careful working out of characterization and line interpretation takes place. Most directors remain in the studio, although some prefer to go to the control room for this part of the rehearsal. The argument for the director's staying in the studio is that better results may be obtained through the close, personal contact with actors that is impossible when a talk-back must be used to give directions from the control room.

One special problem that may occur at this stage of the rehearsal is the question whether a line should be changed if an actor cannot read it properly. If a change will not damage the script and will aid the actor, it is certainly justified. Where the demands of the program require that the line be maintained in its original form, the actor can sometimes be led to a proper interpretation by being asked to paraphrase it. In extreme instances the director may illus-

trate the desired reading himself, but this is dangerous if the director is a poor actor or does not achieve the reading he desires. Most people agree that the best results come from drawing out the actor, not by asking for imitation.

Another major problem is securing proper reactions from actors who respond ad-lib as members of crowds. Unless checked, the average person is likely to let down in this situation, muttering something like 'Bella Citronella' in an uninspired manner that is completely out of keeping with the mood of the scene. Actors must be reminded that authentic crowd effects depend on each person's responding as vigorously and enthusiastically as he would if he were delivering the line by himself directly into the microphone. Moreover, the ad-libbed lines must be appropriate to the situation in case they are heard distinctly by the radio audience.

A further danger in today's radio is the stock performance. Leading actors portray so many roles per week that they often fall back on a stereotyped characterization. If a director is not careful, an actor will give him exactly the same kind of blustery businessman he gave on a program the day before and on ten programs before that. The multitude of broadcasts invites this kind of routine, typed performance; the result is that the drama ends up by sounding like every other one on the air. A real, artistic achievement can come only from the director's insistence on delicately shaded performances individually tuned to the requirements of a particular script.

As pointed out when discussing the general characteristics of good direction, the director must be a master psychologist in all his relations with actors. For example, embarrassment can often be saved by informing an actor of an obvious mistake during an intermission, when his error will not be paraded before the entire cast. Remember that the director is responsible for having his actors ready to give their best performance at air time. He will not achieve this end if he angers, exhausts, or depresses them.

4. *Securing and Maintaining Balance.* When a program is balanced, all of the various elements of the program are heard with equal volume, except those purposely diminished in volume for perspective or transition purposes. Attaining and maintaining proper balance are two of the most important responsibilities of the director. If a listener finds it necessary to keep adjusting the volume according to what is happening on the program at the

moment, it means that he is doing what should have been done by the director.

The director has two ways of telling whether his program is in balance. The first is through what his ear tells him, and the second is by watching the needle on the control-board volume indicator. To explain this second method, at its loudest each one of the various elements on the program should send the needle to approximately the same point. If the loudest notes of the music continually move the needle into the red portion of the volume indicator, while the loudest speech sounds are registered two or three points this side of the red, the two elements are obviously out of balance.

Usually, a director begins the part of the rehearsal conducted on microphone by taking the volume levels of the various elements in the program—the first step in securing proper balance. The microphone position of the various speakers is adjusted until all voices sound equally loud. The same procedure is followed with sound effects and music. The general principle in securing and maintaining balance is to make all possible adaptations to this end in the studio, not in the control room.

Generally, however, balance cannot be obtained without some adjustments at the control board. While a program is on the air, a director may decide that the established level of a certain background noise is too loud, and instruct the engineer to reduce its volume. On the other hand, it may be necessary to increase the volume at the board to make certain low-level sounds, such as whispered lines, audible to the radio audience. A planned turning down of the volume gain would be required to handle such sounds as a high-pitched scream.

The director's right-hand man in maintaining balance is the engineer, who actually handles the controls on the console. The director often depends on him for the information regarding volume that is revealed by the needle on the volume indicator. A close correlation between the two men is also necessary to prepare for the low or loud sounds for which a change of gain has been planned ahead of time.

5. *Microphone Rehearsal.* With balance attained and line interpretation set, the next step in rehearsal is to put all the elements of the show together: speech, music, and sound effects. The objective is to mold these various ingredients into a program that flows smoothly from beginning to end. Particular attention must

be given to transition points, to assure a gentle blending of scenes instead of the awkward jump from one to another that keeps a program from sounding professional.

One of the critical maneuvers, so far as smoothness of presentation is concerned, is the execution of transition fades. As was noted in chapter XI, two methods of fading are available to the director. He can instruct the actor to move out of the microphone's beam as the line is said, or he can tell the engineer to diminish the volume of the sound by gradually turning down the volume in the control room until the sound disappears altogether. The advantage of this latter method, known as the board fade, is that the sound seems to dissolve entirely, leaving no studio 'hum,' as is the case with the actor fade. A board fade-in of the next scene often follows.

In a properly executed board fade, the sound goes out entirely, is succeeded by a beat or two of silence, after which the next scene is faded in. As the faded line goes out, the director cuts all sound in the studio; he cues the next line before he signals the engineer to start the fade-in. No sound from the previous scene must be allowed to spill over into the next scene, nor, equally important, can a line be faded up unless it has begun.

A significant point for the director to remember in controlling board fades is that the loudspeaker in the control room is of higher fidelity than the average home receiver. For that reason the director will hear sound for a considerable period after it has completely disappeared for the radio listener. The board fade must be handled in terms of what the listener at home hears; if the director uses the control-room loudspeaker as an absolute guide, the pause between fade-out and fade-in will seem too long to the listener.

The cross-fade—the blending of one sound into another to indicate a transition—presents problems similar to those of the board fade. The effect is gained by fading down one sound as another is simultaneously faded up. In a story depicting a wild ride to a meeting, for example, a cross-fade could cause the sound of horses' hoofs to be gradually replaced by the sound of the meeting, indicating the completion of the ride. Music and sound are frequently cross-faded in this manner; the objective is to achieve the blending so subtly that the audience is scarcely aware that a change from one sound to another is taking place.

Again we emphasize that the director manifests much of his skill by the effectiveness with which all parts of the broadcast are

put together to create a unified whole—particularly the manner in which the various scenes are linked together. The microphone rehearsal is the period devoted primarily to the achievement of smoothness and integration.

6. *Dress Rehearsal.* Now, the director guides his performers through the program exactly as if it were on the air. In addition to keeping an accurate record of the program's timing, he watches carefully for errors, and notes any places where improvement can be made. Usually, these corrections are indicated in the margin of the script for presentation to the cast at the conclusion of the dress rehearsal. An actor may have to be reminded, for instance, that he must wait for a cue before starting a certain line; or the director may decide that a change of perspective in a scene will contribute to clarity. Sometimes actors appearing in scenes with loud background noises may start reading lines too loudly. This fault, known as 'fighting the background,' must be corrected. At this time, also, final cuts or reinsertions are given to the cast.

7. *Spotting Rehearsal.* This rehearsal, necessary only if the dress rehearsal has demonstrated weaknesses, comes just before the broadcast. The director repeats those sections that need tightening and polishing, and goes over any scene in which he has made a change after the dress rehearsal. The existence of a spotting rehearsal depends, of course, on the director's leaving some time for it between the end of the dress rehearsal and the beginning of the broadcast.

Using Rehearsal Time Effectively

The period assigned to the preparation of radio programs is generally so brief that a director can get a program ready for the air only if he makes the best use of every rehearsal moment. As a summary of the points we have just covered and as a check list for evaluating a director's work, we present six rules that must be followed to insure efficiency in rehearsal.

1. Take complete command of the rehearsal period, assuming a position of leadership from the very beginning.

2. Begin the rehearsal by knowing exactly the kind of program you want; the rehearsal can then be devoted entirely to the achievement of that design, not squandered in deciding what it should be.

3. Eliminate from the general rehearsal matters that can be decided beforehand, particularly decisions regarding sound and music.

4. Insist on the cast's making an immediate record of cuts or other changes in the script, in order to prevent the loss of time resulting from repetition of instructions.

5. Apportion the available time so that the entire script will have a well-rounded rehearsal. Do not spend so much time on one phase of the rehearsal that another part must be completely neglected. The best way to accomplish this objective is to set up a rehearsal schedule after deciding beforehand how much time will be used for each phase of the schedule. Below is a suggested plan for a two-hour rehearsal preceding a 15-minute broadcast. The schedule would, of course, vary with the demands of the program. A drama with many difficult sound and music effects would necessitate a longer microphone rehearsal than is indicated below, with less time available, as a result, for table rehearsal.

a. Check for voice contrast on microphone:	5 minutes
b. Table rehearsal:	45 minutes
(1) Read through	
(2) Set lines—characterization	
c. Break:	5 minutes
d. Microphone rehearsal:	35 minutes
Integrate:	
(1) Sound	
(2) Music	
(3) Speech	
e. Dress rehearsal:	15 minutes
f. Spotting rehearsal:	10 minutes
g. Break:	5 minutes
h. The broadcast:	15 minutes

6. Give the cast occasional opportunities to rest. Efficiency in rehearsal does not imply working the cast continuously through the entire period; the familiar radio phrase, 'take five,' indicates that the director is a man of consideration and wisdom.

On the Air

When the director of a stage play has finished the rehearsal period, his job is done, but the radio director still has one of his most important tasks ahead of him—the responsibility of guiding the program through the broadcast performance. In this responsibility he resembles the conductor of an orchestra.

1. *Control-Room Signals.* A number of hand signals must be made by the director from the control room to get instructions to

Fig. 30. George W. Allen, director of the 'Whistler,' 'throws a cue' while a production man checks the timing on the right, and an engineer 'rides gain' on the left. (Courtesy CBS)

his cast while the program is being broadcast (see Fig. 30). Of particular importance on the air because they constitute the only means of communication with studio personnel, signals can also be employed during rehearsals on microphone. Before we describe the

gestures that have become standard in radio, two general suggestions on signaling are in order.

First of all, the movements, whatever they are, must be precise and definite. A director who is hesitant and tentative in his signaling is likely to throw the whole cast into confusion. Beginners are often guilty of 'throwing a cue' so limply that the actor cannot tell when to start the line. Secondly, the director must be sure that the performer for whom a signal is intended is actually looking at him. It is useless to give a direction to the back of someone's head.

Of the many signals used in radio broadcasting, the following are the most frequently employed (see Fig. 31):

Stand by: The arm is held up with the palm open to let the performers know that the program is about to begin.

Cue: A cue is given when the director swings his hand down from the position in which the elbow is bent to a position in which the arm is extended. As the hand reaches the bottom of the arc, the index finger points directly at the performer concerned.

Speed up: The director twists his forefinger in a circle, the rate of the movement indicating how much speed-up is required.

Slow down: The director pulls his hands apart as if he were stretching a rubber band between them.

Move closer to mike: The director first points at the performer concerned and then moves his open palm toward his mouth.

Move farther from mike: The same as 'move closer' except that the palm is moved away from the mouth.

Increase volume: The director with his palms turned up and parallel to the floor makes an upward movement.

Lower volume: The director with his palms turned down and parallel to the floor makes a downward movement.

Fade down: The director makes a sweeping, downward, oblique motion with his arm, palm down.

Fade up: Exactly the opposite of the 'fade down.'

Cut: The index finger is swept sharply across the throat.

Everything O.K.: The thumb and forefinger describe a circle.

2. *Directing the Actual Broadcast.* The two specific duties of the director while the program is on the air are (a) to keep a careful check of the timing and make the adjustments necessary to bring the show in 'on the nose'; and (b) to give all the cues arranged for during the rehearsal. If a director fails to give a cue for which an actor has been instructed to wait, a large, gaping hole will be left in the program.

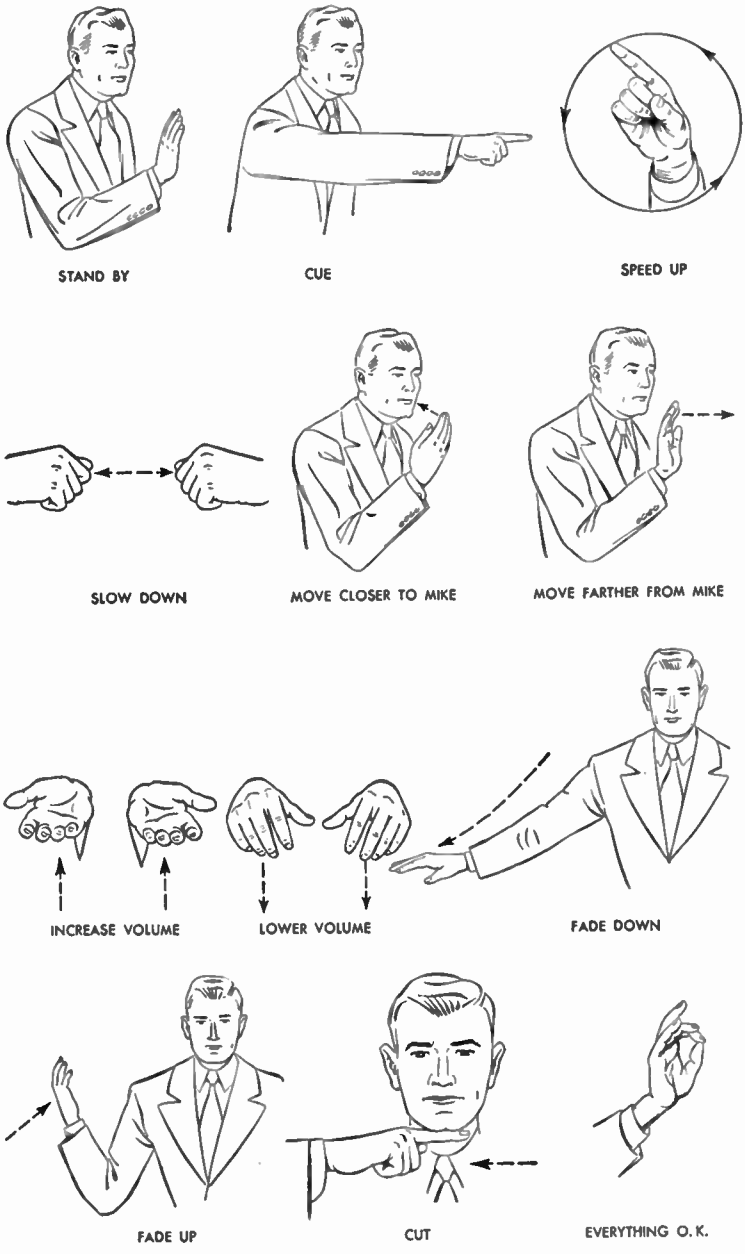


Fig. 31. The director's signals.

In addition to these specific responsibilities, the director must listen carefully to the show to detect any possibilities for improvement through changes or adjustments that can be either indicated by signals or accomplished in the control room. He must not only listen to what is happening at the moment, but also look ahead constantly to make certain that he and his performers are ready for assigned responsibilities. With this kind of foresight, emergencies can be prevented before they occur.

Remaining a poised, calm individual while carrying out these many duties under the pressure of a broadcast requires a definite application of will power. Yet it is absolutely essential that a director remain calm no matter what happens; dismay or excitement on his part is bound to affect the actors detrimentally. The director should particularly avoid any exhibition of anger or irritation at the type of mistake that cannot be helped, such as an unintentional fluff. A display of anger will simply induce cast jitters and invite more mistakes of the same kind. Rather than reacting in this way, the director should try to stimulate his group by providing the kind of response an audience would give, even if it is necessary to feign amusement and interest.

After the Program

Even though there may be ten million satisfied listeners who would applaud enthusiastically were they all gathered in one place, the performer has no way of knowing that his efforts have been appreciated. Unless there is a studio audience, the director must try to fill in this vacuum by providing some kind of response. Of course, it is much easier to be enthusiastic if the cast has performed in commendable fashion but, in any event, a smile and some words of appreciation are generally in order.

If performers have been guilty of errors, nothing is gained by tearing them apart as soon as the program is over, especially since the persons who have committed the mistakes are usually well aware of them. Generally speaking, even constructive criticism should not be made in this period, because the tensions and pressures of the broadcast just completed reduce the objectivity of such criticism. Unfortunately, the same actors are not usually gathered together again, so it may be necessary to say what needs to be said as soon as the program is over. An example of constructive criticism is to tell an actor that he tends to use stage instead of

radio projection, or that he falls out of character at the end of his lines. Nothing would be gained by telling him he had fluffed a certain line, unless he were obviously unaware of it.

The post-broadcast discussion should also include a word of praise for outstanding work. Even the most experienced and skillful performer enjoys being told occasionally how good he is, since no one likes to be taken for granted. The program just broadcast is beyond repair, of course, but a director can often help future programs by a constructive discussion that includes both criticism and commendation.

Directing Music Programs

This review of drama production has covered most of the principles and techniques involved in presenting any kind of radio program. The following discussion of music broadcasts and partly rehearsed programs is limited to those factors in production that have not been covered thus far because they are peculiar to a specific type of program.

Conductor-Director Relationship

One difference between an orchestra program and a drama broadcast is that the former involves the co-operation of two persons whose functions are leadership and direction—the conductor of the orchestra and the director of the program. Lack of co-ordination, even friction, may develop unless these two people agree on an effective working arrangement. Generally speaking, the program director is the over-all leader; however, when the conductor is a person of great distinction, like Toscanini or Stokowski, the radio director may actually be the subordinate one.

But whatever the situation, the program director should accept the conductor as the person responsible for the interpretation of the music and the manner in which it is played. If a particular player is creating a problem—perhaps a tympanist whose cymbal is struck so vigorously that it dominates when it should not—then a suggestion for modification from the program director should go to the conductor, not directly to the player. This procedure supports the conductor's position of authority over the members of his orchestra.

The director of the program, on the other hand, is the final authority on matters of timing. He must demand a cut in a broad-

cast that runs too long, even though the decision in regard to where the cutting is to be done may be left to the conductor. Matters of balance also fall within the province of the director.

Timing

Music programs are usually not timed every 30 or 60 seconds as is the case with drama programs; instead, timing is indicated at the beginning and end of the various units of the program: theme music, announcements, and selections. On the air the timing can be checked at each of these points to determine whether the program is staying on schedule. Corrections can be made by adjusting the length of pauses and theme music, by speeding or slowing announcements, and by including or excluding provisional material, such as the newscast that follows the CBS broadcast of the New York Philharmonic Orchestra.

Studio Setup and Balance

The objective in setting up a musical program is to provide the same effect the listener would receive were he sitting in a concert hall listening to the program. To achieve this aim, a number of different setups may be used, including many varieties of player and singer arrangement and adjustment of microphones. The musical unit involved, the type of microphone to be used, the shape and size of the studio, and the nature of the music are factors that affect the decision. In many cases the engineer's technical knowledge makes him the best-qualified person to determine the setup, but the director bears the final responsibility for its success.

The basic grouping pattern, which serves as a beginning point in determining the arrangement for a particular broadcast, is the same as that which prevails in setting up an orchestra in a concert hall. The governing principle is that the higher and lighter an instrument sounds, the closer it is placed to the listener. Thus, in radio, the light strings of an orchestra are placed closest to the microphone, and the woodwinds, brasses, string basses, and percussion instruments are placed away from the microphone in that order.

A similar pattern is followed in arranging smaller ensembles. For a string quartet, the microphone might be located between the players divided into two groups, with the cello in the most distant position. Vocal music ensembles are usually disposed with the women closer to the microphone. In setting up a piano recital,

the microphone is most often placed next to the strings that emit the highest notes and the ones lightest in volume.

The question whether a music program is balanced must be decided, as is the case with all radio programs, from the control room. The director listens to the monitor speaker to determine whether the tonal relationships and loudness values of each unit in the group are correct. Usually, the program director is qualified to decide this matter, particularly if he specializes in music broadcasts; but if he is in doubt, he may call the conductor into the control room to help settle the question of balance.

If a lack of balance exists, corrections can be made in a number of ways. The strings, for example, may need an extra microphone to give that section its proper loudness value. Dance orchestras featuring presentations in which the dominant melody shifts from one section of the orchestra to another may need several microphones to achieve an adequate pickup. Sometimes balance can be attained simply by moving the microphone, by raising it, or by changing its angle; frequently a rearrangement of orchestra members will solve the problem.

The Rehearsal Schedule

The preparation of a music program usually follows three well-defined steps. First of all, the orchestra becomes familiar with the music and perfects its playing of each individual number; the director of the program need not be present for this part of the preparation. The second step is to determine the proper setup for each number, and this, of course, means rehearsing the music on microphone. Finally, the whole program, including introductory announcements, is run through in a dress rehearsal. Sometimes the announcements and the music are never actually put together until the program goes on the air, but the complete timing is ascertained by combining each individual element.

The rule that the more complicated the show the longer the rehearsal applies to music programs as well as to all other types. A small ensemble may get ready in a short period of time, but a broadcast featuring a wide variety of music, including solos and orchestra selections, will require hours and hours to prepare properly.

Rules Governing the Use of Music

The director of music programs must be aware that the restrictions surrounding the playing of music demand that specific clearance be obtained for every number scheduled on a broadcast. The most important restrictions are of two types—network and copyright.

1. *Network Restrictions.* To prevent the monotonous repetition of the same music, some networks and stations require that a certain period of time elapse before a specific number can be repeated. NBC, for example, has decreed that two and a half hours must separate the playing of the same selection. In order to obtain network clearance, a director must make certain that no program within that period has scheduled the same number. Generally, the first director to request it is given the privilege of using the number. A few years ago, Bing Crosby, the singer most closely associated with 'White Christmas,' was denied the right to use the song on his Christmas broadcast, because the director of a program adjoining his had previously scheduled the number.

2. *Copyright Restrictions.* Copyrights on music have the same duration as a literary copyright; the original runs for 28 years, with renewal for another 28 years possible—a total of 56 years. Music on which the copyright has run out is in the public domain and can be played without restrictions. However, since arrangements can also be copyrighted, the director must be certain that, even though the music and words of a particular selection are more than 56 years old, the arrangement he is using does not violate someone's right.

In the case of that large body of music still protected by copyright, composers often vest performance rights with a licensing organization, which pays the musician a certain yearly sum, determined by the amount and popularity of his music. The most important of the organizations controlling performance rights are: the American Society of Composers, Authors, and Publishers, or ASCAP; Broadcast Music Incorporated, or BMI; Associated Music Publishers, or AMP; and the Society of European Stage Authors and Composers, or SESAC. By paying a blanket fee, a radio station or network acquires the right, with certain exceptions, to perform all the music controlled by one of these licensing companies. Most large broadcasting organizations subscribe at least to BMI and ASCAP.

An important exception to the music that can be used, even when the blanket fee is paid, is the number that, for various reasons, is placed on a restricted list. For example, the writer of a show tune may want to prevent wearing out the tune through repetition before the show is over. It is the responsibility of the director to check the numbers on his program against this restricted list and to eliminate any music that appears on it. If the performance rights to an individual number are not vested with any of the licensing organizations, these rights must be contracted for on an individual basis.

Directing Partly Rehearsed Programs

Every day many programs are presented which do not receive complete rehearsal before air production. They run from the variety or comedy show, which can be rehearsed completely except for the factor of studio-audience reaction, to the audience-participation program, which goes on the air with no rehearsal at all. Some programs may be rehearsed completely in each of their parts, but the various units are not linked together until broadcast time—an example is the type of broadcast that originates from several different points.

Even though a program is only partly rehearsed, it must end on time just as any other broadcast. This means that the director must fit the show into the particular period while the program is actually on the air. One method is to give a timing leeway to the basic part of the program and get the broadcast off 'on the nose' by contracting or expanding the end of the program. Announcers are frequently provided with closing announcements of different lengths; the amount of time left after the main part of the program is over determines which one is used. The second method is just the opposite in that the closing announcement is timed very carefully, and the rest of the program is brought to an end in time to leave room for it. This technique is often employed for interviews, newscasts, and round-table discussions.

When a program is composed of various parts, a time for each part may be estimated beforehand; the director can then determine the timing situation at the end of each of these parts, and shorten or lengthen the succeeding part accordingly. Directors of audience-participation shows divided among several stunts or contestants utilize this timing method.

For variety and comedy shows, estimates of the time to be taken for applause and laughs are entered into the script before the broadcast, and these are added to the timing of the rehearsed portions of the program. The director then has a constant reference for checking timing during the broadcast, just as a drama director has.

The only type of broadcast in which the director is normally relieved of timing worries is the presentation of a sports contest or special occasion, since the program usually runs until the event is over. However, opportunities for stations to identify themselves must be provided approximately every half hour.

In addition to unusual timing requirements, certain partly rehearsed programs face other types of problems. The newscast that switches from point to point during the program is an example of such a broadcast. Careful preparation is an absolute essential to the success of this type of show. For most remote pickups, each originating point can hear on a monitor what is happening at the other points, so that a word cue, such as 'We now take you to London,' is sufficient. Each participant who can hear the whole broadcast must receive a cue sheet that details both the exact words preceding his portion and the ones with which he must close. Participants in certain areas of the world, such as Tokyo and Moscow, however, cannot hear the rest of the broadcast. They must receive a cue sheet indicating a precise time for beginning and ending their part of the broadcast. If planning is done properly, the production of remote programs is fairly simple, but any doubt about cues will throw an entire network into confusion.

Two dangers faced by the director of programs involving the use of short-wave radio are the breakdown of the facilities and atmospheric interference. The director must judge whether foreign pickups are of broadcastable quality, and be ready to substitute something else if they are not.

Another type of program involving special difficulties is the presentation of an interview or discussion. The essential problem is to maintain spontaneity and at the same time produce a program that will have some order and progression. Writing a script word for word achieves organization but almost always results in a program so dull and wooden that audience interest is killed. Even an ad-lib rehearsal is likely to have a harmful effect. Nothing is duller than a discussion in which the members of the panel know exactly

what one another's opinions are and recite replies that have become stale with repetition.

In order to cover the subject in an organized manner, however, it is usually wise to get the participants together ahead of the program to agree on an outline. During this session the speakers decide what they are to discuss and in what order, but they do not actually discuss it. Signals should also be arranged, to keep speakers from interrupting one another. In preparing for an interview, the questions to be asked can be determined ahead of time so the interviewee may have an opportunity to consider his answers.

The Director's Qualifications

Most of the qualifications necessary for the director of radio productions have been either stated or implied in this chapter. Let us briefly review the essential knowledge, skills, and personality characteristics basic to success. By the very nature of his role as the organizer and conductor of rehearsals, the director assumes a position of leadership in the presentation of programs. Moreover, he must be able to handle people in such a way that they come up to a broadcast ready to give their best performance. Co-ordinating many people's contributions into a program that has unity and coherence requires a person who can plan for every eventuality, then execute that plan with precision and careful attention to detail under the pressures of broadcasting.

The director need not be a writer, yet he must recognize good writing when he sees it, and he must be able to improve poor writing by a discerning job of editing. He need not be an actor, yet he must be sufficiently sensitive to the problems of the actor to inspire peak performances. He need not be a musician, yet he must be alive both to the meanings and emotions that can be communicated by music, and to the conditions necessary for its effective presentation. He need not be an engineer, yet he must know the limitations and potentialities of technical equipment.

In short, an individual needs to know a great deal about broadcasting before he is ready to conduct a rehearsal or guide a program through its air performance. For this reason, few directors start off their radio careers in that capacity. Most of them spend long periods of apprenticeship as writers, actors, sound men, or announcers, gaining the broad background necessary for the effective direction of radio programs.

Projects and Problems

1. Design an audition sheet and try out several members of your class. Experiment with the type of audition sheet that lists a large number of factors to be checked by the auditioner, and the type of sheet that requires general, written-out reactions. Decide which technique is preferable.
2. Select music for a script that you find in a volume of radio dramas. As part of your preparation, listen to such compositions as Stravinsky's *The Rites of Spring* and decide how its various passages could be used for dramatic purposes. Keep a permanent record of these analyses for future use.
3. Place plugs in your ears and practice balancing the voices on a program through the use of the volume indicator exclusively. Then remove the plugs and check results.
4. Take the air with a 15-minute program, knowing that early in the broadcast you will be told by your instructor to add or cut 30 seconds while the program is on the air. Be prepared with appropriate measures to make the cut or addition without injuring the effectiveness of the show.
5. Using a stop watch, check the amount of time consumed by laughter and applause on a comedy show. This will indicate how much time the director has allowed for 'spread.'
6. Write and produce a 5-minute dramatization of a recent news event.
7. Design, write, and produce a 15-minute program of recorded music, including commercials for an imaginary sponsor. Work out an idea that will tie music and continuity into a unified whole.
8. Write a 15-minute comedy show, using your own campus and its characters as a source of humor, and present it before an audience of students. Leave sufficient 'spread' for laughter and applause to bring the program in 'on the nose.'
9. Write a series of brief scenes involving reactions from a crowd, and rehearse these scenes with your classmates until they are completely realistic and authentic.
10. Prepare a three-hour simulation of a radio-station schedule, letting 10 minutes equal 30 minutes and cutting all other times proportionally except for station breaks, which should be maintained at 30 seconds. Then produce this schedule, keeping the

timing for each show exactly right. Types of programs that may be included are newscasts, recorded shows, discussions, dramatizations, and audience-participation shows. Each change of program should include a station-break commercial, a public-service announcement, or a reference to a coming program on the station.

PART III

The Techniques of Television Broadcasting

FIFTEEN

The Tools of Television

The year 1945 not only saw the end of a great world war, but also marked the beginning of an era that gives promise of being dominated by influences that, for all practical purposes, never existed before. Not the least among the developments that may profoundly affect our lives is the new broadcasting medium, television. True, some activity in this field preceded the war, as we noted in chapter 1, but for the average person, video programs were remote and almost fantastically unreal. Today the amazing instrument that can magically materialize pictures and accompanying sound out of the air has assumed virtually commonplace existence in millions of American homes.

The sudden blossoming of television has motivated some glowing predictions regarding its future. There are enthusiasts who believe that television will eventually become a six-billion-dollar-a-year industry, ranking among the top ten in the nation. This progress, they argue, will be made at the expense of competing media; some even go so far as to say that radio, movies, magazines, and books must face a lingering illness followed by inevitable extinction. In 1949, as informed a person as M. H. Aylesworth, former president of NBC, gave radio three more years of life.

It is impossible to determine the accuracy of these predictions now, but no one can deny that the new medium will seriously affect the older ones. Time taken in watching television, already dubbed the 'eater of evenings,' obviously cannot be used in other activities. Some confirmed addicts spend so many hours before a

video screen that two new human ailments have been facetiously recognized: 'telesquat,' the result of squeezing down to permit people behind to see the TV screen; and its opposite, 'telecrane,' an elongation of the neck that comes from peering over the heads of others. More seriously, surveys have indicated that radio listening drops by 80 per cent in homes with recently acquired television sets, and movie-going is reduced by 25 per cent. In New York, where television first blossomed, a drop in newspaper circulation and book sales has been blamed on the new medium.

On the other side of the argument, there are many who admit that television will assume an important place in American life, but doubt that it will ever completely supplant any other medium. The doleful predictions made when earlier inventions were introduced are recalled to support this view. The advent of the phonograph was expected to banish the piano from the American home; the coming of the radio was seen, in turn, as a death blow to the phonograph. The piano and the phonograph still survive. Will television now kill radio? Those who say 'no' argue that the functions performed by radio, movies, and printed material can be accomplished by television only to a limited extent. A woman cannot wash dishes and watch a video screen at the same time, for example, but she can listen to the radio. The TV show does not provide the escape from home confines that going to a movie does. Moreover, there is a large rural audience too remote from city TV stations to pick up programs. Radio must be retained to serve their needs. That some of television's attraction may be its novelty appeal is indicated by a recent Hooper survey showing that people tend to listen to the radio more than they did during their first year of TV-set ownership.

One of the most difficult hurdles television must surmount before it can attain dominance is to find a way of paying, on a permanent basis, for the tremendous costs of production. The extensive equipment, space, rehearsal, and personnel required by TV make it five times as expensive as radio. Thus far, station and network operators have paid for video activities with funds obtained from other sources, but this policy cannot continue indefinitely. Unless advertisers come in sufficient numbers to support television as they have radio, the new medium will face serious difficulties. One suggested solution is to meter the use of the TV set by tying it into the telephone; thus, viewers would pay for their programs when they paid

their telephone bill. Few people in the industry doubt, however, that complete commercial support will be forthcoming as soon as the potential TV audience reaches a number high enough to justify the cost of video advertising. This depends, of course, on a continued increase in the number of receivers.

Confidence in television's future is based on a realization of its tremendous power as a commercial medium. The impact of video advertising is believed to be at least five times as great as that of radio. This increased effectiveness justifies the greater cost per audience member, claim TV's supporters. That many advertisers agree is shown by their action in entering video even during the period when receivers were relatively scarce. In fact, the power of the new medium lured a number of sponsors who were entirely new to broadcasting; 30 per cent of NBC's television advertisers have never used radio.

To summarize, then, we can be certain that television will seriously compete for people's time with the older media: radio, movies, books, and magazines. But in view of the unique functions performed by each of them, it is likely that all will continue to play some part in our lives. The evidence indicates, however, that television will take a more and more dominant position as the years go by. Just as the radio pattern crystallized from 1925 to 1935, so we can assume that television will grow from infancy to complete maturity in the decade beginning in 1950. With several methods for color telecasting now being developed,[1] we can expect color to replace black and white on the video screen. The number of receiving sets is likely to increase to 20 million. The utilization of frequencies in both the VHF and the UHF bands, as recently announced by the FCC, can ultimately send the number of TV stations to over 2000. Networks bound together by coaxial cable and microwave relay will grow until they cross and crisscross our nation. Scientists have not yet solved the problem of bending TV signals around the earth (except in the 'Dick Tracy' comic strip), but people in remote areas may eventually receive programs through a procedure called stratovision, in which programs are relayed over

[1] Late in 1950 the FCC ruled that the color-television process developed by CBS was to be used for all commercial color telecasting; Columbia immediately announced that it would begin broadcasting TV programs in color 20 hours a week. A number of set manufacturers, however, have indicated that they will fight the FCC decision in the courts. RCA, interested in promoting its own color-television method, will probably be a leader in this fight.

wide areas by airplanes circling high above the earth. In short, video, which has been a novelty for the few, will soon become a commonplace for the many.

How Pictures Are Broadcast

When thinking of television, the average person is concerned almost exclusively with the picture part of the process. The usual telecast, however, features a combination of two different stimuli—the simultaneous broadcasting of both sound and sight impressions. The principles involved in the transmission of sound, already considered in chapter x, are the same for television as for radio; therefore, these principles will not be repeated here. Television, of course, demands that the sound be synchronized with the picture—a feat accomplished by the simple expedient of picking them up at the same time. Originally, the sound part of television was broadcast by the amplitude-modulation method, but a switch to frequency modulation has now been made. Since the transmission of the television picture has the same line-of-sight limitation as FM, no range was sacrificed by the change, and FM's fidelity and clarity of reception were gained. With this brief reference to the sound, or audio phase, of television, we now concern ourselves with the process of broadcasting the picture, or video part, of the medium.

In chapter x we saw that radio is a process that transforms sound into electromagnetic energy, transports it, and then reconverts it into sound again. In the same way, the television transmission of pictures is a process that transforms light into electromagnetic energy, transports it, and then reconverts it into light again.

The Transmission of the Television Picture

The broadcasting of a television picture begins with a camera having a lens similar to that found in the ordinary motion-picture camera. This lens picks up the object to be televised and focuses its image on a sensitive surface in the television camera, known as the 'mosaic.' The mosaic is composed of a photoelectric substance broken up into a great many tiny globules, each one of which reacts to light by building up an electrical charge proportional to the amount of light falling on it. Since a picture is made up of varying degrees of light, each of these photosensitive dots is strongly or weakly charged with electricity, depending on the amount of light focused on it by the lens of the camera. The result is that the picture

reflected by the lens in terms of light has now been traced in terms of electricity.

The next step in the process is to pick this picture off the mosaic bit by bit and send it through the air. This is accomplished through the use of a beam of electrons, generated at the back end of the camera by a device known as the 'electron gun.' Swept back and forth across the mosaic by a system of magnetic deflecting coils, the electron beam releases in succession as it strikes them the various electrical charges stored up on the mosaic. In effect, each one of these charges flows down the electron stream individually, and is carried from the camera to be broadcast by the transmitter simultaneously with the sound elements of the program. Thus, the picture has been taken apart dot by dot and sent out into the atmosphere in single file, ready to be reassembled by whatever television receivers pick up the signals. Just as in radio, the agency transporting the picture through space is a carrier wave, whose amplitude is modulated by the various video impulses.

The television picture thus broadcast exists on the mosaic in approximately 525 lines, each one of which must be swept by the electron beam 30 times every second—a total of 15,750 lines scanned each second. In order to transmit pictures of the proper steadiness and clarity, the timing of this movement must be accurate to one ten-millionth of a second.

The Reception of the Television Picture

Reception begins when the waves of electromagnetic energy are picked up by the receiving antenna and are conducted by wire down to the heart of the receiver, a large vacuum tube. At one end is an electron gun, which generates a beam of electrons. The movement of this beam is synchronized with the movement of the electron beam in the TV camera. The other end of the tube is coated on the inside with a fluorescent substance, which glows when struck by electrons.

Just as the electronic beam in the camera took the picture apart, so the electron beam in the receiver puts it back together. As it sweeps back and forth across the inside of the receiver tube, the electrical charges coming from the antenna flow up the stream to the fluorescent substance and cause it to glow dot by dot and line by line with a brightness exactly proportional to the strength of each charge as it was broadcast by the TV transmitter. The original

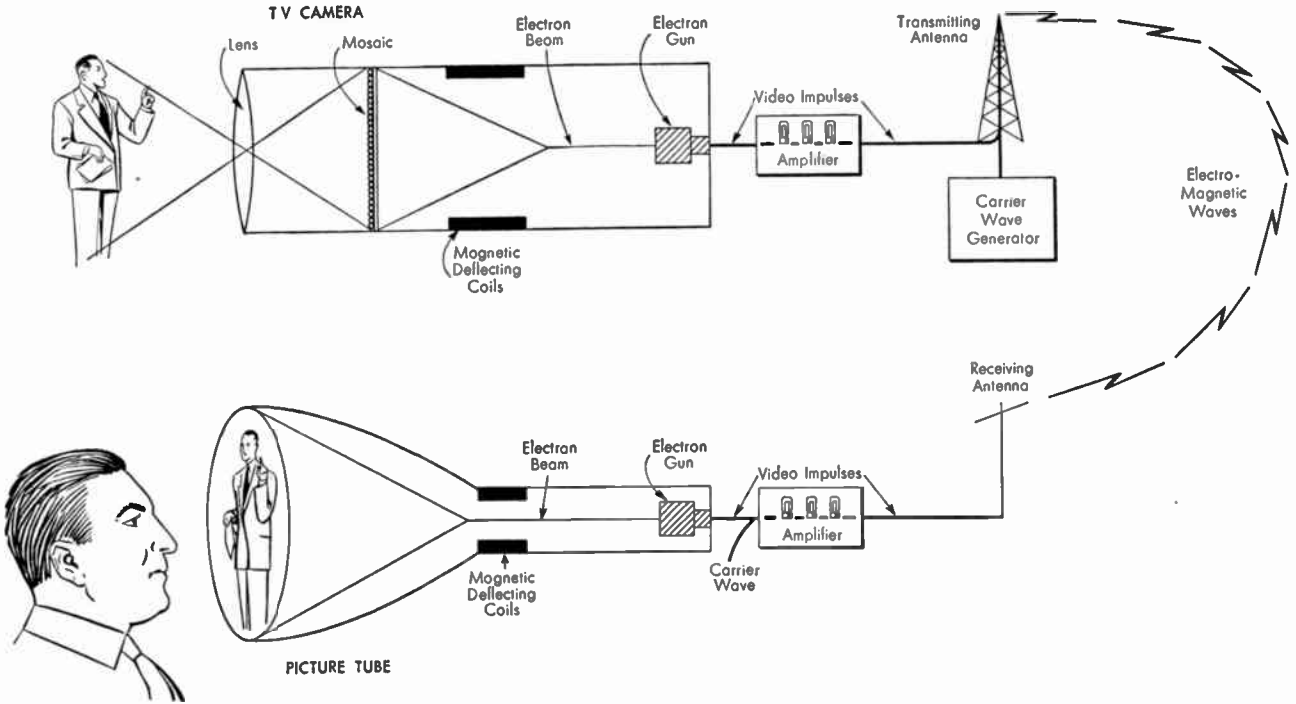


Fig. 32. A schematic diagram of the process of broadcasting a video picture.

pattern of light and dark is reassembled as the electrical energy is again changed into varying degrees of light. An individual watching the end of the cathode-ray tube sees exactly the same picture that was focused by the lens of the TV camera onto the mosaic. The swiftness of the operation prevents the observer from actually seeing the reassembling process, which is taking place before his eyes (see Fig. 32).

Most people view the television picture by watching the end of the cathode-ray tube on which the image is traced by the electron beam. The picture can be made larger, however, by projecting it from the tube to a screen attached to the set. Some home receivers in the upper-price class use this method. It is also employed by public places, such as bars and taverns, featuring television to attract customers, and by theaters that project television programs on their regular screens.

To avoid complicating the matter, this technical discussion of television has been restricted to a consideration of the basic essentials in the process. As in radio, amplification is required at various points during transmission and reception. Furthermore, the image picked up by the cameras is traced on various monitor tubes in the control room, to permit the director and his aides to check the picture being transmitted for home receivers.

Television Studios

Television, like radio, requires studios that are isolated from outside noise and constructed and treated to condition the sound originating in the studio with desirable acoustic properties. But whereas radio's demands almost end with these requirements, television's only begin. The overwhelming need in the video medium is for space. The three or four sets that some dramatic programs call for must be placed in a long line to permit cameras to switch from one to the other without a break. The cameras themselves, with their large, movable bases and booms, are bulky objects that further accentuate the need for room. Places must also be found for microphone booms, lighting equipment, and, in many cases, an orchestra. In addition to expansiveness in a horizontal direction, vertical space is needed to permit banks of lights to be placed over the set. The ideal television studio, therefore, is a long rectangular room with a high ceiling.

Another factor of considerable importance is easy accessibility to

the main street level. Horses, automobiles, and other unwieldy exhibits make frequent appearances on TV shows; the necessity of using elevators to reach studios complicates the problem of bringing some of these exhibits in—if it does not exclude them entirely. One Texas TV station desiring to televise cattle solved its problem by building a studio next to the corral, from which steers could be driven right past the cameras.

That important auxiliary to the studio, the TV control room, is similar in purpose and design to the radio control room, except that more equipment and personnel are needed and, therefore, considerably more space. In addition to a loudspeaker and audio control boards, the TV control room includes a video control board and monitor tubes to show the various pictures being picked up by cameras. Turntables for playing recordings, talk-back microphones for use during rehearsal, and other communication equipment are also essential items.

The dependence of TV on movies has made the film-projection room a vital adjunct to the studio. Sometimes entire programs are presented by film. In other cases movies are woven into a telecast that is being produced primarily as a 'live' program from a studio. The split-second integration required by such operation demands the finest co-ordination between the control room and the projection booth. Key network stations require, in addition, another space for making sound movies directly from a monitor tube as programs are broadcast by the station. The resulting film, as we pointed out in the chapter on networks, is shown by affiliated stations that lack a coaxial-cable or microwave-relay connection with the network.

Finally, television production makes necessary a number of auxiliary spaces close to the studio for storage and general preparation for the program. Set requirements demand large areas for building and storing scenery; room for paint, lumber, and properties must be found; other spaces are needed for costumes; and a make-up room for performers should be available.

The general studio requirements just outlined approach an ideal that few stations can as yet attain. Most of them have remodeled other buildings for television purposes—a makeshift that falls far short of satisfying TV's demands, particularly when the original structure was designed for radio. NBC in New York, for example, has been forced to stack scenery in the corridors of the Radio City buildings. A number of theaters have been made over for television

production in various parts of the country. As video activity grows, however, we shall probably see more and more buildings designed with television's needs specifically in mind.

Television Equipment

TV Cameras

Two types of cameras are now in general use throughout the industry: the iconoscope, invented by Zworykin; and the image orthicon (see Fig. 33), developed by RCA during the war. Each has its advantages and disadvantages. The iconoscope shows up detail better than the orthicon, but it is much less sensitive to light. This weakness necessitated an intense array of lights—a requirement that, until recently, constituted one of TV's principal problems. Furthermore, on days of low visibility, outside scenes were virtually impossible to telecast. The advent of the orthicon, which can transmit a scene lighted only by a candle, enormously simplified lighting problems and almost drove the iconoscope from studio and remote productions. However, with its greater facility for picking up fine detail, the iconoscope still plays an important role in televising motion pictures.

Television cameras are usually equipped with three or four different lenses that can change the pickup for close-up, medium, and long shots. Various types of movable bases permit the cameras to be tilted, swung from side to side, or moved in or out on a scene. Booms have been developed that will lift the entire camera up and down to attain further variation of camera angles.

Microphones

Because the microphone in a television program is usually kept hidden in a position over the stage, performers cannot get as close to it as they can in radio. This means that a highly sensitive instrument with a wide pickup beam is needed—demands best satisfied by a microphone of the cardioid type. The microphone is made mobile by hanging it on a boom that can be swung around during the program or shifted in and out on a movable base. For those programs, such as discussion and audience-participation shows, where the microphone is not hidden, an instrument that is small enough not to obscure the face of the performer is required (see

Fig. 34). The RCA 'bantam' and the Altec microphone (see Figs. 13 and 16) have been developed to satisfy this need.

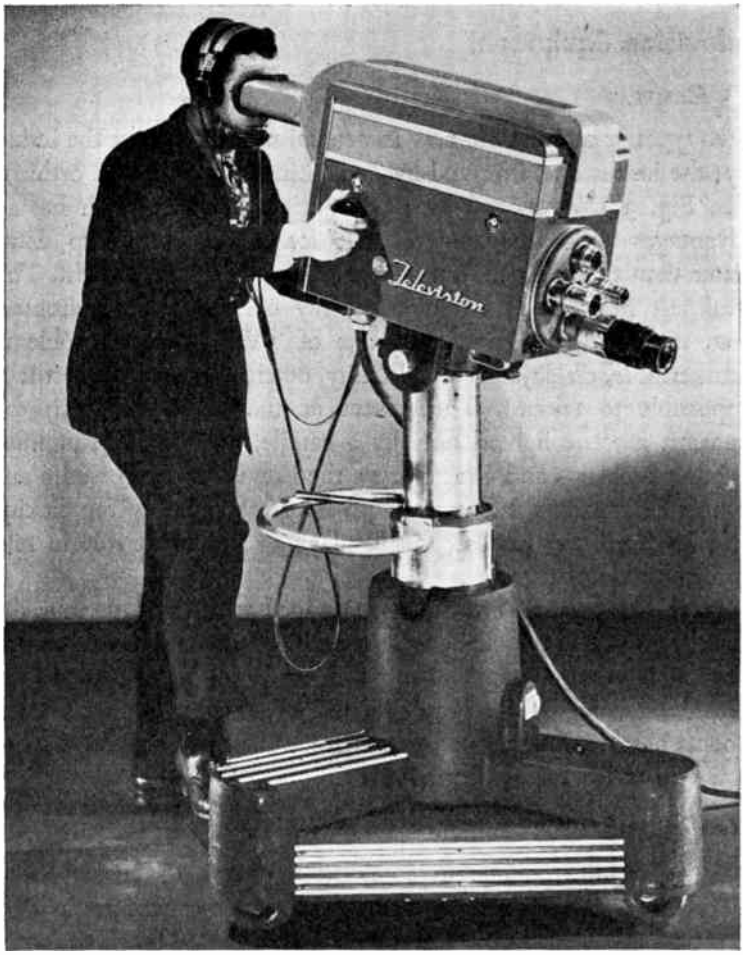


Fig. 33. An image-orthicon camera. (Courtesy RCA)

Control Equipment

The monitor tubes in the TV control room are a vital part of the equipment determining the picture the audience is to see. Usually, there is a tube showing the pickup of each camera on the program, plus a monitor to indicate what is being broadcast at any given

moment. Various controls are used to switch from one camera to another or to blend the pickups of two at the same time. An audio board equipped with a volume indicator, just like that in radio, is used to control the sound elements of the program. The picture elements are regulated at the video control board, where an engineer balances the light and dark elements of the image and sees to it that

Fig. 34. A telecast of 'Who Said That?' showing the use of the RCA 'bantam' microphone to avoid obscuring the faces of the participants, who are, left to right, Elliott Roosevelt, Faye Emerson, Earl Wilson, and John Cameron Swayze. (Courtesy NBC)

general brightness values are maintained properly. Both of these audio and video operations are referred to as 'riding gain.'

Motion-Picture Equipment

The televising of films is accomplished by projecting the picture directly onto the mosaic of the TV camera. A difficult technical problem was solved when engineers succeeded in adapting the '24 frame per second' exposure of films to the television camera, whose electronic beam traces the picture 30 times each second. Both 35- and 16-millimeter film can be used for television. The former

has somewhat better quality so far as sound elements and detail are concerned, but 16 mm. is more economical, since only 36 feet of film per minute are needed, as compared with 90 feet for 35 mm. The importance of the motion-picture projector to television is emphasized by a prediction of Mark Woods, president of the ABC radio and television networks, who said in 1949 that, in the future, films are likely to constitute 80 per cent of the average TV station's program output.

Sets, Properties, and Lights

We said in an earlier chapter that one of the overwhelming problems of radio and television is the necessity of providing a constant flow of material for the many programs produced every week. Television faces a tremendous complication of that problem because all the programs produced 'live' must take place on some type of set. Drama programs make the most severe demands; sometimes four or five realistic scenes must be constructed for a single half-hour play. And dance programs, audience-participation shows, commercials, and even newscasts require a background and properties of some sort.

The easiest solution to this problem would be to use a few standard sets over and over again; unfortunately, such repetition would soon make the sets as distasteful to the audience as the shop-worn jokes of some comedians. The usual procedure is a compromise. Certain basic scenery units—wall sections, doorways, and steps —are used a great many times, but they are assembled in different ways to create new designs. Skillful use of properties and original employment of paint help to complete the illusion of a completely new set. Supplementing these basic units are painted drops and photograph enlargements, which portray scenes that could not possibly be built in a studio. The use of a small-scale model is a frequent answer to a set problem. Hospitals can burn, earthquakes commit their destruction, U. S. Navy ships sail majestically into a harbor, all in miniature. Films can also be woven into programs that are otherwise presented 'live,' to show scenes beyond the range of studio production.

The usual limitation of television to black-and-white pictures somewhat simplifies the problem of the set painters. Backgrounds are executed in various shades of gray; actually, such a procedure

gives a more dependable result than a colored set, since TV cameras sometimes display unexpected idiosyncrasies in the way in which they transmit certain colors. Simplicity is another keynote to set design, for cameras are unable to pick up a great deal of detail. In fact, a 'busy' background (as sets full of minutiae are called) might be an actual hazard to picture clarity. A further danger to be avoided is the possibility that some of the scenery short cuts, such as painted-on moldings or wall cornices, will show up for just what they are. This difficulty arises from the fact that television sets, instead of receiving individual light adjustments for each scene, as is possible in movie production, must be flooded with a flat, generalized type of lighting, which tends to reveal the artificiality of painted sets unless great pains are taken to disguise it. On the other hand, the flat effect of flood lighting washes out the shadows that would be cast in the normal situation—a condition that sometimes requires the scene craftsman to paint in artificial shadows.

As far as properties are concerned, stations generally keep on hand those that are likely to be needed for the average run of programs. Unusual demands are met by renting the equipment. Antique furniture, for instance, might be acquired temporarily to dress a special broadcast. In addition to regular set needs, stations must have a plentiful supply of frames and devices for presenting visual titles; they also need slides, projectors, mechanical gadgets, various exhibits, and paraphernalia for commercial presentations.

As we have just pointed out, a satisfactory pickup by the relatively insensitive iconoscope depends on the generation of an intense blaze of light. The heat that formerly resulted never melted an actor (though some felt like grease spots after a program), but candles on the set were actually liquefied. The heat problem was almost solved through the invention of lighting equipment that operates at cooler temperatures. The image-orthicon camera, with its reduced lighting demands, has clinched the victory over heat, and, in addition, has made possible more shading and contrasts on the TV set. Most of the lights employed in television were developed for use in stage and movie production, although TV has some original adaptations to its credit. The major types of lights now in use for TV include carbon arc lights, incandescent globes, mercury vapor lamps, and fluorescent tubes.

Costumes and Make-up

The costumes retained permanently by a television station are selected on the same basis as properties—demand settles the question. Unusual or infrequently needed items are rented from costume agencies. As in movie studios, articles of everyday wear are provided by the performer who wears them.

The subject of television make-up has received a great deal of publicity, mainly because of the weird experiments performed during the days when white-hot lights were necessary. Some performers have appeared before the cameras in gray greasepaint, green rouge, and blue lipstick. These grotesque combinations have now been abandoned for the type of make-up evolved in the movies, which sticks closely to natural colors and strives, in general, to mask the imperfections of nature. Sometimes nothing more than a light dusting of panchromatic powder is needed. Some make-up is usually considered desirable, however. Men with dark beards, for example, in order to avoid appearing unshaven despite a recent application of the razor, must apply some powder or greasepaint.

The flat, generalized lighting used in television creates a special problem in character make-up. Like artificial set elements, fake noses and imitation beards and hair tend to betray their falseness on the video screen. For this reason directors try to cast to type as much as possible, using actors who actually look like the people they are supposed to portray.

Projects and Problems

1. For class discussion: Will it be possible, as some people suggest, to produce any large number of TV shows that will be intelligible to those who can only listen?
2. After interviewing people who own TV sets, prepare a report on the influence of television on radio listening and movie-going in your community.
3. Visit your local TV station and report to the class the nature of the lighting equipment and its uses in various situations.
4. Prepare a report on the current status of color television in regard to both the method of transmission and the receiving of the picture, noting particularly what adjustments must be made in present sets to bring in color.

5. As many TV-station owners have had to do, try to find a building on your grounds that could be adapted to the production of TV programs. Draw up a plan for remodeling the building into studios and control rooms.

SIXTEEN

The Production of Television Programs

The production of television programs is an enormously complicated operation, beset by most of the difficulties encountered in radio but lacking its compensating advantages. A TV show, for example, must be timed as precisely as a radio broadcast, but while radio actors can look at the director to get 'slow down' or 'speed up' signals, the television actor must keep his eyes within the scene or spoil the illusion for the audience. It is the visual aspect of the medium, of course, that accounts for TV's greater difficulties and incidentally drives the cost of production so much higher than radio's. To the microphone needed in radio, television must add several cameras costing $13,000 each; the coaxial cable necessary to transmit a picture costs seven times as much as a radio wire; the personnel requirements are much greater—e.g. the 'Ford Theater,' which is put on in radio by ten production people exclusive of performers, on television requires forty people working behind the scenes.

Even when compared with other visual media, television, while not necessarily more expensive, does present problems never encountered before. For example, to maintain interest, television needs as much variation in camera angle and pickup as a movie does; yet in contrast to the film situation, where the action can be stopped to set up the camera for each individual scene, in television the cameras must be moved and arranged while the program is actually on the air. A similar contrast exists between stage and television productions with regard to costume changes. The intermissions between

the scenes of a play make complete changes easy; with one scene following another in nonstop fashion as it does on television, changing a costume sometimes becomes very difficult.

Even this early in its existence, a system of methods and personnel utilization for meeting these and many other problems is becoming firmly established. As time goes on, new and better techniques will undoubtedly be evolved, but today's pattern is likely to provide the basis for future development.

The Television Staff

The Producer

This term has the same meaning in television that it has in radio, for the producer is the person assigned over-all responsibility for a program or series. He supervises the whole process of production from the conception of the program idea to its presentation on the air, and often directs as well. Directors, writers, and many other personnel not only are accountable to the producer but are also, in many cases, selected by him.

The Director

As in radio, the director is the person who rehearses the program and guides it through the air presentation, achieving in this process the co-ordination of effort necessary to realize the potentialities of the script. During the broadcast he sits in the control room, where he can see and hear the program as it will be received by a viewer in his home. Thus, the director can maintain strict control over the sound and picture elements of the telecast. To be successful in this complicated task, he needs, in addition to the skills of a radio director, the knowledge of picture values possessed by a movie director, and the experience in stage composition and movement that comes from training in the theater.

The Technical Director

This staff member is the director's right-hand man in handling the technical details of the program. Skilled in camera techniques and lighting problems, he provides the director with expert advice on these matters. In addition, he is often the person responsible for relaying the director's instructions to personnel in the studio and the film-projection booth through the medium of a telephone line.

When communications are handled in this way, the director need wear no earphones at all but merely give general instructions to the technical director, who is depended on to relay them with the additional details necessary to satisfy the director's wishes. In some TV setups, however, the director himself maintains telephone contact with studio personnel. But in almost every case, the technical director operates the controls that switch the program from one camera to another, or to a film presentation integrated into the program.

Just as these practices differ, so do the control-room arrangements for seating personnel. When the technical director handles all communications, he must sit either next to or immediately below the director, in order to receive his instructions by word of mouth. When he merely operates the switches controlling the choice of cameras, he can receive his instructions on the telephone line connecting the director with the studio workers.

The Engineers

Two other specialists operating from the control room are the audio engineer and the video engineer. The former controls the volume of the sound elements and cuts microphones in or out; thus, his responsibility is similar to that of the engineer on a radio program. In addition, he may be in telephone contact with the worker in the studio who moves microphones around during the show. The video engineer 'rides gain' on the picture elements of the program by controlling brightness and other values. He may also, on instruction from the director, operate the controls that increase or decrease the brightness of a scene until it either 'whites out' or 'fades out'—techniques used for transitions between scenes.

The Floor Manager

This individual, also called a stage manager or assistant director, is the director's chief agent in the studio. Working out of camera range, he sees to it that the various elements of the program are ready when needed. This may include such tasks as seeing to it that actors are ready for entrances, arranging title cards, giving cues, and making adjustments and changes in one part of the set while the camera is focused on another part. Most of the floor-manager's work can be planned ahead of time, but he, like the director, must be constantly looking ahead to prevent trouble before it arises. If

unforeseen emergencies develop, his reaction must be swift and intelligent. During the program the floor manager receives his instructions by telephone from the control room.

Cameramen

Each camera used in a production requires the service of a technician, who operates the equipment under guidance from the control room. Instructions regarding the position of the camera and the lens setting are executed while another camera is picking up the scene being broadcast. When his camera is in use, the cameraman must concentrate on keeping it focused on the action, being careful, at the same time, to avoid picking up any part of the stage that does not belong in that particular scene. If camera movements are necessary to follow an actor or to get a closer view, they must be performed with smoothness and precision. In rehearsal the cameraman can be of great assistance to the director, whose attention is divided among so many elements, by taking over special responsibility for getting good scene composition.

The Microphone and Light Men

In those television productions in which microphones are moved about to follow the movements of the actors (a setup usually required in dramas), a man must be delegated to handle the microphone booms. The lighting effects are under the supervision of a light man, who also may move lights during the program to improve the effect of a given scene. Both of these people maintain telephone contact with the control room during the broadcast.

The Sound Man

When a television production includes sound effects not actually created on the stage by the actors and the props, the services of a special sound man are required. He works out of camera range to produce sound with manual and recorded equipment just as his counterpart in radio does.

Manager of Production Facilities

This official is responsible for what might be called the behind-the-scenes preparation for a video show. Working in close co-operation with the director and the technical director, he supervises the activities of the people who design, construct, or otherwise provide the

sets, properties, costumes, make-up, title cards, and miscellaneous effects required for television production. He is thus a key person in presenting a successful program, for he provides the background against which the director and his performers attain their effects.

Other Staff Members

Because of the visual element, television has made many new workers necessary in broadcasting, without eliminating anyone required by radio. Managers, salesmen, writers, traffic supervisors, music librarians, performers, and program directors are as necessary in a television station as they are in a radio station. Some of the additional workers required by the special demands of television have been mentioned already. There are many others. If a station maintains a unit for the taking and processing of newsreels, the services of motion-picture cameramen, directors, cutters, and processors are required. But whether the station makes its own movies or not, the broadcasting of films received from other sources makes a film editor essential; and a projectionist is needed to put the movies on the air. Most stations employ an art director, who may have one or more artists working for him; these are usually combination show-card writers and cartoonists, who prepare the title cards and visual material constantly needed by TV stations. Other essential workers are carpenters, electricians, painters, make-up specialists, and costumers.

The many different workers required for television production have tremendously complicated the TV station's operations in another way. Cameramen, engineers, performers, construction workers, and most of the other people involved are members of labor organizations; in some cases more than one union is striving for supremacy in a given field. The TV-station manager frequently finds that in order to keep operating he must reach agreements with as many as seven or eight different unions. In contrast, the manager of the radio station, if he must submit to organization at all, usually signs contracts with only three unions: one of the several representing engineers, the American Federation of Radio Artists, and the American Federation of Musicians.

Performing on Television Programs

When a script is used for a television show, the lines are almost always memorized; some reading of scripts is done before the

cameras, but, as in any visual situation, this method is awkward and unnatural, even for a newscast. A large number of programs are produced without scripts, the participants extemporizing their lines. The television performer, therefore, must have command of three different techniques: he must be able to commit lines to memory with speed and accuracy, and deliver them effectively; he must be capable of reading from a script without sounding stilted; he must be a master of ad-lib expression, putting ideas into words with speed, ease, and clarity.

As far as TV acting is concerned, both radio and stage training contribute something of value, and each in turn develops habits that are detrimental. The intimate, unprojected, conversational style of speaking appropriate to radio is also most desirable for television, since the actor is never more than a few inches from a microphone. Responding quickly to cues, adapting to strict time requirements, developing a characterization in a short period of time, and sustaining a performance through an entire show are other lessons learned in radio that can be carried over into television.

The principal handicap of radio training is that the actor, taught to orient himself completely in terms of the microphone, finds it difficult to subordinate that instrument in favor of the camera, as he must do in television, and to depend on the boom men to keep the microphone near enough for an adequate pickup. People with radio experience frequently betray their background on TV shows by unconsciously reaching for the microphone above their heads. The second major disadvantage of radio is that the actor has never needed to concern himself with the visual aspects of his performance. To show the effect of habit, a veteran radio announcer had to be constantly reminded not to cup his hand behind his ear as he spoke on a TV program.

The major benefits derived from stage work are training in line memorization, experience in sustaining a character and mood through an entire performance, and development of the art of building a scene or play to an effective climax. The ability to move and gesture effectively, as learned on the stage, is of some value in television, but certain modifications are required. The broad gestures and exaggerated facial expressions of the stage are often out of place on a TV program. Moreover, movements must be made somewhat more slowly, with some advance warning to technicians.

An actor who arises too rapidly from a sitting position is likely to suffer head amputation so far as the audience is concerned.

Another problem for actors accustomed to an expansive stage is adapting to the relatively small area covered by the TV camera. Actors working in the same scene must stand close together in order to be picked up. The principal hazard to effective TV acting by an actor experienced in stage work, however, is the habit of delivering lines so that a person in the last row of an auditorium can hear him. Radio projection, characterized by intimacy and subtlety, must be substituted for the stage projection that would blast the microphone.

While few students are likely to enter television with a background of film experience, we might mention that the movie actor finds his knowledge of gesture, movement, and facial expression valuable in television; moreover, the microphone situations in the two media are similar. His biggest problem is to learn a long stretch of lines at one time, and then deliver them in the sustained, unbroken performance so necessary in television.

It is not only the actor, however, who is required to make special adaptations in television; the announcer who transmits ad-lib descriptions of sports events for TV audiences faces some unusual difficulties. To describe what the viewer can see for himself is naïve and unenlightening; the announcer must present a discerning type of description that will interpret without relating the obvious. In most cases this account should be directly related to the picture on the screen, for the viewer will become confused or irritated if the broadcaster talks about one thing while his set is showing another. Yet, under present conditions, it is the director of the program who decides what is to be shown; the announcer must keep constant check on the monitor tube and create description to match what he sees. Until he is given authority to choose the picture (a change that is strongly recommended by some announcers), he lacks the complete control of the situation that is enjoyed by the radio sportscaster.

It is not enough, however, for the announcer to watch the screen. He must also be aware of what is happening on that part of the field not covered by the camera, in order to keep the audience apprised of all aspects of the situation. For example, Red Barber, famous sports announcer, tells how he missed an important play in a baseball game while his eyes were focused on the screen.

Watching the monitor tube, he saw a force-out play at second base, as did the TV audience, but he failed to see that the pitcher had previously tagged the hitter on his way to first base, to total three outs. Thus, both he and the audience were completely mystified when the defensive team ran for the dugout. A person with two eyes to watch the field and a third eye on the side of his head to watch the monitor tube would be a natural for TV sports announcing.

Writing for Television

Despite the addition of sight images to radio's sound, virtually all of the general requirements for radio writing, discussed in chapter XIII, apply also to television. A video program, like one in radio, exists in time rather than in space; consequently, the writer is called on to prepare material that will be clear and understandable the first time through, since it cannot be reviewed by the audience. Moreover, the TV audience is almost as diverse and haphazardly selected as the radio one. The taboos that surround the writer in one broadcasting medium apply equally to the other. A third factor of similarity is the situation in which the audience receives the program. The relative scarcity of TV sets has made the audience per set larger than that for radio, but it is still true—and it will become more true as the number of receivers increases—that a program's audience is broken up into many small segments composed of individuals or small groups in which the phenomenon of social facilitation is slight or nonexistent. Thus, writers must prepare scripts keynoted by the informal, conversational approach that is appropriate for solitary viewing. Furthermore, television, like radio, faces intense competition for its audience; hence, the necessity of seizing and holding attention is equally urgent. TV has an advantage in this regard only in that the presentation of sight plus sound is likely to arouse more interest than sound alone. Finally, the video writer, like the writer in any field, must prepare his material with a well-defined purpose clearly in mind.

Not only do these general requirements of radio writing concern the TV writer, but we might mention a specific requirement that applies as well—the dramatist must keep his cast to the smallest number possible. This is necessary in radio because of the difficulty of distinguishing among many characters on the basis of voice alone. The small area picked up by a camera makes it equally necessary

in television production; moreover, the director must utilize many close-ups in order to maintain viewer interest in TV's small screen. This requirement further limits the number of people who can appear together in a given scene.

Some demands of television writing, of course, are markedly different from those of radio. The two media definitely part company so far as set and costumes are concerned. The radio writer, who utilizes the listener's imagination for his stage, can create an unlimited number of sets, peopled by characters who can flit instantly from one locale to another in any kind of costume. The TV writer enjoys no such freedom. He is always bound by what can be physically created in a studio; consequently, his productions must require no more than three or four sets at the most, and costume demands face a similar restriction.

In fact, it is the physical actuality of television that creates most of the writer's problems. One of the most difficult of these is that he must prepare a script that can be produced without a stop from start to finish—a requirement that creates extreme technical difficulties under certain conditions. At the beginning of the chapter we mentioned one problem that may arise. Suppose a scene ends with an actor in one costume, and the scene immediately following requires him to appear in another costume. How will he make the change? On the stage the curtain would come down to mark the end of an act. In the movies the cameras would simply stop rolling. But on television the show must go on without hesitation.

Some ingenious solutions to continuity problems have been developed by writers in specific instances. One writer constructed a scene involving only an actor's hands, which was played by a second person while the original actor was making a swift costume change for the following scene. In another case an actor who was supposed to grow older from one scene to the other used water-resistant make-up for his older face and covered it with water-soluble make-up for his younger one. He accomplished instant aging by taking a moment between scenes to wash off the top layer. Films have also been used to bridge scenes involving costume changes. Few general rules can be established for writing a script capable of continuous presentation; the problem is usually an individual one, requiring great ingenuity to solve. Writers can eliminate most of their difficulties, of course, by planning scripts that do not call for aging characters, flashbacks, or extensive costume changes.

Another problem in TV writing that is absent in radio is the necessity of deciding which of the two stimuli, sound or sight, is to be the dominant one. There is general agreement that television is primarily a visual medium, in which sound should play a secondary role. In other words, the pictures are the key to the telecast. The writer should think in terms of the various visual scenes that are to compose the program, and build the show around them. This does not mean, however, that unbroken concentration on sight should be maintained. For one thing, the eye tends to tire with constant use—a fact that makes the opportunity to look away from the screen a welcome relief. Furthermore, an occasional change in emphasis from sight to sound helps to maintain interest; and the power of sound to amplify a total situation, particularly in its emotional aspects, should not be overlooked.

Too much dependence on sound, however, can be confusing, as an experience with the production of a TV 'Suspense' show on CBS illustrated. The program involved a killing, but in order to avoid showing an act of violence on the screen (a TV taboo), the murder was committed out of the audience's sight. The sound of the killer's voice, however, was clearly audible. Despite the fact that he had been carefully introduced in previous scenes, many listeners failed to identify him by his voice alone. Thousands of telephone calls requesting the identity of the murderer jammed the CBS switchboard, and the network finally broadcast a 'news bulletin' announcing his name. This incident is further proof of the fact that people tend to remember what they see, and it highlights the necessity of telling the main facts of a TV story through vision.

The format required for TV scripts differs, of course, from that of radio because of the need for space to indicate camera positions and movements by the actors. Generally, one half of the page is used by the writer for speech, music, and sound. The actors' movements essential to the advancement of the story are usually described on the other side, which also has space for the director to record camera information. The exact format of a TV script differs from situation to situation. The writer leaves most of the camera details to the director, who is best qualified in terms of sets and lighting to know what camera positions will achieve the best pickup. However, when a certain type of picture is essential to the plot, the writer should so indicate it. To illustrate, if the ring worn by a character has some special significance—perhaps it contains

poison—the writer should ask for a close-up of the ring. On the other hand, a writer wastes his time requesting that a character be pictured by a camera located over the set if a side or front shot will do just as well. Only the director knows whether the shot from above is desirable or even possible.

Directing Television Programs

The director of a television show faces the impressive responsibility of producing in a medium that combines some of the aspects of radio, the stage, and motion pictures with elements that belong to television alone. Which of the older media the new most closely resembles is a matter of dispute. William Paley, head of CBS, believes that TV, as a broadcasting medium, is most dependent on radio for its techniques, but many disagree with him. Without attempting to settle this argument, we can state that, as is the case with writing, many principles of radio production apply equally to television. These principles will not be repeated. Instead, we shall direct our attention to some of the special problems and procedures involved in the production of TV shows.

Rehearsal Procedures

Most television productions of any complexity are rehearsed in a three-step sequence. To reduce the costs of production, the early rehearsal of television programs is conducted without the use of cameras—a practice called 'dry' or 'line' rehearsal. Some of this preliminary preparation is usually carried out on the set, to accustom actors to the restricted area in which they will have to perform. During this rehearsal without the cameras, the director can block action as a stage director does; set lines, characterization, and business; and plan his camera positions. The next step is to prepare all of the other phases of the production—cameras, lights, and sound effects—in a process called technical rehearsal. The final integration of all these elements with the speakers on the set constitutes the camera rehearsal, which is culminated by an actual run-through of the program just as it will be done on the air.

This elaborate process of preparation requires much more rehearsal time than does a radio program of the same length. The TV half-hour drama, 'Actor's Studio,' for example, is rehearsed an average of 46 hours per week; this contrasts sharply with the 4-hour rehearsal accorded the average 30-minute radio program.

Because the time spent in rehearsal drives TV costs up, stations attempt to find a balance by producing many programs that require no rehearsal at all. ABC has even experimented with drama produced in this way. For the 15-minute program 'Ethel and Albert' no script was written; instead, situations were set up before the broadcast, and the participants ad-libbed appropriate lines while the program was on the air.

Camera Techniques

To be an effective producer of television shows, the director must first become acquainted with the limitations and potentialities of his most important tool, the television camera. Knowing, for example, that the camera's focus is relatively short, he will not attempt to play two important actions one behind the other, for the audience will miss what is happening in the rear. He will keep his actors working close together to permit the camera, with its limited field of vision, to pick them all up. He will use a large number of close-up shots to maintain interest for an audience that would soon become bored with the tiny figures transmitted by medium or long shots.

In planning the picture to be picked up by the TV camera, the director faces three major responsibilities: the scene must be properly framed; the elements of the picture must be appropriately composed and balanced; and constant visual variety must be provided. With regard to the first two factors, certain general principles are usually accepted as desirable. First of all, simplicity in composition is an all-essential attribute—a requirement that carries over into the making of movies for television. Some rules followed by any good photographer also apply to television: the director should strive for interesting perspective rather than shoot a scene from directly in front; perfect symmetry in composition should be avoided; extremely unusual camera angles should be used only with a specific purpose in mind, not for themselves alone.

Variety in the picture can be attained in a number of ways. To transmit complicated productions, such as dramas, as many as three cameras may be used in rotation. We have already pointed out that the lens setting for each of them can be changed for close, medium, and long shots. The other techniques for securing variety can be divided into two general groups: those that are accomplished by a movement of the camera in the studio, and those attained by adjustments in the control room.

1. *Camera Movements.* Television cameras can be moved in a number of ways to change the pickup of a scene, much as a movie camera can; in fact, the terms used to describe these movements have their origin in the motion-picture industry. The following are the ones most often used:

A. TILT UP OR DOWN. The camera can be tilted up and down to alter the vertical coverage of the scene.

B. BOOM UP OR DOWN. An expansion of the tilting movement can be obtained by placing the camera on a boom, which can be raised to provide shots from overhead or lowered to permit the camera to shoot up from the floor.

C. PAN RIGHT OR LEFT. The camera can be swung from side to side, or panned, as it is called, either to follow a moving element in a scene, such as a baseball player running for a ball, or to give a general impression of a large crowd or background panorama. In drama programs a camera focused on one part of a scene is often swung over to catch the entrance of another character.

D. DOLLY IN OR OUT. The camera can be placed on a pedestal with wheels (see Fig. 35), which permits moving it toward or away from the scene while the camera is in action. When 'dollying in,' the camera seems to be advancing for a closer look; when it is moving away, the field of pickup steadily enlarges.

In executing these changes, the director must be careful that a camera is not moved into the range of the one actually picking up the picture being broadcast, or the illusion of the program will be destroyed. To avoid this error, the movement of each camera must be carefully planned and rehearsed ahead of time, just as the movement of characters on the stage is plotted and rehearsed.

2. *Control-Room Adjustments.* The techniques used in the control room to vary the pictorial aspects of the program are executed by the technical director or the video engineer under the supervision of the director. As many as four or five of the following changes may be made in a single minute.

A. CUT. When a director decides to replace a scene being picked up by one camera with that of another, he instructs the technical director to 'cut,' giving the number of the camera to be used next. In this way the angle on a scene and the distance of pickup—close-up, medium, and long—can be constantly varied throughout a program. While one camera is on the air, the director supervises the lens setting and positioning of the cameras to be employed next.

We might mention that cameras are not usually cut away from a character while he is in the middle of a line. However, the camera does not always need to be on the person speaking; sometimes the reactions of the listener are more important. In one instance an actor saying a line was kept out of camera range so that he could simultaneously make a change of costume.

Fig. 35. A TV-studio scene. Note the floor manager behind the cameramen, the carriage or 'dolly' permitting the camera to be rolled around, the microphone-boom man at the far left, and the two sets side by side. (Courtesy NBC)

B. FADE. The video gain is turned up or down until the scene 'whites out' or 'blacks out,' a device commonly used to end a sequence; a reverse movement fades the next scene in.

C. DISSOLVE. This is a combination of a fade-in and a fade-out in which the products of two cameras are put on the screen at the same time, with one camera at normal gain and the other at zero. Then as the first camera is faded down while the second is faded up, the existing scene dissolves into the one that comes into view to replace it. This technique is often used for transitions and can be compared in general effect to the cross-fade in radio.

D. SUPERIMPOSURE. This effect is similar to the dissolve except that two scenes are maintained on the screen together, like a double exposure, as the gain on each camera is kept constant. In music programs this technique is used to show a close-up of the orchestra leader superimposed over a long shot of the members of his orchestra. The superimposure may be employed for trick shots also. To illustrate, one camera may pick up a fire, the other a dancer; when the scenes are shown together, the girl appears to be dancing in flames.

SOUND PROBLEMS IN TELEVISION

In radio the entire program can be built around the microphone, but in television the microphone must play a subservient role—a fact that confronts the TV director with some special problems in picking up sound. In most video productions the microphone is kept out of the picture either by suspending it over the stage or by hiding it behind some object on the set. In determining this location, the director must remember that as distance from the microphone increases, so does the reverberation of the actors' voices and the sounds on the stage; consequently, his objective is to get the microphone as close to the performers as possible. Another reason for this is to permit speakers to use the subtle, intimate type of projection employed in radio programs. The kind of balance obtained in radio, however, is virtually impossible in TV, where actors are constantly moving in relation to the microphone. Sets also must be designed with the sound factors in mind—particularly the problem of reverberation. The hard surfaces and type of wall arrangement that tend to keep sounds bouncing back and forth for too long a period must be avoided.

The problem of sound perspective, however, cannot be overlooked in placing microphones. A lamp might be a convenient spot to hide a microphone, but if it were near a door, the voice of a person just entering a scene would sound louder than that of a character nearer the camera—a situation that would lead to confusion on the part of the viewer. Another difficulty is the fact that a microphone cannot indicate the direction of a sound. To the viewer, an off-stage noise can appear to be right or left, upstairs or downstairs. Its direction can be suggested, however, by instructing characters to look in the direction from which the sound is supposed to come.

Sound effects may come from the stage as the result of movements by the actors, or they may be produced off stage by a sound man who operates in the same way as his prototype in radio. Dependence on actors for sound does have its hazards. There is a story about a program designed to end with the playing of Wagner's 'Wedding March' on a phonograph on the stage. Just as one of the actors lifted the arm to place it on the record, the needle came loose and fell to the floor. Before the program could continue, members of the cast had to get down on their hands and knees and scramble around until the needle was found—all in full view of the TV audience.

On the Air

During the actual broadcast period the director performs two important functions. First of all, he determines which pictures are to be seen by the audience—a task that might be termed editorial in nature. Two different setups are used for this purpose. In the more common one the director watches a monitor tube showing the picture on the air, plus other monitor tubes for each camera, to which the production may be switched (see Fig. 36). In the second setup the director watches only two tubes, one showing the current scene, and the other showing the scene immediately to follow, but he does not see the pickup of the third camera (see Fig. 37). The disadvantage of this method is that the director, seeing only the product of two cameras, can miss using the pickup of the third one, which, at a given moment, might be better than either of the other two.

In addition to editing the picture, the director's second important function on the air is to co-ordinate the activities of the many other people involved. A particular difficulty arises with respect to performers. As we said at the beginning of this chapter, cueing is more difficult in television than in radio, because hand signals are likely to pull a performer's eyes toward the director or floor manager, and thus spoil the illusion of the program. When cueing goes awry, a camera will often start to pick up an actor before he realizes he is on the air. One solution is to place lights, hidden from the camera, which the performer can see out of the corner of his eye without turning toward them. An additional help is to identify the camera actually on the air with a light on the top. Touch sig-

nals may be used in some cases; the floor manager off stage pokes an actor in the back to signify the beginning or end of a sequence.

An idea of the complexity of television directing can be gained by listing some of the things for which a director is responsible during the broadcast period. (1) He must watch the scene currently on the

Fig. 36. A control room and part of a studio. The director is in the foreground to the left, and next to him is the audio engineer, who also operates the turntables. Below, left to right, are the video engineer, the technical director, and the timing assistant. The studio personnel are the floor manager, the cameraman, and the production assistant. In this setup the director communicates directly with his staff by phone. Moreover, he watches a tube for the picture on the air, another showing the scene to follow, and one for each camera working the show. (Courtesy KGO-TV, American Broadcasting Company)

air to make certain that it is being picked up properly. (2) Simultaneously, he must give directions for the positioning of cameras to pick up future scenes. (3) The director must check the sound elements of the program by listening to the control-room loudspeaker. (4) He must give all instructions for switching the program from one camera to another. (5) At an exact moment he may have to cue in sound originating in another studio. (6) He must be

certain that the production is adequately lighted, and give instructions for whatever modifications are needed. (7) He must follow the script and keep a continual check on the timing. Sometimes an assistant takes over this latter task, but the director is ultimately responsible for correct timing. Obviously, the requirements for suc-

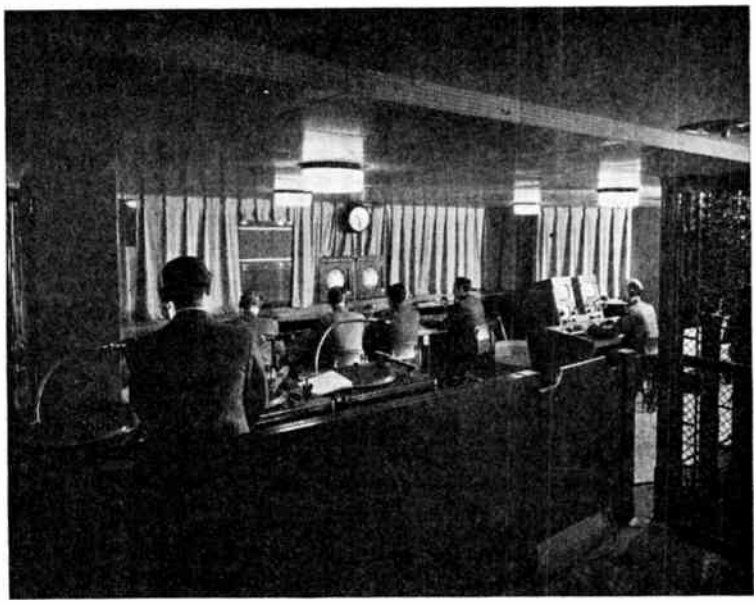


Fig. 37. A control-room scene showing in the foreground a turntable operator, and in the background, left to right, the audio engineer, an assistant timer, the director, the technical director, and the video engineer. In this setup the director wears no phones but communicates through the technical director. Only two tubes are watched, one showing the scene on the air, the other the scene that is to follow. (Courtesy NBC)

cessful direction in radio—namely, the ability to plan and think ahead, and to act with dispatch and coolness in any crisis—are even more necessary in television, where the director's responsibility is much heavier.

Remote Productions

The televising of events away from the studio makes up an important part of the average TV station's broadcasting activity. A

portable control room and transmitter together with the necessary microphones and cameras are taken to the scene of the event, whence the program is beamed back to the station by microwave relay. The transmitter of the station then sends the program out on its regular wave length to ordinary receivers.

Preparation for this type of program begins with a preliminary survey of the site of the special event in order to get information, particularly of an engineering nature. Unless a source of electrical power is available, a power unit must be included in the portable equipment. A straight, uninterrupted sight line from the portable transmitter to the TV station must be found, so as to avoid the necessity of setting up further relays to get around obstacles.

The placing of the cameras at special events is a matter that requires careful planning. They must be located to get a good picture of the event without obstructing the view of any spectators. If the event takes place during the day, the position of the sun must be ascertained to avoid facing the cameras into it; the same precaution applies to the lights used to illuminate events taking place at night.

In addition to engineering data, other information about the event is necessary for the director. He needs to know ahead of time what phases are likely to be significant and where they will take place. Spectators of a televised track event, for example, would probably be chagrined to find that they had been watching a mediocre broad-jumping performance while a pole-vault record was being broken in another part of the stadium. Another major problem is that the director, generally unable to broadcast the entire panorama of the event, must choose which part to present on the video screen. The camera televising a baseball game, for example, cannot focus on both the runner and the ball he has hit. However, new techniques are being devised to solve this problem. One is to split the screen between two cameras; another is to show one part of the action superimposed on another part. One of the reasons boxing has been popular on TV is that it is one of the few sports in which the home viewer can get a complete and natural picture of the action—an advantage that has frightened many promoters into banning the televising of boxing for fear of losing their paid audience.

Filmed TV Productions

The television industry has recently developed a technique for producing a TV program entirely on film, using the same camera techniques employed in 'live' television broadcasting. Three movie cameras are loaded with film; the cameras then operate together, picking up the show in the same way that TV cameras would pick it up during a broadcast. Unlike a 'live' show, however, the film can be edited; scenes in which errors appear can be retaken, and thus it is possible to cut down on rehearsal time. The show is then presented by film over all the stations of the network. This method definitely benefits those stations not tied to the network by cable or microwave relay, since the transmission of film is superior to that of the kinescope recordings, on which these stations must otherwise depend for their network shows. For stations with a regular network connection, however, there may be a certain disadvantage in the filmed method. They would ordinarily be carrying the program 'live' and would thus lose whatever advantage a 'live' presentation has over a filmed one.

Projects and Problems

1. For class discussion:
   a. Should television be placed under the same taboos that now surround radio?
   b. What types of material can be presented more effectively by television than by radio?
   c. Which of the other media does television most closely resemble?
2. Plan a course of study designed to fit an individual for a career as a television director.
3. Tune in to a TV drama program and note carefully the nature and number of camera variations employed.
4. Visit your local TV station and report to the class the type of control-room setup used, particularly the relationship between the director and the technical director.
5. Select a radio script and decide how you would turn it into a television broadcast; make certain that the set demands of your adaptation are reasonable and that costume or make-up changes will not prevent the continuous presentation of the program.

APPENDICES

An Original Radio Script for Production Practice

The creator of the following comedy-drama, Mr. Lee C. O'Connor, who wrote it in the summer of 1948 while a student in the author's radio-writing class at the University of Michigan, has kindly granted permission to educational institutions to use it for non-commercial purposes. This script has been selected not only because it is a very commendable achievement for a beginner in the field, but also because it is representative of many of the problems faced in drama production. The sound-effects demands are not particularly difficult, but both manual and recorded effects are required, and considerable ingenuity must be exercised to devise the equipment necessary to produce one of the sounds. Suitable music can be found on records. Since the script is designed for a 15-minute period but is likely to run over that period, experience in making cuts can also be gained. The cast is small enough to permit more than one production in a class, which, if the equipment is available, can be recorded and played back for purposes of comparison.

THE EAVESDROPPER
by
Lee C. O'Connor

CHARACTERS
ANNOUNCER
BOB
IRENE
JENKINS

(MUSIC: THEME)

ANNOUNCER: (Regular opening announcement)

(MUSIC: TRANSITION)

ANNOUNCER: There comes a time in the life of many young married couples when the flame of romance seems to flicker a little and grow dim. You know how it is ... the wife may suddenly develop an intense interest in some strange hobby while the husband suffers from neglect and boredom. Take Irene and Bob Larson, for instance ... they've just entered this hobby-frantic wife-neglected husband stage of matrimony, which means, of course, that quarrels and petty bickering have now become part of their daily routine. So it's not at all unusual that we look in on Bob and Irene to find them crossing verbal swords over that traditional battlefield of marriage ... the breakfast table.

SOUND: ESTABLISH TINKLE OF CUPS AND SILVERWARE

IRENE: Another cup of coffee, Bob? Or is that newspaper more interesting than breakfast?

SOUND: RUSTLE OF NEWSPAPER

BOB: Huh? ... Oh ... no thanks, Irene. I would like another piece of toast, though.

IRENE: Well, you'll have to wait until my new pop-up toaster decides to pop.

BOB: (PREOCCUPIED WITH PAPER) Did you win that on a radio show, too?

IRENE: (PROUD) Yes ... like it?

SOUND: RATCHET WHIRR ENDING WITH A PING AS TOASTER POPS UP TOAST

IRENE: Oops! There goes the toast, Bob! Catch it!

SOUND: NEWSPAPER HURRIEDLY CRUMPLED, BREAKFAST TABLE JARRED

BOB: (SLIGHTLY OFF MIKE) Got it! (ON) It was a high fly out in left field, but I got it!

IRENE: Give it to me... I'll butter it.

BOB: I guess I'd better start wearing a catcher's mitt to breakfast. (SUDDENLY IRATE) Irene, why can't we use the old toaster?

IRENE: This toaster is the latest model, Bob Larson. The spring just needs adjusting.

BOB: That's not all that needs adjusting.

IRENE: (PROUD, IGNORING SARCASM) I won it on the You Can Have It show yesterday for naming our first five presidents. I think it was very clever of me to ...

BOB: I suppose it was also clever of you to win a thousand boxes of Foamy Crystal soap flakes on that program last week?

IRENE: We can always use soap, Bob Larson.

BOB: But we don't have to have it stacked in the bathroom so we can hardly get

in. I managed to squeeze into the shower last night and wound up taking a Foamy Crystal bubble bath.

IRENE: You should have moved some of those boxes.

BOB: (EXASPERATED) O-o-o-oh!

IRENE: Bob Larson, you don't appreciate my racking my brains on those quiz shows.

BOB: Appreciate? Irene, darling, when a man shows up at eight o'clock in the morning threatening to dump five tons of coal on the living room floor just because you won it on the radio, I can't appreciate anything.

IRENE: Can I help it if we live in an apartment and don't have a furnace? Besides, we sold the coal to the janitor so everything turned out all right.

BOB: Yes, but you took the money and sent in thirty donations with thirty testimonials to the Try Your Luck program. What are you trying to do ... win a coal mine?

IRENE: (VERGE OF TEARS) Oh, Bob ... (SOBS) you don't love me any more.

BOB: Oh, Irene ... I didn't mean to hurt you. It's just that ... well, you know what I mean.

IRENE: (THROUGH SOBS) No ... what do you mean?

BOB: Well, can't you go a little slower on this quiz show business? Gee, honey, I hardly ever see you any more. Every night you're at some radio studio.

IRENE: (CONTROLLING SOBS) But I've won so many things.

BOB: (TOLERANTLY) You certainly have, honey! Look, from now on why don't you limit yourself to just the shows that give away big things ... like a house, for instance?

IRENE: A house?

BOB: Yes, a house. Why try to bring one home a piece at a time ... win one all at once. Then we'll have more time together and we won't be having these little spats.

IRENE: I suppose I have been selfish. (DETERMINED) I'll concentrate on winning a house from now on!

BOB: That's the spirit! ... Now, young lady, how about meeting me at the office tonight? We'll go to dinner some place to celebrate.

IRENE: Tonight? I was going to ... No! ... that show's sponsored by a cod-liver oil company ... it's not for me. You've got a date for dinner, Bob Larson.

BOB: Now you're talking like the wife I love! How about a little kiss to seal the bargain?

SOUND: KISS

BOB: Oh, boy! Delicious! ... Well, I'd better be getting to the office, honey.

IRENE: You haven't even touched your cereal, Bob.

BOB: What kind is it?

IRENE: (APPREHENSIVE) Snappsy-Wappsies.

BOB: I hate Snappsy-Wappsies!

IRENE: But I've won a whole year's supply...

BOB: (TOLERANTLY) I know, honey, I know. (FADING) I'll see you tonight at the office.

IRENE: (CALLING) Don't forget your hat!

BOB: (OFF MIKE) I've got it, honey.

SOUND: OFF, A DOOR SLAM

(MUSIC: TRANSITION, FADE OUT BEHIND FOLLOWING)

SOUND: DOOR BUZZER, INSISTENT SHORT RINGS

IRENE: Oh, dear, somebody's always at the door just when I'm in the middle of washing dishes.

SOUND: RATTLE OF DISHES, THEN PROLONGED DOOR BUZZER

IRENE: (CALLING) Just a minute!

SOUND: DOOR BUZZER, HOLD UNTIL DOOR OPENS

IRENE: (CALLING OVER DOOR BUZZER) Yes, yes, I'm coming!

SOUND: DOOR OPENS ON, BUZZER OUT SIMULTANEOUSLY

JENKINS: Good morning, good morning, good morning, Mrs. Larson. I just know you're Irene Larson by that happy smile on your face. Yes sir, you can always tell a happily married woman whenever you see one!

IRENE: Who on earth ...

JENKINS: Now don't tell me you're not Mrs. Larson ... I've got your name and address right here on this letter in your very own handwriting. You can't fool me! No sir, you can't fool Harry Jenkins, the Old Radio Eavesdropper.

IRENE: The Radio Eavesdropper?

JENKINS: Yes, ma'am, I'm Harry Jenkins, the Old Radio Eavesdropper from the Try Your Luck program and I've brought you wonderful news, Mrs. Larson ... yes it is ... the greatest news you've had in many a day. I'm going to give you two

hundred ... yes, I said two hundred ... milk-fed baby chicks!

IRENE: Two hundred baby chicks! Oh, no!

JENKINS: And not only that, Mrs. Larson, for each and every one of those two hundred little baby chicks I'm also going to give you a five year supply of Happy Cackle chicken feed!

IRENE: (WEAKLY) Chicken feed?

JENKINS: I can see you're overwhelmed, Mrs. Larson, but that isn't all! In addition to the two hundred milk-fed baby chicks and the five year supply of Happy Cackle chicken feed, you're going to have a chance to win a deluxe, fully-furnished, twenty-thousand-dollar ranch style home.

IRENE: (BRIGHTER) A ranch style home?

JENKINS: That's what I said, Mrs. Larson. Isn't that wonderful? Your letter, lucky girl, was picked out of many thousands. Our judges have chosen you as the most happily married woman of the week, which entitles you ... in addition to your other prizes, of course ... to appear on the Try Your Luck program tonight to try for the grand prize of a ranch style home.

IRENE: How marvelous! What do I have to do?

JENKINS: As you know, the contest winner each week appears with her husband on my show, but here's the catch: only the wife knows that they're on the air! You see, your Old Radio Eavesdropper hides a microphone somewhere about their home or on a night club table while the whole world listens in on their private conversation.

IRENE: Yes, I've heard your program.

JENKINS: Well, the radio audience votes for the most entertaining married folks, and at the end of ten weeks, when ten couples have appeared, the couple with the most votes wins the home.

IRENE: I'm sure Bob and I can win!

JENKINS: I've got a set-up for you tonight, Mrs. Larson, that'll make you a cinch to win!
(GLEEFULLY) Oh ho! You'll love this!

IRENE: (VERY EAGER) What is it, Mr. Jenkins?

JENKINS: You're going to ask your husband for a divorce!

IRENE: A divorce! ... Mr. Jenkins, you're crazy!

JENKINS: It's only a gag, Mrs. Larson. All you have to do is to have your husband take you to the Club Unique for dinner tonight. I'll arrange to have you seated at a special table where a microphone will be hidden in a bowl of flowers.

IRENE: (FLATLY) And I'll ask Bob for a divorce.

JENKINS: At exactly ten minutes after eight.

IRENE: (FLATLY) And it'll be broadcast over your program.

JENKINS: That's the idea! Wonderful gag, isn't it?

IRENE: Terrible! I couldn't do that to Bob even in fun.

JENKINS: It's a perfect set-up, Mrs. Larson ... you're the most happily married woman of the week! Why, your husband's reaction when you ask for a divorce will thrill the whole radio audience.

IRENE: It sure will.

JENKINS: Then you'll do it?

IRENE: I can't do a thing like that.

JENKINS: (TEMPTING) Not even for a super-deluxe, fully-furnished, twenty-thousand-dollar ranch style home?

IRENE: It is a house, isn't it?

JENKINS: A house? It's a mansion!

IRENE: You'd be right there to explain things to Bob when it's all over?

JENKINS: I'll take care of everything!

IRENE: No ... No, I can't do it.

JENKINS: (VERY TEMPTING) It's a beautiful home, Mrs. Larson.

IRENE: Do you think I should do it?

JENKINS: Of course! But remember ... not a a word to your husband! You'd spoil every chance of winning.

IRENE: Oh, I wouldn't dare tell Bob.

JENKINS: Then you'll be at the Club by eight?

IRENE: ... (SUDDEN DECISION) I'll be there!

(MUSIC: TRANSITION. FADE DOWN AND OUT WHILE SOFT DINNER MUSIC FADES IN AND UP. HOLD UNDER FOLLOWING)

BOB: Gee, Irene, it seems like old times again ... lights, music, dancing. See what you've been giving up for a lot of crazy give-away radio programs?

IRENE: Uh ... How's your steak, Bob?

BOB: Steak? Oh, it's fine... I'm glad you suggested the Club Unique for our celebration, honey ... it's so intimate. It seems like we're all alone ... just the two of us.

IRENE: Yes ... just the two of us.

BOB: We've got to do this more often ... now that you've given up being a quiz kid.

IRENE: What time is it, Bob?

BOB: Just a little after eight.

IRENE: I mean exactly.

BOB: It's exactly nine minutes after. Why? Are you due at some radio studio? (LAUGHS)

IRENE: Bob ... I love you!

BOB: Well, I love you too, honey, so we're even.

IRENE: Oh, I really love you my dearest, my darling, I love you... I've always loved you and I always will love you!

BOB: Take it easy, honey, you'll blow a fuse.

IRENE: What time is it now, Bob?

(MUSIC: SNEAK OUT DINNER MUSIC UNDER FOLLOWING SPEECH)

BOB: At the sound of the musical water glass, it will be exactly ten minutes and thirty seconds past the hour of eight, through the courtesy of your husband's watch.

SOUND: SPOON STRIKING BELL-TONED WATER GLASS

IRENE: Bob, I've got something to tell you.

BOB: (FLATLY) You've bought another new hat.

IRENE: No, I ...

BOB: (FLATLY) You've lost that brooch I gave you for your birthday.

IRENE: (VERGE OF TEARS) No ...

BOB: Well, I'll just have to give up.

IRENE: Bob ...

BOB: Yes?

IRENE: (BLURTS) I want a divorce!

BOB: (CALMLY) A divorce!

IRENE: (TINY VOICE) Yes.

BOB: Oh ... so you know?

IRENE: Know?

BOB: About Dorothy and me.

IRENE: Dorothy?

BOB: My secretary. We've been wondering how to tell you.

IRENE: (WEAKLY) Oh?

BOB: It's just one of those things. I've seen so little of you these last few months that ... well, Dorothy and I have grown very fond of each other. If you insist on a divorce, of course I'll pay your fare to Reno and grant you a property settlement.

IRENE: (GROANING) Oh!

BOB: It certainly is a relief to have it all out in the open so we can discuss it like civilized people, isn't it?

IRENE: (EXPLODING) Bob Larson, you beast! You ... you philanderer! You ... you heel! (SOBS WHILE FADING OFF) I never want to see you again!

BOB: Irene! Wait a minute ... come back here ... Irene!

JENKINS: (FADING ON) What a performance, Mr. Larson, what a performance! I just know the radio audience loved it. You and the missus are a cinch to win the grand prize. Why, she didn't even suspect that you were part of the gag!

BOB: Shut up, you fool! You've just made me lose my wife!

(MUSIC: TRANSITION. FADE OUT BEHIND FOLLOWING)

SOUND: INSISTENT DOOR BUZZER

BOB: (DESPONDENT) Come in...

SOUND: DOOR OPENS OFF MIKE, CLOSES QUICKLY

JENKINS: (FADING ON) Good evening, good evening, good evening, Mr. Larson.

BOB: It's you!

JENKINS: Yes sir, it's the Old Radio

Eavesdropper, Harry Jenkins, himself.

BOB: Get out of here, you homewrecker!

JENKINS: Now, now, Mr. Larson, don't be too hasty! After all, you may win the super-deluxe, fully-furnished, twenty-thousand-dollar ranch style home. Letters and telegrams have been pouring in all week. You and your wife have already got twice as many votes as any other couple so far.

BOB: I haven't got a wife! I haven't seen or heard of her since she walked out on me at the Club Unique last week. Oh, why did I ever listen to you? I only did it because I thought I could teach Irene a lesson and cure her of quiz-show-itis. Now look at the mess I'm in.

JENKINS: Calm yourself, Mr. Larson, calm yourself!

BOB: She didn't even wait for an explanation. She actually believes that I'm really in love with my secretary. You're the cause of it all!

JENKINS: Now don't condemn me too quickly, Mr. Larson. I'm going to help you get your wife back.

BOB: A lot of help you'll be.

JENKINS: You'll see, Mr. Larson, you'll see. Now, I just want you to tell me why you think she should come back.

BOB: (EXPLODES) Why? There are a million reasons why!

JENKINS: Just tell me a few.

BOB: Well, I haven't any clean shirts for one thing.

JENKINS: No shirts.

BOB: No! And my socks need darning ... yes, and the sink's full of dirty dishes.

JENKINS: Your socks need darning and the sink is full of dirty dishes. Anything else?

BOB: (VERY IRRITATED) Yes, I love her, you fool! Is that reason enough? I love her!

JENKINS: Will you say that again, Mr. Larson?

BOB: I love ... L-O-V-E ... love my wife!

JENKINS: That's what the radio audience wanted to hear, Mr. Larson.

BOB: Radio audience?

JENKINS: That's what I said... Surprised?

BOB: Hey, what are you doing with that lamp?

JENKINS: (SLIGHTLY OFF MIKE) Ladies and gentlemen, you have just heard Mr. Robert Larson in a candid microphone interview. Mr. Larson is the husband of last week's contest winner, Irene Larson, who appeared with her husband on our last program as the most happily married woman of the week. I'll now return you to the Try Your Luck program in our regular studio.

BOB: (EXPLODING) What have you done?

JENKINS: (FADING ON) Temper, temper, Mr. Larson. I merely took the liberty of hiding a microphone in this lamp today so we could broadcast your love for your wife to the whole world. The janitor let me in. You see, I feel partly responsible for you two having broken up, so I figured that if your wife heard you on the air ...

BOB: You get out of here, Jenkins, before I beat you to a pulp!

JENKINS: Don't be hasty, Mr. Larson. Remember, after tonight's broadcast you can't miss winning the grand prize ... (EXCITED) Wait a minute, Mr. Larson, you don't know what you're doing!

BOB: Oh, yes I do. I'm throwing you out of my apartment!

JENKINS: But you can't do this to me!

SOUND: DOOR OPENS ON MIKE

BOB: Get out and stay out!

JENKINS: (OFF MIKE) You'll be sorry for this, Mr. Larson!

IRENE: (OFF MIKE) Bob! ... Bob, darling!

BOB: Irene!

IRENE: (FADING ON) Oh, Bob, darling, I heard the broadcast. I didn't know ...

BOB: Where have you been, honey? I've been living a nightmare.

IRENE: Staying upstairs with Mrs. Johnson. I've been so unhappy.

JENKINS: (FADING ON) See, I told you everything would turn out all right. You've got me to thank for this!

BOB: Oh, shut up!

JENKINS: I just know you two will win that home. (FADING) Well, goodbye for now, you two love birds... But I'll be back.

IRENE: Oh, Bob, this has been all my fault. Those darned quiz shows!

BOB: Forget it, honey. Forget the house, forget everything. You're the only prize I ever want.

(MUSIC: TRANSITION)

ANNOUNCER: But having Irene back in his arms was not the only prize Bob got.

Six months must have gone by when an old friend of the Larson's, just bubbling over with good news, again descended on their little apartment.

SOUND: INSISTENT DOOR BUZZER. DOOR OPENS

IRENE: Why, Mr. Jenkins!

SOUND: DOOR CLOSES QUICKLY

JENKINS: Yes, ma'am, it's your Old Radio Eavesdropper again!

IRENE: You don't mind if we talk out here in the hall, do you?

JENKINS: Not at all, Mrs. Larson. (GLEEFULLY) Oh ho, I bet you're happy to see me again!

IRENE: I certainly am if you've come about the house.

JENKINS: That's it, Mrs. Larson! Your twenty-thousand-dollar, fully-furnished ranch style home was completed today down to the last tiny detail.

IRENE: How marvelous!

JENKINS: I want to be the first to congratulate you, Mrs. Larson. Here ... I've brought the deed.

IRENE: I can hardly believe it!

JENKINS: Is your husband home, Mrs. Larson? I've just got to congratulate him too.

IRENE: Yes, Bob's home, but ...

JENKINS: But what, Mrs. Larson?

IRENE: He's in a terrible mood, Mr. Jenkins. I don't think you ought to go in.

JENKINS: Nonsense! He'll be delighted to hear the news.

IRENE: Oh, he will be ... but you'd better let me tell him.

JENKINS: Now don't tell me Mr. Larson is still holding a silly old grudge

against your Old Radio Eavesdropper?

IRENE: I'm afraid so, Mr. Jenkins. You see, he's been rather unpleasantly reminded of you every day for the past six months and lately he's been having violent temper tantrums. Why he's even threatened to kill you, Mr. Jenkins!

JENKINS: But what have I done?

IRENE: Remember those two hundred baby chicks I won on your radio program?

JENKINS: Two hundred baby chicks?

IRENE: Yes ... only they're not babies any more, Mr. Jenkins ... listen!

SOUND: DOOR OPENED. QUICKLY FADE IN CACKLE OF MANY CHICKENS, ESTABLISHING WELL AND ENDING WITH A ROOSTER CROW. CROSS-FADE

(MUSIC: THEME)

ANNOUNCER: (Closing Announcement)

A Radio Adaptation for Production Practice

The 15-minute script that follows is an adaptation of the well-known short story by Nathaniel Hawthorne entitled 'Dr. Heidegger's Experiment.' Educational institutions may use it for any non-commercial broadcast. The script's principal challenge as a production exercise is to the three actors who must portray characters successively in old age, middle age, and youth; other than that it presents no particular problems. The sound can all be produced with simple manual equipment; suitable music is available on recordings.

Students may be interested in comparing this adaptation with the story as written by Hawthorne. An evaluation of the script should be undertaken with questions such as the following in mind: (1) Is the radio version faithful to the spirit and purpose of the Hawthorne original? (2) Are the variations from Hawthorne's story justified? For example, one character has been eliminated and a new one added; do the demands of the radio medium make these changes necessary? (3) Has the adapter failed to make any changes from the original that would have made this a more effective radio presentation? (4) Is the opening scene one that would gain the attention of the listener?

DR. HEIDEGGER'S EXPERIMENT

a radio adaptation of the
story by
Nathaniel Hawthorne

CHARACTERS

ANNOUNCER

DR. HEIDEGGER--An old doctor with a peculiar investigative mind and an ironic sense of humor.

MARTHA--Dr. Heidegger's maid, a steady, stolid girl of 20, who believes implicitly in the doctor.

WIDOW WYCHERLY
COLONEL KILLIGREW
MR. MEDBOURNE
— Very old people who live in their somewhat questionable pasts; during the story they become middle-aged, then youths of 20.

ANNOUNCER: Over a hundred years ago a great American author, Nathaniel Hawthorne, wrote a story called 'Dr. Heidegger's Experiment.' This strange tale of youth and old age has held the attention of readers ever since. Tonight the _____ Players present a radio dramatization of this famous story. Listen now as Dr. Heidegger begins his remarkable experiment.

(MUSIC: MYSTERIOUS OR FORBIDDING ... TO ESTABLISH MOOD)

ANNOUNCER: The scene is Dr. Heidegger's laboratory, an eerie place besprinkled with antique dust and festooned with cobwebs. In a dark corner lurks a musty skeleton. That very singular man, old Dr. Heidegger, is working at a table covered with test tubes and bottles when his maid knocks at the door.

SOUND: (OFF MIKE) DOOR KNOCK

DOCTOR: Come in.

SOUND: (OFF MIKE) DOOR OPENS THEN CLOSES BEHIND FOLLOWING SPEECH

MARTHA: (COMING ON) A package for you, Doctor.

DOCTOR: Ah ... perhaps it's what I've been waiting for.

SOUND: UNWRAPPING PAPER

DOCTOR: Yes ... at last, it's arrived.

MARTHA: Why ... it's only a bottle of ordinary water.

DOCTOR: Water ... yes, my dear ... but not ordinary water. The liquid you see in that bottle is from the Fountain of Youth.

MARTHA: Whatever is that?

DOCTOR: Why this water can turn old age into youth.

MARTHA: If you say so, Doctor, but ... that's pretty hard to believe.

DOCTOR: But it's true nevertheless. A friend of mine sent it to me from Florida. He found the Fountain of Youth that Ponce de Leon failed to find.

MARTHA: Are you going to drink that water?

DOCTOR: Not before I test it... Let's see, now ... ah, Martha, do you see that butterfly there on the table?

MARTHA: Yes ... but it looks dead to me.

DOCTOR: Perhaps... Its wings are certainly

faded and worn. But we shall find out... Now, to open the bottle.

SOUND: UNSCREWING BOTTLE TOP

DOCTOR: Let's see what happens when I put a few drops of this water on the butterfly's wings... There!

(MUSIC: HARP INTERLUDE TO INDICATE TRANSFORMATION)

MARTHA: Why the butterfly's flown off.

DOCTOR: Did you see what happened to its wings? They became as fresh and beautiful as the day the butterfly first burst from its cocoon.

MARTHA: That water's peculiar stuff.

DOCTOR: It's magic water, Martha... It can make me young again... One glass and I can be as young as you are.

MARTHA: Are you going to drink it now?

DOCTOR: I don't know. Do you think that old people would be happy with their youth restored?

MARTHA: I never thought about it.

DOCTOR: I suppose not... Never having been old, you've never wondered what it would be like to be young again... But you will.

MARTHA: What are you going to do now?

DOCTOR: I have in mind a further test ... on people this time. They must be the oldest, the most faded people in the village ... and, yes, it would help if they were just a bit disreputable.

MARTHA: Uh-h ... what about Colonel Killigrew?

DOCTOR: Perfect, Martha... He's certainly old ... and rumor says that he was drummed out of the army for cowardice... And, oh yes, then there's old Mr. Medbourne.

MARTHA: The one who used to be the banker?

DOCTOR: The very one... He retired suddenly when a shortage was discovered. I understand he escaped jail by a miracle.

MARTHA: Do you need anyone else?

DOCTOR: I should have a lady to complete my experiment ... ah ... I know just the person ... as decrepit and senile an individual as yet breathes ... the Widow Wycherly.

MARTHA: I've heard stories about her.

DOCTOR: And so has everyone. Gossip says that her husband disappeared fifty years ago. She's been a 'widow' ever since by courtesy of the community. Invite the three of them for next Saturday, Martha. Tell them the Doctor is giving a party.

MARTHA: Will they come?

DOCTOR: They've been old and forgotten so long now, I'm sure they'll jump at the chance.

MARTHA: Oh, Doctor ... I've just remembered something.

DOCTOR: Yes?

MARTHA: Weren't Colonel Killigrew and Mr. Medbourne both in love with the Widow once?

DOCTOR: Quite true.

MARTHA: Won't that make things a bit stiff and awkward?

DOCTOR: Exactly what I hope will add a special touch of interest to my experiment.

MARTHA: What should I serve?

DOCTOR: Nothing whatsoever, my dear ... the sole refreshment will be that magic bottle of water from the Fountain of Youth!

(MUSIC: TRANSITION)

WIDOW: (STIFFLY) Well, Mr. Medbourne ... It's been a long time.

MEDBOURNE: Indeed it has, Mrs. Wycherly.

KILLIGREW: I wonder what the doctor is up to ... inviting us all like this.

WIDOW: I'm sure I don't know, Colonel... He's a strange man.

KILLIGREW: I don't want any nonsense... I took time from writing my memoirs to come tonight.

MEDBOURNE: And I was working on some reports.

WIDOW: Yes and I ... I was ... I ... I ...

SOUND: (OFF MIKE) DOOR OPENS

WIDOW: Oh, here's the doctor now.

DOCTOR: (COMING ON) Good evening, my friends. Before we begin may I thank you all for coming to help me with my little experiment.

KILLIGREW: Experiment? What's this all about, Doctor?

MEDBOURNE: I thought we were invited to a party.

WIDOW: I want nothing to do with your experiments, Dr. Heidegger. If you don't mind my saying so I've heard tell there've been some strange goings on in that laboratory of yours.

DOCTOR: Gossip, Mrs. Wycherly, I assure you... We've all been victims of that, I'm afraid.

WIDOW: Humph!

KILLIGREW: Get to the point, Doctor... I left some important work to come here tonight.

MEDBOURNE: So did I.

WIDOW: And my social obligations are very heavy... Really, this was the first night in weeks I had free.

DOCTOR: Of course ... of course... We're all busy people... So I'll get to the point immediately. Do you all see this bottle of water?

KILLIGREW: We're not blind, Doctor.

DOCTOR: Of course not, Colonel... We're old ... all of us ... but not yet blind. Now watch closely, please. See ... from the pages of this book I draw forth this rose... It is faded and brown now but once it was as fresh and young as we once were.

MEDBOURNE: What about it?

DOCTOR: Fifty years ago this rose was given to me by Sylvia Ward, whose portrait hangs on the wall yonder.

WIDOW: Sylvia Ward ... wasn't she ... weren't you going to ... ?

DOCTOR: That's right, Mrs. Wycherly. We were engaged to be married. In fact, she gave me this very rose to wear on our wedding day.

WIDOW: I remember now... There was a tragedy.

DOCTOR: Your memory is excellent... Shortly before the ceremony Sylvia became slightly ill. Unfortunately, she came to me for treatment. I gave her a prescription that I thought would help. She died on what was to have been our wedding day.

KILLIGREW: Ahem... Dashed bad luck, Doctor.

DOCTOR: Quite, but completely beside the point at this moment... Mrs. Wycherly ... look at this withered and crumbling flower... Do you think this rose of half a century could ever bloom again?

WIDOW: Nonsense! You might as well ask

whether an old woman's wrinkled face could ever bloom again.

DOCTOR: Then watch as I sprinkle a few drops of water from this bottle on the rose... There.

(MUSIC: HARP INTERLUDE TO INDICATE TRANSFORMATION)

MEDBOURNE: Amazing!

KILLIGREW: Why ... ahem ... the rose is growing red again.

WIDOW: Even the stalk's getting green.

DOCTOR: Yes ... it now blooms as brightly as the day Sylvia gave it to me.

KILLIGREW: A very clever trick, Doctor. How did you do it?

DOCTOR: It was no trick, Colonel. You actually saw that rose grow young again.

MEDBOURNE: Do you expect us to believe that?

DOCTOR: Not without further proof, Mr. Medbourne. But first you should know that the water in this bottle is no ordinary liquid... It is water from the Fountain of Youth.

KILLIGREW: Humbug!

WIDOW: Let the doctor explain.

DOCTOR: This water is from the very Fountain of Youth for which Ponce de Leon searched in vain two or three centuries ago.

WIDOW: But he never found it.

DOCTOR: No ... but a friend of mine was more fortunate. He stumbled across the Fountain of Youth while on a hunting trip in Florida and has sent me what you see in this bottle.

KILLIGREW: Humph! ... and what is the effect of this fluid on the human frame?

DOCTOR: That you shall judge for yourself ... all of you ... Will you

drink from the Fountain of Youth, Mrs. Wycherly?

WIDOW: The Fountain of Youth! ... Indeed I will!

SOUND: POURING WATER

DOCTOR: There ... and you, Mr. Medbourne?

MEDBOURNE: I'll drink with Mrs. Wycherly.

SOUND: POURING WATER

DOCTOR: There, Mr. Medbourne... Now ... What about you, Colonel?

KILLIGREW: Humph! I still think the whole thing's a humbug ... but I ... ahem ... am feeling a bit dry.

SOUND: POURING WATER

DOCTOR: There, Colonel ... guaranteed to conquer thirst as well as old age.

WIDOW: Won't you join us, Doctor?

DOCTOR: If you'll excuse me ... no. I've had so much trouble growing old, I'm in no hurry to grow young again. With your permission, I'll merely watch the progress of the experiment.

WIDOW: Then let's drink.

DOCTOR: One moment, please... You now have a second chance to tread the perilous path of youth. Think what a sin and shame it would be if you did not become patterns of youthful virtue and wisdom.

MEDBOURNE: Do you think we are foolish enough to repeat the errors we have already committed?

DOCTOR: Drink then... Drink to youth!

(MUSIC: HARP INTERLUDE TO SUGGEST TRANSFORMATION)

(CHARACTERS NOW BECOME MIDDLE AGED)

KILLIGREW: Why ... Mrs. Wycherly ... you're changing... Your hair is getting darker.

WIDOW: You're changing too, Colonel... You're straighter than you were ... and Mr. Medbourne! ... I've never seen you look so distinguished.

MEDBOURNE: Thank you, fair lady... A compliment from such a charming person as you is overwhelming.

KILLIGREW: Mrs. Wycherly ... Clara ... You are as beautiful as the day I proposed.

MEDBOURNE: You are more beautiful than the day I proposed.

WIDOW: Who can believe two such confirmed spoofers? But I can believe a mirror. Is there one around, Dr. Heidegger?

DOCTOR: I have one in the hall, Mrs. Wycherly, well out of the way. You see, I fancy I see the faces of my dead patients leering out at me from it. You can understand why I avoid it.

WIDOW: (GOING OFF) I wonder if I dare look.

DOCTOR: At this moment, you have nothing to fear from a mirror, Mrs. Wycherly.

KILLIGREW: How I'd like to be at the head of my regiment again. I'd lead a charge that was a charge.

MEDBOURNE: Yes ... and I must look into several new enterprises... I feel my old vigor returning.

WIDOW: (COMING ON) It's true! It's true! I'm growing young again... But we're still too old... Quick! ... Give us more water!

KILLIGREW: Yes, Heidegger... Let's have another glass.

DOCTOR: Patience ... patience. You've been a long time growing old... Surely, you might be content to grow young in half an hour. But the water is at your service.

SOUND: POURS THREE DRINKS

DOCTOR: There... Drink again.

KILLIGREW: A toast ... to the most charming widow in all the world ... Clara Wycherly.

MEDBOURNE: To Clara.

(MUSIC: HARP TO INDICATE TRANSFORMATION)

(CHARACTERS NOW BECOME YOUTHFUL)

KILLIGREW: (LAUGHS LOUDLY)

MEDBOURNE: What are you laughing at?

KILLIGREW: Those clothes you're wearing... You look like a grandfather.

MEDBOURNE: So do you... And look at Clara. Here, give me those spectacles.

WIDOW: (GIGGLING) Now, Jack ... be careful ... ooooh ... you've broken them.

MEDBOURNE: What do you care? A girl your age doesn't need eyeglasses.

WIDOW: That's right ... of course, I don't ... Come, let's dance... Dr. Heidegger, you dear old soul ... get up and dance with me.

DOCTOR: Pray excuse me... I'm old and rheumatic and my dancing days were over long ago. But either of these gay young gentlemen will be glad to dance with so pretty a partner.

KILLIGREW: Dance with me, Clara.

MEDBOURNE: No, dance with me.

KILLIGREW: You forget that Clara and I were once engaged.

MEDBOURNE: She was engaged to me too.

WIDOW: Please ... boys ... not so rough. Now stop your pulling ... ooooh!

DOCTOR: Come ... come, gentlemen ... I really must protest against this riot.

KILLIGREW: Out of the way, old man, before you get hurt... Now stand aside, Medbourne... This is my dance.

SOUND: STRUGGLE THROUGH FOLLOWING

MEDBOURNE: It is, is it! ... We'll see about that.

KILLIGREW: Let go of me or I'll knock your head off.

WIDOW: Stop them, Doctor ... please.

KILLIGREW: I wouldn't push if I were you.

MEDBOURNE: Get out of my way ... you big ox.

WIDOW: Careful ... Boys! ... The bottle of water ... watch out!

SOUND: BODIES CRASH INTO TABLE ... BOTTLE FALLS TO FLOOR AND SMASHES

WIDOW: Oh ... the water ... It's all over the floor.
(CHARACTERS GRADUALLY GROW OLD THROUGH NEXT SPEECHES)

KILLIGREW: Doctor ... what does that mean?

DOCTOR: Look at my poor Sylvia's rose.

WIDOW: It's shriveling up again.

MEDBOURNE: And so are we ... Why Clara, your hair is almost white already.

WIDOW: I don't want to grow old again... Doctor ... save us.

DOCTOR: I can do nothing... You have spilled the water.

KILLIGREW: What kind of cruel trick is this ... to give us youth and then snatch it away again?

DOCTOR: Perhaps it's just as well... Who of us is worthy to live his life a second time?

WIDOW: It's easy enough for you to say that. You haven't tasted what it's like to be young again.

MEDBOURNE: You've got to tell us where to find that Fountain of Youth.

DOCTOR: I'm afraid I haven't the slightest idea where it is.

KILLIGREW: Then we'll find it ourselves... Come,

Clara ... and Jack... We've no time to lose.

DOCTOR: Wait ... wait ... Don't be foolish.

WIDOW: (GOING OFF) We'll find it... We'll find the happiness of eternal youth.

SOUND: (OFF MIKE) DOOR OPENS AND SLAMS

DOCTOR: H'mm ... (LAUGHS QUIETLY) Martha! ... Martha!

MARTHA: (COMING ON) Yes, Doctor ... what is it?

DOCTOR: I'm afraid there's a bit of a mess for you to clean up...

MARTHA: But where are your guests?

DOCTOR: They've gone to look for the Fountain of Youth... But not before they had spilled my magic water all over the floor... Just in time, too... Another drink and they'd have all been babies... I don't think I'd fancy the Widow Wycherly in swaddling clothes.

MARTHA: Then you can't drink the water yourself, after all.

DOCTOR: No ... nor do I want to... My experiment has taught me a good lesson. I am old but I have no regrets. If the Fountain of Youth gushed at my very doorstep, I would not stoop to bathe my lips in it ... no, though its delirium were for years instead of moments. Such is the lesson they have taught me.

(MUSIC: TO CONCLUSION)

ANNOUNCER: You have been listening to 'Dr. Heidegger's Experiment,' a radio adaptation of Nathaniel Hawthorne's famous short story ... presented by the _____Players.

A Sample Television Script

Permission to publish the script of 'Papa Romani' and the floor plan accompanying it has been kindly granted by the producer, Mr. Frank Telford, the authors, Mr. George Panetta and Mr. Bill Whitman, and the designer, Mr. Don Gilman. The program is intended only for classroom use and demonstration and should not be used outside the classroom for any purpose. 'Papa Romani' was broadcast on the CBS television network in the regular 'Silver Theater' series and starred Chico Marx in his first legitimate role, played without his customary wig and pointed hat.

This script illustrates a common TV format, in which the page is divided into two parts to separate what is seen from what is heard. The important picture elements of the program are described at the left under the heading 'video,' while the narration, dialogue, sound, and music are grouped to the right under the 'audio' heading. In addition, any action by a character that must be integrated with dialogue is usually described on the 'audio' side, to indicate the relationship of the movement to the line it accompanies. As with radio scripts, all spoken material is printed in regular type, while everything else—video directions, sound, music indications, character names, dialogue directions—is indicated in capital letters.

The floor plan in Fig. 38 shows the two major sets used in producing the drama, the location of the commercial exhibits, and the various positions occupied by the three cameras. The camera positions on the floor plan can be compared with the notations in the script indicating the camera used for each scene. The cameras

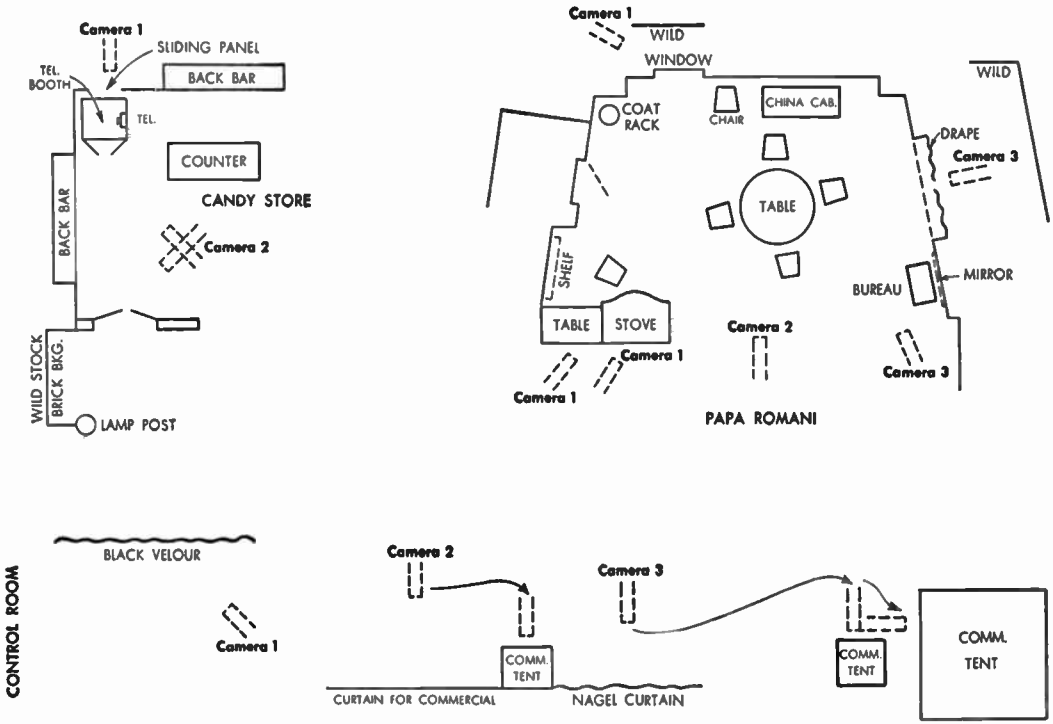


Fig. 38. Floor plan for television drama, 'Papa Romani.' This plan shows the two sets, the location of the commercial exhibits, and the various positions occupied by the three cameras used in televising the production.

are identified by numbers appearing on the video side of the page. The notation (1), for example, means that the part of the show beginning at that point and continuing until the next number appears was picked up on camera number 1.

In a letter accompanying the script, the producer-director of the program, Mr. Frank Telford, describes the general theory underlying the arrangement of the set and the use of cameras. He says:

In contrast to the right and left movements prevailing in the theater, in television the major movements should be upstage and downstage—in other words, toward the camera and away from it. TV shows that are blocked properly give a third dimensional illusion—that is, the camera creates a perspective in depth. Following this principle, one places the furniture in the set so there will be movement up and downstage. In 'Papa Romani' the major movement was from the stove to the table to the bedroom exit; also from the stove to the window. Note in the floor plan how camera #1 covers this upstage-downstage movement, since the stove is downstage, the table upstage, the window farther upstage, and the bedroom arch also upstage left. In the drug store scene, an opening was made in the back of the telephone booth through which the long telephone conversation was picked up. Note that the cameras move around a great deal, camera #1 being in four very distinct positions.

The Silver Theater

presents

PAPA ROMANI

by

George Panetta

and

Bill Whitman

Produced and directed by
Frank Telford

Designed by Don Gilman

VIDEO	AUDIO
(1)	
EXTREME LONG SHOT OF MASSIVE, SIMPLE BUT VERY LUXURIOUS	(MUSIC: STRONG, FULL-THEME)

VIDEO	AUDIO
SILVER CURTAIN. CURTAIN EXTENDS ACROSS ENTIRE FRAME AND IS HUNG ABOVE HIGHLY POLISHED BLACK LACQUERED FLOOR WHICH SHOWS REFLECTION OF CURTAIN.	(FADE MUSIC IN BG)
CURTAIN PULLS UP SLOWLY IN DEEP FOLDS TO REVEAL A SECOND SILVER CURTAIN IN EXTREME LONG SHOT. WORDS "THE SILVER THEATER" ARE SUPERIMPOSED.	ANNOUNCER: The Silver Theater!
SECOND CURTAIN PARTS AND TRAVELS TO REVEAL THIRD SILVER CURTAIN. WORDS "PRESENTED BY" ... AND "THE INTERNATIONAL SILVER COMPANY" ARE SUPERIMPOSED.	... presented by The International Silver Company ... Creators of 1847 Rogers Bros.
FADE OUT WORDS AND FADE IN "1847 ROGERS BROTHERS" IN LOGOTYPE.	
CURTAIN RISES AND REVEALS ANOTHER CURTAIN WHICH IS SLIGHTLY PARTED TO SHOW ONE SPOON IN CENTER OF SCREEN.	... 1847 Rogers Brothers ... owned and loved by more women than any other kind ... because its beauty and richness has no equal!

VIDEO	AUDIO
THIS CURTAIN CONTINUES TO TRAVEL BACK SLIGHTLY ... REVEALING OTHER SPOONS ARRANGED IN CIRCLE.	
SPOONS BEGIN TO MOVE AROUND IN CIRCLE AS CAMERA MOVES IN FOR CU OF ORNAMENTATION. (3)	The finest Silverplate in America!
DISSOLVE TO EXTREME LONG SHOT OF NAGEL STANDING IN CENTER OF ANOTHER CURTAIN.	And here is the host of your Silver Theater ... Conrad Nagel.
DOLLY IN ON NAGEL AS HE SPEAKS.	NAGEL: Good evening, ladies and gentlemen, and welcome to Silver Theater. Tonight we take particular pleasure in presenting Chico Marx. You all know Chico as the piano-playing zany of the Marx Brothers ... but tonight on our Silver Theater stage, Chico starts a brand new career in television. Tonight he is Papa ... in Papa Romani, a comedy of emotions written especially for him by George Panetta and Bill Whitman. And now, the silver curtain rises on Act I

VIDEO	AUDIO
	of Papa Romani starring Chico Marx.
(2) TITLE CARD "PAPA ROMANI STARRING CHICO MARX."	
(1) FADE IN SCENE. ROMANI KITCHEN. THE SUPPER TABLE IS NEATLY SET. ON THE STOVE IS A BIG POT OF BOILING WATER. ALSO ON THE STOVE, UNDER COVER, IS A PLATTER OF MEATBALLS. AS WE OPEN, MAMA IS GOING TO THE WINDOW. MIKEE WATCHES HER AS SHE GOES. HE HAS BEEN SITTING AT THE TABLE, WITH AN EYE ON THE MEATBALLS.	
	MAMA: (HALF TO HERSELF) Where he go ... he's never come late before.
SHE REACHES WINDOW AND LOOKS OUT. MIKEE HAS BEEN WATCHING HER CAREFULLY. HE FEELS, WHEN SHE LOOKS OUT THE WINDOW, THAT CHANCES ARE GOOD AND HE TIPTOES TO THE STOVE AND IS ABOUT	

VIDEO	AUDIO
TO TAKE A MEATBALL. MAMA TURNS HER HEAD INTO KITCHEN AGAIN.	MAMA: (LOUD AS CAN BE) Putta down the meatballs!
MIKEE, SCARED OUT OF HIS WITS, PUTS THE MEATBALL BACK. AS HE DOES SO HE SHAKES THE PLATE AND SOME OF THE OTHER MEATBALLS SCATTER ON THE FLOOR. MAMA STARTS CHASING HIM. HE RUNS INTO BEDROOM, PASSING LUCY.	LUCY: What happened, Mama? MAMA: (SHOUTS) Pick up the meatballs! (GOES ON CHASING MIKEE)
LUCY STARTS PICKING UP MEATBALLS. MAMA RETURNS FROM BEDROOM.	MAMA: He's run under the bed, but I'm catch! LUCY: (STILL PICKING UP) What are we going to do with these meatballs now? MAMA: (GOING TO WINDOW) We wash and we eat... LUCY: Wash and eat ... not me! MAMA: Nunch worry about the meatball, what happena you father? LUCY: Don't worry, he'll come soon, Mama.
(2) LUCY FINISHES PICKING UP	

VIDEO	AUDIO
MEATBALLS. SHE PUTS PLATE IN THE SINK. SHE GOES BACK INTO BEDROOM.	
MIKEE PEEPS OUT BEDROOM DOOR.	MIKEE: (CALLING) Mama... (MAMA TURNS AROUND WITH A LOOK) You gonna hit me, Mama? (MAMA GIVES ANOTHER LOOK, NOT MENACING, NOT LOVING) Gee, it's not my fault I'm hungry. MAMA: All right ... all right... I'm forgive. MIKEE: Thanks, Mama.
HE COMES QUICKLY INTO KITCHEN, SITTING DOWN IN SAME CHAIR. MAMA IS STILL LOOKING OUT WINDOW. MIKEE LOOKS AT MEATBALLS, THEN AT MAMA. SIMULTANEOUSLY, MAMA TURNS HER HEAD TO SEE WHAT HE IS DOING. HE SMILES AT HER AND FIDGETS. MAMA GOES BACK TO WINDOW.	MAMA: (EXCITEDLY) Oh, I think Papa come now...
MIKEE RUNS OVER TO WINDOW AND LOOKS OUT BESIDE MAMA.	(YELLING OUT WINDOW) Hurry up ... hurry up!
THEY COME INTO KITCHEN. MIKEE TO A POSITION DESPERATELY	

VIDEO	AUDIO
NEAR THE MEATBALLS. MAMA LOOKS TOWARD BEDROOM.	Lucy, get ready for supper... Papa come.
(3)	LUCY: (COMING TO DOOR) I won't have time, Mama... I have an appointment at the beauty parlor!
	MAMA: Beauty parl! Beauty parl! Maybe if you eat more you hair get curly without the beauty parl.
(2)	
LUCY GOES BACK INTO BEDROOM.	LUCY: I'll eat when I get back, Mama.
	SOUND: DOOR BUZZER
MAMA MOTIONS MIKEE TO ANSWER. SHE STANDS WAITING IN FRONT OF THE DOOR, ARMS AKIMBO.	
PAPA ENTERS SMILING.	PAPA: Hello, Mikee. (KISS) Hello, Josephina!
	MAMA: Nunch say hello! Where you go?
	PAPA: Where I'm go? I'm work!
	MAMA: You sure you work?
	PAPA: Sure I'm sure! Whatta you think I'm do ... play bootch!
	MAMA: That's funny thing you never work overtime before...
	PAPA: That's gotta be first time sometime ... and that's the first time this time!
(1)	

VIDEO	AUDIO
MAMA GIVES PAPA A HALF BELIEVING LOOK. PAPA PLACES HIS JACKET AROUND A CHAIR. MAMA TAKES IT RIGHT OFF.	MAMA: Hang him up on a hang...
PAPA GOOD NATUREDLY TAKES IT AND IS ABOUT TO GO TO BEDROOM WITH IT.	
MEANWHILE MIKEE HAS MADE HIS DECISION. HE LIFTS THE COVER OFF MEATBALL PLATTER AND TAKES ONE OUT. BUT MAMA HAS CAUGHT HIM. MIKEE PUTS MEATBALL IN HIS MOUTH. AT SAME TIME MAMA COMES OVER AND SOCKS HIM ON TOP OF THE HEAD.	MAMA: (LOUDER THAN EVER) Stop steal the meatball!
PAPA STOPS IN HIS TRACKS. MIKEE IS CHOKING. PAPA COMES RUNNING OVER. LUCY COMES RUNNING OUT OF THE BEDROOM. SHE IS DRESSED A LITTLE MORE THAN SHE WAS. (2)	LUCY: What's matter? What happened? PAPA: (POINTING TO MAMA) She choke him... MAMA: I'm no mean ...
THEY ARE HUDDLED AROUND MIKEE WHO	

VIDEO	AUDIO
FEELS AWFUL. LUCY PATS HIM ON THE BACK. HE CHOKES MORE.	
	PAPA: Give drink a water!
LUCY GOES FOR WATER. SHE BRINGS MIKEE A GLASS, LETS HIM DRINK THEN GOES. MAMA PATS MIKEE LOVINGLY.	MAMA: I'm sorry I'm make you choke, Mikee. That's you father fault. PAPA: Why's my fault? MAMA: Because if you no work overtime ... he no get hungry! PAPA: That's you fault! Because if you put the telephone the house like I'm always say ... I'm call op ... and then you eat first and so Mikee no be hungry! MAMA: Please no talk about the telephone! (TO MIKEE, STILL PATTING HIM) You all right now, Mikee? PAPA: Everybody got telephone the house ... why I'm no can have like real people. MAMA: I'm no like telephone the house. PAPA: Why ... why? You tell me why? MAMA: Because that's hard luck ... that's why! PAPA: (EXASPERATED) Oh,

VIDEO	AUDIO
	what's the use! MAMA: Come on, wash up ... we eat! PAPA: I'm no wanna eat now... I'm too tired. I'm wanna rest lilla bit first. MAMA: A'right ... a'right ... no eat!
PAPA GOES INTO BEDROOM.	Come on, Mikee ... now you eat all the meatballs you want! MIKEE: (STILL SUFFERING) I'm not hungry anymore, Mama. MAMA: What's matter ... you still feel sick? MIKEE: I think I need some fresh air. Can I go to the Boy Scouts, Mama ... they got a meeting ... MAMA: A'right ... sure ... go! Maybe you feel better.
(1) MIKEE HOPS TO DOOR KISSES MAMA AND GOES.	
MAMA PUTS SOME MACARONI IN THE POT. LUCY COMES OUT, POCKETBOOK IN HAND, ALL SET TO GO. WALKS OVER TO MAMA, KISSES HER.	LUCY: Goodbye, Mama. I'll eat when I get back from the beauty parlor. MAMA: (MARTYRED BY THIS TIME) Go ... go!

VIDEO	AUDIO
LUCY GOES.	
MAMA, ALONE, PREPARES HER OWN SUPPER, TAKING MACARONI OUT OF POT, STRAINING IT, PUTTING IT IN A DISH. SHE GETS SOME GRAVY FROM A LITTLE POT ON THE STOVE AND SPREADS IT OVER THE MACARONI. SHE BRINGS HER PLATE OVER TO THE TABLE, SITS DOWN, PUTS SOME GRATED CHEESE ON MACARONI. SHE TAKES ONE FORKFUL AND STOPS.	
(2)	MAMA: Macaroni no taste good when you eat all alone ... (SHE PUSHES DISH TO SIDE) Poor Mikee ... he wanna eat meatball ... and he almost choke... SOUND: DOOR BUZZER
(3)	
MAMA GETS UP AND OPENS DOOR.	MAMA: Hello, Missa Cleanastreet! GREENSTREET: GREEN-street! MAMA: Oh yeah ... I'm always forget. Come in, come in...
MISS GREENSTREET ENTERS, WITH A JAR IN HAND.	
	GREENSTREET: I was wondering if I could

VIDEO	AUDIO
	borrow some grated Italian cheese. MAMA: Oh sure ... sure!
MAMA GOES TO PANTRY, GETS CONTAINER OF GRATED CHEESE, POURS SOME INTO THE JAR AND PLACES CONTAINER ON TABLE.	MAMA: Sit down, Missa Cleanastreet...
(2)	GREENSTREET: (WITH A SMILE) Greenstreet!
THEY SIT DOWN AT TABLE.	
	You haven't had your dinner? MAMA: Nobody wanna eat tonight. My husband work overtime and Mikee choke... GREENSTREET: Choked your husband? MAMA: No, he choke himself. He eat the meatball and get stuck ... like this ... (MAMA DEMONSTRATES WITH OPEN MOUTH) GREENSTREET: Ah, poor Mikee... MAMA: He wanna eat too fast...
MISS GREENSTREET PICKS UP MAMA'S CONTAINER OF CHEESE AND POURS SOME MORE INTO HER OWN JAR.	
	MAMA: Take ... take...
(3)	GREENSTREET: You say your

VIDEO	AUDIO
	husband worked overtime?
	MAMA: (NODDING) First time happena...
	GREENSTREET: You sure it was overtime?
	MAMA: That's what he say...
	GREENSTREET: Sometimes they say they work
(1)	but ... (SHAKES HER FINGER)
	MAMA: They no work?
(3)	GREENSTREET: The best way to find out is with psychology.
	MAMA: Witha who?
	GREENSTREET: Psychology.
	MAMA: That's Italian?
	GREENSTREET: That's the mind, Mrs. Romani. (TAPS HER HEAD) It's finding out with the mind if your husband really worked overtime...
	MAMA: (DEFENDING HER HUSBAND, INSTINCTIVELY) Oh ... I'm sure my husband work...
	GREENSTREET: I know a man on MacDougall Street who told his wife he worked overtime until she used psychology...
	MAMA: (INTERESTED) And what happena?
	GREENSTREET: (SHAKING HER FINGER, KNOWINGLY) No overtime.

VIDEO	AUDIO
(1) MAMA GIVES GREENSTREET A SORT OF FIERCE LOOK. THEN SHE TURNS AND LOOKS IN THE DIRECTION OF THE BEDROOM. SHE TURNS BACK TO GREENSTREET.	GREENSTREET: You see, Mrs. Romani, in this world it's best to know than not to know and with psychology ... you know! MAMA: (TAPPING HER HEAD) The head?
GREENSTREET NODS. AGAIN POURS CHEESE FROM CONTAINER INTO JAR.	MAMA: (A LOT MORE WORRIED) Take ... take...
(3)	GREENSTREET: Of course Mr. Romani is a good man but just to make sure ... use
(1)	a little psychology. When his mind is not thinking of something that you think he's not thinking of, then you ask him questions about the thing you're thinking of... (MAMA NODS OPEN-MOUTHED) That's how the wife of the man on MacDougall Street found out.
	MAMA: How she do?
(3)	GREENSTREET: Well, one day the man from MacDougall

VIDEO	AUDIO
(1)	Street was sitting in his living room reading the newspaper and the wife came tiptoeing behind him (GREENSTREET GETS UP AND DEMONSTRATES THIS) and when she thought that the man wasn't thinking what he should have been thinking of ... she got close and yelled: 'Who's your tootsie wootsie?' MAMA: (POPPING TO HER FEET) Ooooo! GREENSTREET: That's how the wife of the man on MacDougall Street found out that he wasn't working overtime. MAMA: (MUCH INTERESTED) When she say tootsie wootsie ... what he say? GREENSTREET: He say Clarabelle... MAMA: Who's him? GREENSTREET: The other woman!
THERE IS A SILENCE. MAMA DOES SOME THINKING. GREENSTREET GOES THROUGH CHEESE ROUTINE AGAIN. MAMA LOOKS AT HER IN INCREASING PAIN.	MAMA: Take ... take... (THINKING HALF ALOUD) Maybe that's why alla time he wants put telephone the house.

VIDEO	AUDIO
	Maybe he expect call...
	GREENSTREET: He wants to put a telephone in the house? (MAMA NODS, ANTICIPATING DOOM) Just like the man on MacDougall Street.
	MAMA: He's wanna telephone too?
	GREENSTREET: He got it ... just for Clarabelle.
	MAMA: (AS IF IT HAPPENED TO HER) Ooo--no! (GREENSTREET NODS. SHE HAS UTTERED A GREAT TRUTH) Wait! How you do this cosolo--this sycolo-- or whatever you call ...
(2)	whatta you do? You think something he no think and then when you think he no think ... you say something fast?
	GREENSTREET: (NODDING) Just be sure he isn't thinking what you're thinking about... (SHE GOES INTO CHEESE ROUTINE)
	MAMA: Take ... take ...
	GREENSTREET: (RISING) I've
(3)	got to be going now...
MAMA SHOWS HER TO THE DOOR.	
	Goodbye, Mrs. Romani.
	MAMA: Goodbye, Missa Cleanastreet.
DOOR CLOSES. MAMA GOES TO TABLE, PICKS UP CHEESE	

VIDEO	AUDIO
CONTAINER AND LOOKS IN IT. HER LOOK IS STOICAL. THEN SHE GOES TO THE SINK AND STARTS TO WASH DISHES.	
	He never work before overtime... (STOPS WASH) That's very funny he want to put telephone the house... (WASHES AGAIN)
(1) PAPA COMES OUT OF BEDROOM, WITH A BIG SMILE ON HIS FACE.	
	PAPA: I'm hungry now, Josephina.
MAMA LOOKS AT HIM, SAYS NOTHING. HE GOES TO TABLE SITS DOWN. SHE PREPARES HIS SUPPER, DUTIFULLY. STRAINING MACARONI, ETC. EVERY ONCE IN A WHILE SHE GIVES HIM A LOOK.	PAPA: You eat? MAMA: (SIGNIFICANTLY) I'm no hungry no more... PAPA: Maybe if you sleep a lilla bit, you be hungry. MAMA: (DEFIANTLY) I'm no feel sleepy! (SHE BRINGS PLATE TO TABLE) PAPA: Well, if you work hard like me--you sleep!
(1)	MAMA: Sure you work hard ... you work

VIDEO	AUDIO
(2)	overtime! (SHE PUSHES DISH UNDER HIS NOSE) Here! Eat!
PAPA IS TOO CONCERNED WITH THE FOOD TO NOTICE ANYTHING PECULIAR IN HER MANNER. AS SOON AS HE GETS MACARONI, HE BEGINS EATING. MAMA SITS IN THE CHAIR OPPOSITE HIM AND WATCHES. PAPA LOOKS UP SMILING ONCE IN A WHILE AND SAYS "GOOD" ABOUT THE MACARONI. MAMA KEEPS WATCHING AND THEN WHEN SHE THINKS THE MOMENT HAS ARRIVED, SHE LEANS OVER THE TABLE.	
	MAMA: (YELLING IN HIS FACE) Who's you sweetheart?
	PAPA: (DROPPING A FORKFUL OF MACARONI AND JUMPING TO HIS FEET) Whattheheckwhat's-matterwhathappena!
	MAMA: (HOVERING OVER HIM) Say quick ... what's the name the sweetheart?
	PAPA: (NONPLUSSED) Whattheheckwhat'smatter, Josephina? You go craze?
(2)	MAMA: You craze ... no me! (FAST) Who you work overtime with?
	PAPA: Who I'm work

VIDEO	AUDIO
	with ... I'm work with the machine! MAMA: (CONTINUING PSYCHOLOGY) What's the name the machine? PAPA: The name Singer... MAMA: (POINTING A FINGER) Aaah haaa! PAPA: Whatta you mean--aaah haaa! MAMA: She's sing ... what's the name?
(1)	PAPA: Oh, Josephina ... please ... no go craze! That's the sewing machine ... watch work with feet... (DEMONSTRATES WITH FEET) Nuncha rememb? MAMA: Yea ... ? (LOOKS, SHE IS AFRAID HE'S THINKING SOMETHING NOW AND FOREGOES IT) I find out ... nuncha worry! PAPA: Whatta you gon fine out? Please, Josephina, let me eat a lilla macaroni, yes?
MAMA SAYS NOTHING. GOES BACK TO HER SEAT. PAPA GOES TO TAKE HIS SEAT BUT WHEN HE SEES THE LOOK ON MAMA'S FACE, HE HAS ANOTHER THOUGHT. HE PUTS BIG NAPKIN ON HIS FRONT AND THEN SITS DOWN.	
	PAPA: Please, Josephina

VIDEO	AUDIO
	... no jump no more...
	MAMA: Eat ... eat!
PAPA EATS HIS MACARONI BUT HE KEEPS AN EYE ON MAMA. TO KEEP HER HARNESSED, HE REPEATS THE "GOOD."	SOUND: DOOR BUZZER
(3) MAMA OPENS DOOR.	
CANDY STORE MAN, MR. BOX, COMES IN. HE IS A PASSIVE, MILD LOOKING LITTLE MAN. HIS WAYS ARE SLOW, MAKES HIS OWN PACE.	BOX: Hello, Mrs. Romani...
(1)	MAMA: (NOT TOO ENTHUSIASTICALLY, BUT NOT RUDE) Hello, Mr. Box.
	BOX: Mr. Romani home?
	MAMA: (NOT MISSING AN OPPORTUNITY) He's just come home ... he work overtime!
THEY GO TO TABLE.	
	BOX: Hello, Mr. Romani.
	PAPA: Hello, Mr. Box. Sit down--you like to eat some macaroni?
	BOX: No ... I've got to get back to the store.
MAMA, NOT FORGETTING HER HOSPITALITY, GETS PLATTER OF	

VIDEO	AUDIO
MEATBALLS FROM OVEN AND OFFERS THEM TO MR. BOX.	
(2)	MAMA: Maybe you like have a meatball? BOX: No, thank you, Mrs. Romani. I just came up to say there's a telephone call for Mr. Romani... MAMA: (DROPS THE MEATBALL DISH) Aaaah haaa! Telephone!
SHE MAKES A BEE-LINE FOR THE DOOR. PAPA GETS UP FROM HIS CHAIR AND TROTS OUT AFTER HER.	PAPA: Hey, that's for me the telephone ... no for you!
MR. BOX, LEFT ALONE, QUIETLY, SYSTEMATICALLY, GOES ABOUT THE BUSINESS OF PICKING UP THE MEATBALLS.	
FADE AND INTO COMMERCIAL.	
(3) NAGEL IN FRONT OF CURTAIN	NAGEL: And so the great silver curtain closes on Act I of Papa Romani. And before Chico Marx returns for Act II ... our silver spokesman, Dick Stark ... wants to talk to you ladies about a secret.

VIDEO	AUDIO
(1) DISSOLVE TO MEDIUM CU OF BEAUTIFUL YOUNG GIRL ... SEATED IN FRONT OF LOVELY MIRROR FRAME. SHE IS IN THE ACT OF PUTTING ON A LOVELY HAT. PLAIN FLAT IN NEUTRAL TONE BEHIND GIRL.	STARK: This is a secret all women know. So perhaps it isn't a secret at all... You might call it know-how ... a certain intangible instinct ... a sense of style and good taste. It tells you, for instance ... how you can make a simple suit a costume of importance when you choose the right
(3) DISSOLVE TO PHOTOGRAPH OF PORTION OF BEAUTIFUL ROOM. ONE BEAUTIFUL PIECE OF FURNITURE SETS THE PLAN OF THE ROOM.	accessory. Or how a room takes on an air of distinction and beauty when you build it around a lovely piece of furniture.
(2) DISSOLVE TO TABLE SET FOR FOUR. CAMERA TAKES IN WHOLE TABLE ... AND MOVES IN ON ONE PLACE SETTING.	And you know, too ... that when you set your table with lovely 1847 Rogers Brothers ... that table assumes a graciousness it never had before... Every detail ... your linens, china and glassware ...
(3) DISSOLVE INSIDE SMALL TENT #1 TO FOUR SPOONS ARRANGED IN COMPACT PATTERN.	borrow life and warmth from 1847's rich, gleaming beauty. And it's little wonder. For in every one of 1847's lovely patterns ... there is a richness and quality that is unsurpassed ... a richness and quality that

VIDEO	AUDIO
	make 1847 Rogers Brothers the finest silverplate in America.
(2) DISSOLVE INSIDE SMALL TENT #1 TO CU OF GIANT FIRST LOVE AND ADORATION SPOON HANDLES.	This is First Love and Adoration. When you see them ... you'll know at a glance that this is silverware of distinction and importance. No other silverplate you can buy has pattern ornaments of such unusual height and depth.
(3) DISSOLVE INSIDE SMALL TENT #1 TO CU OF GIANT ETERNALLY YOURS HANDLE.	This is Eternally Yours. 1847 Rogers Brothers was the first to create a pattern like this ... with gleaming, jewel-like openwork ... even on knife handles ... a pattern so carefully, beautifully finished in every detail.
(2) DISSOLVE INSIDE SMALL TENT #2 TO CU OF GIANT REMEMBRANCE HANDLE.	And when you see Remembrance ... with its added lustre and sparkle ... you'll understand why it's only natural for women who know and love really beautiful things to choose 1847 Rogers Brothers.
(3) DISSOLVE INSIDE SMALL TENT #1 TO SHOT OF FOUR SPOONS.	Yes ... you might call it know-how ... a certain instinct of good taste.

VIDEO	AUDIO
	It tells you you're right to set your table with 1847 ... because it's the finest in America ... the
(1) SUPERIMPOSE 1847 ROGERS BROS.	one and only 1847 Rogers Brothers.
(3)	NAGEL: And now back to ACT II of Silver Theater and Papa Romani starring Chico Marx.
(2) DISSOLVE TO GLASS DOOR OF CANDY STORE FROM INSIDE. WE SEE MAMA AND PAPA BUT CAN'T HEAR THEM. MAMA IS TRYING TO PUSH IT OPEN AT THE SAME TIME GUARDING IT FROM PAPA. PAPA IS TRYING TO GET TO DOOR KNOB BUT EVERY TIME HE MAKES A MOVE, MAMA BLOCKS HIM OFF.	PAPA: (LIP MOTIONS ONLY) Let me do... I'm more strong! MAMA: (LIP MOTIONS) Oh, no ... you joost wanna go first!
MAMA SHAKES KNOB SOME MORE. DOES IT SO HARD THAT THE GLASS ON THE DOOR BREAKS. SIMULTANEOUSLY, MR. BOX IS SEEN	

VIDEO	AUDIO
COMING TOWARD THE STORE.	PAPA: Now--see what you do ... you break the window! MAMA: I break! PAPA: Sure you break! MAMA: I no do ... you do!
MR. BOX COMES TO DOOR AND LOOKS UNPERTURBEDLY AT BROKEN GLASS.	PAPA: I'm sorry my wife she break the window. MAMA: (POINTING TO SELF) I do! PAPA: (POINTING TO HER) Yes, you do! MAMA: (POINTING TO HIM) You do! PAPA: (POINTING TO SELF) I do! BOX: (INTERRUPTS) Wait, you see the door is locked. (TAKES KEYS FROM POCKET, HOLDS THEM UP) I couldn't find anyone to send up so I locked the door and came up myself.
MR. BOX OPENS DOOR. MAMA RUSHES THROUGH AND ALMOST TRAMPLES MR. BOX. PAPA TROTS IN AFTER HER. MR. BOX GOES LEISURELY IN, SETTLES BEHIND THE COUNTER. MAMA GETS TO THE TELEPHONE, PUTS RECEIVER TO HER EAR.	

VIDEO	AUDIO
(1)	MAMA: (YELLS) Hello! (SHE LISTENS AND MAKES HORRIFIED FACE AS ONE WHO HAS JUST LEARNED THE TRUTH. THE VOICE AT THE OTHER END IS THAT OF A WOMAN.)
(2) SHE DROPS THE RECEIVER AND BOUNCES OUT OF THE STORE.	MAMA: (YELLING) That's a woman call op! PAPA: (FROZEN) What womana? MAMA: (YELLING, RUNNING) A womana call op! I'm get divorce!
PAPA CAN'T MOVE, HE WANTS TO GO AFTER MAMA. MAKES A MOVE TO DO SO THEN GOES TOWARD TELEPHONE.	BOX: (QUIETLY) See who it is, Mr. Romani.
(1) PAPA PICKS UP HANGING RECEIVER. BOX MOVES CLOSER TO PHONE.	
	PAPA: Hello? (HE WAITS, SHRUGS TO MR. BOX THAT THERE'S NO ANSWER. MR. BOX MOTIONS TO KEEP TRYING) Hello? ... Hello? ... That's you ... that's me! BOX: Somebody there? PAPA: No. I'm think maybe if I'm say something they hear me... BOX: Say it louder... PAPA: Hello? ... Hello?

VIDEO	AUDIO
	... That's you ... that's me! (WAITING, PAPA LOOKS AT MR. BOX. MAKES A FACE, SHRUGS)
	BOX: Call up information.
	PAPA: Oh, yeah ... yeah!
PAPA HANGS UP. THEN HE LOOKS IN HIS POCKET FOR A COIN. HE HASN'T GOT ONE.	Mr. Box, you lend me a nickel, please?
	BOX: (GIVING NICKEL TO PAPA) I'll add this to the bill...
(2)	PAPA: (SURPRISED) Wha bill? (MAKES A FACE THEN PUTS NICKEL IN BOX, DIALS, WAITS, LOOKS OUT AT MR. BOX) How much the glass anyway?
	BOX: I must figure it, Mr. Romani. Costs so much an inch.
(1)	PAPA: (QUICK LOOK AT DOOR) Gee Whiz! ... that's lotta inch! (INTO PHONE) Hello ... hello?
	VOICE: This is information!
	PAPA: Hello ... Information? I'm like to know ... what happena the people call me up?
	VOICE: What is the name of the party whose number you wish?
	PAPA: I'm no know the name. My wife ... she

VIDEO	AUDIO
	answer first. All I'm know she's a girl...
	VOICE: Do you have an address of the party whose number you wish?
	PAPA: No ... no! I got no address! I got nothing. All I'm know the candy store man, Mr. Box, come upstairs and he call me.
	VOICE: I will see if we have any Mr. Box listed...
	PAPA: (NOT THINKING) Thank you... (REACTION) No ... no ... information! (TO MR. BOX) She's gonna see if you on the list... (MR. BOX SIMPLY NODS) Hello ... hello...
	VOICE: We have a telephone listed for Mr. Gregory Box ... a candy store at number ten Bleecker Street ... would that be the Mr. Box you're looking for?
	PAPA: No ... no! Operator, I'm make mistake! I'm no want Mr. Box number. I'm inside the number right now. Look ... lissena quiet ... my wife upstairs when Mr. Box come and say there's telephone down-stairs for me. But my wife she's run downstairs first because she thinks that's my sweetheart call. When I'm come down, my wife

VIDEO	AUDIO
	catch first the telephone and she hear that's the womana who she think that's my sweetheart. Whatta I'm wanna know-- who's this sweetheart call op!
	VOICE: If you will give me the name and address of your sweetheart I will see if she is listed...
	PAPA: (SCARED OUT OF HIS WITS) No ... no! Look ... I'm no got sweetheart! Please no start give information that I'm got sweetheart. If my wife call op ... please ... please ... no say tha's my sweetheart call! Please!
	VOICE: We cannot give you any information unless you have a name and address...
	PAPA: (FAST. MUCH EXCITED) All right ... no give me no information. Make believe I'm no call you.
(2)	Goodbye! (HE LOOKS DAZED AND HANGS UP)
	BOX: Who was it called you, Mr. Romani?
	PAPA: (STILL DAZED) My sweetheart ...
	BOX: Oh ...
	PAPA: (CATCHING HIMSELF) No ... no ... what I'm say!
	SOUND: RING OF RETURN NICKEL.

VIDEO	AUDIO
	PAPA: Mr. Box, you nickela inside the telephone... If you no mind, you get yourself, yeah... (BOX NODS) PAPA: And if somebody call on the telephone for me, Mr. Box ... please tell I'm move... BOX: If you want, Mr. Romani, I won't even answer it if it rings. PAPA: That's better ... thank you.
PAPA GOES SLOWLY OUT OF THE STORE. HE STOPS AT THE DOOR AND LOOKS AT BROKEN GLASS. HE MAKES WITH HIS HANDS AS IF FIGURING SIZE.	PAPA: (HOPELESSLY) That's a lotta inch!
(3) DISSOLVE TO ROMANI KITCHEN. MAMA AT WINDOW.	
(1)	MAMA: (CALLING OUT WINDOW) Mikeee! Mikee! Hey, Joey ... you see my Mikee! BOY: (CALLING FROM STREET) He's shooting dice, Mrs. Romani. MAMA: He shoot dice! Go call come home ... or I'm shoot him.
(3) PAPA WALKS IN DEJECTED, CIRCUMSPECT. MAMA	

VIDEO	AUDIO
TURNS FROM WINDOW.	PAPA: Look ... Josephina ...
(2)	MAMA: (FAST) Shutupa!
MAMA GOES INTO BEDROOM. PAPA, ALONE, BEWILDERED, GOES TO A CHAIR IN THE CORNER AND SITS. THE NAPKIN IS STILL ON HIM.	
	MIKEE: (CALLING FROM STREET) Mama ... Mama!
PAPA GETS UP, WALKS TO BEDROOM, BENDS HIS HEAD IN.	
	PAPA: Mikee call you...
(2)	MAMA: (COMING INTO KITCHEN) I'm hear ... you no have to tell me!
(1)	(SHE GOES TO WINDOW) Mikee ... go the beauty parl nexa the plumber shop ... and tell Lucy come home ... quick.
	MIKEE: Right now, Mama?
	MAMA: Yeah, right now ... and you come upstairs too.
	MIKEE: Aw--why do I have to come up?
(3)	MAMA: Because I'm gonna get divorce ... that's why!
	(PAPA WINCES AT WORD)
	MIKEE: Whatta you gonna get, Mama?
	MAMA: Never mind ... go ... get Lucy.
MAMA TURNS FROM WINDOW.	

VIDEO	AUDIO
PAPA GETS UP FROM CHAIR WHERE HE'S BEEN SITTING.	PAPA: Whatta you talk about divorce for? I'm no wanna divorce... MAMA: No ... but I'm wanna!
MAMA GOES INTO BEDROOM. PAPA SITS AND WONDERS. MAMA COMES BACK TO KITCHEN, GETS SOMETHING FROM A TABLE DRAWER, GOES BACK TO BEDROOM. SHE DOES THIS VERY FAST AND SEVERAL TIMES. PAPA FOLLOWS THIS WITH HIS EYES.	PAPA: (TO HIMSELF) Whatta I'm do? (PAUSE TO THINK) I work overtime, that's all. SOUND: DOOR BUZZER
(2) PAPA GETS UP TO ANSWER BUT MAMA BEATS HIM TO IT. HE GOES BACK TO HIS CHAIR. DOOR OPENS AND LUCY AND MIKEE COME IN. LUCY'S WEARING A KERCHIEF TO COVER HER HAIR.	LUCY: What happened, Mama? What's the matter? MAMA: Nothing happena! (TO MIKEE) That's the way you go the Boy Scouts! (SHE SWATS HIM. THEN

VIDEO	AUDIO
	TURNS INSTINCTIVELY TO PAPA) He shoot dice! PAPA: (LOOKING TO GET BACK IN THE PICTURE) You shoot dice! MAMA: (REMEMBERING SHE IS PAPA'S ENEMY) Shutupa you! (PAPA GOES BACK TO HIS EXILE) LUCY: (PULLING OFF KERCHIEF, HAIR IS IN A MESS) So! Just because Mikee shot some dice, I have to come home ... looking like this! (TO MIKEE) And why did you say Mama's gonna get a horse? MAMA: I'm no get a horse ... I'm get a divorce! LUCY: A divorce! (TO PAPA) What's the matter, Papa ... what happened? (PAPA SHRUGS) MAMA: Nuncha speak to him. Come pack up the clothes, we go! LUCY: But what did Papa do, Mama? MAMA: What he do I'm no can tell young girl like you... MIKEE: Tell me, Mama, I'm a man. MAMA: Go inside and dress up and shutupa... MIKEE: Gee, I don't wanna go no place. I gotta lot of friends on this block.

VIDEO	AUDIO
(3) MAMA AND MIKEE GO INTO BEDROOM. LUCY FOLLOWS THEM, GIVING PAPA A QUEER LOOK AS SHE GOES. PAPA SHRUGS AT HER. HE IS LEFT ALONE.	
	PAPA: (CALLING) Josephina ... come in, I wanna say something. MAMA: (OFF STAGE) Never mind--no wanna talk. PAPA: (AFTER A PAUSE, HALF TO HIMSELF) Whatta I do? (PAUSE) I work overtime...
(1) MIKEE COMES BACK IN, DRESSED IN SUNDAY JACKET, HAIR COMBED.	
	Mikee, where you Mama say she go?
(2)	MIKEE: Italy... PAPA: Italy! (HE ALMOST POPS FROM HIS CHAIR) MIKEE: That's what she said first. Then Lucy said she had to go to work tomorrow, so Mama changed her mind... PAPA: So where she go? MIKEE: The Bronx. PAPA: Who's upa the Bronx ... ? MIKEE: The Zoo, that's all I know. PAPA: You Mama go cuckoo...

VIDEO	AUDIO
	MIKEE: You musta done something pretty bad. PAPA: What I'm do? I'm work overtime. That's no fault I'm work overtime... MIKEE: I don't know ... it musta been pretty bad for Mama to take us all to the Bronx. SOUND: DOOR BUZZER
(3) MIKEE GOES TO DOOR.	
	LUPO: (EXCITED) You Papa home? MIKEE: Sure. (TO PAPA) It's Mister Lupo from the dress factory, Papa.
MIKEE POINTS TO THE DEJECTED FIGURE OF HIS FATHER ON THE CHAIR. LUPO GOES OVER TO HIM WILDLY. THE OTHERS, MAMA AND LUCY LOOK ON FROM THE BEDROOM.	
	LUPO: (WILDLY) Mister Romani, where you putta the sampla we gotta ship out tonight? PAPA: (SOFTLY) The sampla I'm work for tonight? LUPO: Yeah, the sampla! Where you put? The boss yell! The jobber yell! You ruin the whole business! Watch you do with? Where you put?
(1)	PAPA: I put--uh, let's

VIDEO	AUDIO
	see ... I put in a lilla box under the machine. LUPO: That's where you put the sampla!? PAPA: Where I'm gonna put on top my head! LUPO: That's the sampla... Nuncha know the sampla ... the sampla! PAPA: (GETTING EXCITED HIMSELF) I'm know that's the sampla but I'm no know you spose ship him out tonight! LUPO: I'm lose so much time joost because you put inside the box and hide. (TOUCHING PAPA'S NAPKIN) And what's a this? PAPA: For when I'm eat the macaroni... LUPO: Aw ... nexa time, please put the sampla on top the dummy where spose be... PAPA: How I'm spose know you wanna send out tonight! LUPO: Or right ... or right! That's you don't know! But whena call up the bookkeep ... first she wait half hour for you answer the telephone ... then when you answer ... you scare ... hello ... and then when she starts talk ... goodbye, you go

VIDEO		AUDIO
		away! That's no way to do...
	(1)	PAPA: So that's who call up the telephone ... the girl bookkeep the place ... (LOOKS TOWARD MAMA, BUT SHE HAS TURNED AND GONE)
	(3)	LUPO: Who you think call op! And what you do! The girl speak soft ... and you say Hello! (PAUSE) That's so loud you scare the girl, you scare me ... you even scare the dummy!
		PAPA: I'm sorry, I'm talk so loud...
		LUPO: Well, all right ... you sure the sampla inside the box...
	(2)	PAPA: Oh, sure ... you look ... you look good ... you find.
		LUPO: Well, we better find! (SHAKING FINGER) 'Cause if we no find, we all get fired!
HE EXITS.		
		PAPA: (FACES BEDROOM, FEET APART, ARMS FOLDED) Josephina! (NO ANSWER)
	(1)	(CALLS LOUDER) Josephina! ... you come in. I wanna say something!
		MAMA: (FROM WITHIN, SWEETLY) I'm come Angelo...

VIDEO	AUDIO
(2) MAMA COMES MEEKLY INTO KITCHEN.	PAPA: You hear Mr. Lupo say that's the bookkeep call op ... no the sweetheart! MAMA: Yes. PAPA: (THUNDERING) So what's matta you get such a crazy idea! MAMA: I'm sorry, Angelo! I'm lissena too much to Missa Cleanastreet... PAPA: So Miss Cleanastreet go cuckoo ... you gotta go cuckoo, too? MAMA: (MEEKLY) Yes, Angelo. PAPA: (SOFTENING SLIGHTLY) Where's Mikee? MAMA: Inside! (POINTS) He's una ... (MOTIONS WITH HER HAND) pack! PAPA: Call! MAMA: (CALLING) Mikee!
(1) PAPA TAKES NAPKIN OFF AT LAST, TOSSES IT MANFULLY ACROSS THE TABLE.	
MIKEE COMES IN.	MIKEE: Whatta you want, Mama? MAMA: You papa want you...
PAPA POINTS AT THE FLOOR IN FRONT OF HIM. MIKEE GOES OVER.	

VIDEO	AUDIO
	PAPA: Turn around Mikee... (MIKEE DOES SO. PAPA BOOTS HIM ON THE BACKSIDE) (LOUD) That's for shoot the dice!
	MAMA: He tell me he go the Boy Scouts!
	PAPA: (FAST) Shutupa!
	MAMA: Yes, Angelo!
LUCY HAS BEEN PEEKING THROUGH THE BEDROOM DOOR TO SEE WHAT'S GOING ON. SHE COMES IN GINGERLY.	
	LUCY: Papa, can I go back to the beauty parlor and have my hair finished?
(2)	PAPA: All right, you do nothing wrong.
	SOUND: DOOR BUZZER
	PAPA: (STILL ASSERTIVE) I'm answer!
HE OPENS DOOR AND IN COMES MR. BOX.	
	BOX: This is the bill, Mister Romani.
(1)	PAPA: (READING BILL) Four dollas twenty cents for the glass ... fifty cents ... what's this fifty cents for, Mister Box?
	BOX: That's for the business I lost when I came up to call you on the telephone.
	PAPA: All right! Give the bill to her. (POINTS SEVERELY TO MAMA)

VIDEO	AUDIO
	MAMA: Thank you ... it's all right I pay nexa week, Mr. Box?
	BOX: Oh, sure, Mrs. Romani. Take your time. Good night.
(2)	ALL: Good night...
BOX EXITS.	
MAMA IS LEFT READING THE BILL. PAPA STANDS AND LOOKS AT HER. THERE IS A LONG SILENCE. MAMA LOOKS UP AND SMILES. PAPA DOESN'T. BUT AS HE CONTINUES TO WATCH MAMA, HE GROWS SYMPATHETIC. HE GOES OVER, FINALLY, AND TAKES THE BILL OUT OF HER HAND, BUT FIRMLY, TO SHOW HE'S NOT RELENTING.	
	PAPA: All right ... I'm pay this time. But next week we put telephone the house...
	MAMA: Yes ... Angelo ... yes.
FADE AND OUT.	
(3)	
NAGEL IN FRONT OF CURTAIN	NAGEL: And so the great silver curtain closes on our play ... Papa Romani.

VIDEO	AUDIO
	And in just a moment ... I'm going to bring Chico Marx back for a well-deserved curtain call. But right now ... Dick Stark and I would like you to meet another family. And if I'm not mistaken ... they're celebrating a special occasion. Am I right, Dick?
(1)	
DISSOLVE TO CU OF PRETTY YOUNG WOMAN'S FACE. SHE IS SEATED ON THE EDGE OF HER CHAIR ... AN ARM CHAIR ... AND SHE IS SMILING. THE HANDS OF A LITTLE BOY ARE HELD ACROSS HER EYES. PULL BACK TO SHOW LITTLE BOY IS LEANING OVER THE BACK OR SIDE OF THE CHAIR ... AND IS EVIDENTLY MUCH INTRIGUED WITH ACTION THAT IS GOING ON IN FRONT OF MOTHER. HE IS EXCITED ... AND LOOKS AROUND TO MAKE SURE THAT HER EYES ARE WELL COVERED.	STARK: A special occasion? Well, I should say so! This is Mother's birthday! And if I'm not mistaken ... the big moment is at hand!
AS MOTHER STRUGGLES, LAUGHING A	LITTLE BOY: Are you ready, Mom?
	MOTHER: Yes!
	LITTLE BOY: Really, ready?
	MOTHER: Yes ... hurry up!
	LITTLE BOY: Really, really ready? Okay ... now!

VIDEO	AUDIO
LITTLE ... THE BOY PULLS HIS HANDS AWAY FROM HER EYES. AND SHE GASPS IN DELIGHTED SURPRISE ... LOOKING ALMOST INTO CAMERA...	
AS WE PAN TO DADDY SITTING ON SOFA HOLDING OPENED CHEST OF SILVER ... AND SMILING. AND LITTLE BOY RUNS IN ... MOTHER SITS BESIDE DADDY ... AND LITTLE BOY STANDS TO ONE SIDE OF THEM. CAMERA MOVES IN ON SILVER.	STARK: Yes ... Mother's birthday ... and what a wonderful present! It's 1847 Rogers Brothers' beautiful 52-piece chest ... a service for eight ... of the loveliest, finest silverplate there is! For making a woman proud and happy ... there's no better gift you can give!
(3) DISSOLVE INSIDE BIG TENT TO SHOT OF PIECES LAID OUT ON TABLE COVERED WITH CLOTH... OPENED EMPTY CHEST IS BEHIND THESE ROWS OF PIECES... CAMERA DOLLIES IN ON DOWN SHOT UP ALONG ROWS ... TO EMPTY CHEST.	For it means something to every woman to know she owns the best ... the one and only 1847 Rogers Brothers. The stunning 52-piece chest comes in all four lovely 1847 patterns ... and it costs only $64.75. And ... your dealer will be glad to arrange an easy payment plan for you.
(2) DISSOLVE INSIDE SMALL TENT #2 TO FILLED CHEST	So ... stop in tomorrow. He can show you beautiful 1847 in sets for six, eight, or twelve ...

VIDEO	AUDIO
	ranging in price from _____ to _____. And in each and every one ... you'll find the silverplate of unexcelled beauty and quality ... famous 1847 Rogers Brothers.
(1) SUPERIMPOSE "1847 ROGERS BROS."	
(3) CUT TO NAGEL IN FRONT OF CURTAIN FOR AD-LIB CURTAIN CALL WITH STARS.	
(1) TITLE CRAWL: CAST Papa Romani Chico Marx Mama Romani Bryna Raeburn Lucy Gerianne Raphael Mikee Donny Harris Miss Greenstreet Isabel Price Mr. Box John Holden Mr. Lupo Dino Terranova Telephone Operator Anita Anton	
Script by: George Panetta and Bill Whitman	

VIDEO	AUDIO
Speaking for 1847 Rogers Bros. Richard Stark	
Next week: HAPPY MARRIAGE Starring: Carol Bruce	
(2) DISSOLVE FROM CRAWL TO CU OF FIRST LOVE SPOON HANDLE ON PINWHEEL. MOVE PINWHEEL TO SHOW OTHER SPOONS.	STARK: The Silver Theater is presented by the International Silver Company ... creators of 1847 Rogers Brothers ... the finest silverplate in America.

Glossary

This glossary includes only those terms that are used in the text without definition or that are used in succeeding pages without repeating the original explanation of the meaning. Terms that are adequately defined in the text are not repeated in this list; the reader should consult the index to locate the definition of such words. This glossary also includes certain terms commonly used in radio and television which are not referred to in the text at all; it contains, in addition, a list of organizations playing a role in broadcasting, which should be recognized by their initials.

Abbreviations of Organizations

AAAA American Association of Advertising Agencies.
ABC American Broadcasting Company.
AER Association for Education by Radio.
AFM American Federation of Musicians
AFRA American Federation of Radio Artists.
AMP Associated Music Publishers.
ASCAP American Society of Composers, Authors, and Publishers.
BBC British Broadcasting Corporation.
BMB Broadcast Measurement Bureau.
BMI Broadcast Music, Inc.
CBC Canadian Broadcasting Corporation.
CBS Columbia Broadcasting System.
FCC The Federal Communications Commission.
FREC Federal Radio Education Committee.
FTC Federal Trade Commission.

IBEW International Brotherhood of Electrical Workers.
MBS Mutual Broadcasting System.
NAB National Association of Broadcasters.
NABET National Association of Broadcast Engineers and Technicians.
NAEB National Association of Educational Broadcasters.
NBC National Broadcasting Company.
RDG Radio Directors Guild.
RWG Radio Writers Guild.
SESAC Society of European Stage Authors and Composers.

Radio and Television Terms

ACROSS THE BOARD describes a program heard five days a week at the same time.

ADJACENCIES the programs before and after a particular program period.

AD-LIB to speak without a script, or to say lines not written in the script; also denotes the improvising of music.

AFFILIATE an independent station that contracts to carry a network's programs.

AM amplitude modulation.

AMPLIFIER the part of a radio transmitter or receiver that builds up the power of the signal without altering the relationships among the various factors of the tone.

AUDIO refers (1) to the range of audible frequencies; (2) to radio-transmission equipment; (3) to the sound portion of a television program; (4) to the electrical sound waves in radio transmission as differentiated from the radio frequency or carrier wave.

AUDITION listening to talent or a program for evaluation or tryout purposes.

BACKGROUND (often abbreviated B.G.) sound or music held behind dialogue to suggest the setting or enhance the emotional impact of a scene.

BALANCE arranging the elements of a program in such a way that they are heard with the proper volume.

BEAM the area in which a microphone picks up sound with maximum volume and clarity.

BEARD an error in reading (also called a fluff or bloop).

BEND THE NEEDLE to overload a microphone and cause the needle in the volume indicator to jump beyond the highest normal level.

BIT a small role in a drama program.

BLANK GROOVES the grooves at the beginning and end of a record that contain no sound or music.

BLASTING creating distortion by overloading a microphone with too much volume.

BLUE refers to material that is off-color or risqué.

BLURB a publicity release.

BOARD the control console or panel operated by the engineer in the control room to mix or balance the elements of a program before they travel to the transmitter.

BOARD FADE fading a program down or up by manipulation of the master-volume knob on the control console.

BOOM an extension from a regular stand, which permits easy movement or adjustment of microphone position.

BRIDGE transitional music or sound that joins two dramatic scenes.

BRING IT UP to increase the volume of a program or one of its elements.

CALL LETTERS letters assigned by the FCC to identify a station, e.g. KNBC, WCBS.

CANNED MUSIC recorded or transcribed music.

CHAIN a network.

CHANNEL the frequency assigned to a particular radio or TV station.

CHARACTER an older actor or actress who plays dialect and other unusual parts.

CLEAR A NUMBER to make certain that a particular selection can be used, and to obtain special permission if necessary.

CLEAR THE RIGHTS to obtain permission to broadcast literary or musical material.

CLEAR TIME to arrange a schedule to permit the broadcast of a program at a particular time.

COLD (1) to open a show without preliminary music or sound; (2) to go on the air without rehearsal.

COMMERCIAL a sales message on a radio program.

CONTINUITY a script, particularly the type that introduces musical numbers or a speaker.

CORNFIELD a studio setup using a number of standing microphones.

COST-PER-THOUSAND the cost of a radio or TV program figured in terms of each 1000 people who listen to it.

CREDITS (1) an acknowledgment for the use of material or performers on a radio program; (2) a listing of the people who are connected with the presentation of a program.

CROSS-FADE to blend one sound into another by diminishing the volume of the existing sound while increasing the volume of the succeeding sound.

CROSS-TALK conversation from another source which, because of technical errors, leaks into and interferes with a program.

CU close-up.

CUE (1) a hand signal to a performer, telling him to start or proceed with a program; (2) the words, sounds, or music that precede a given performer's participation, as 'your cue is the sound of the door opening'; (3) the words that immediately precede the switching of a program from one point to another.

CUSHION music, sounds, or announcements that can be adjusted in length to facilitate the timing of a program.

DAMPEN THE STUDIO to reduce reverberation.

DEAD AIR silence, planned or accidental, during a program.

DEAD MIKE a microphone that is either disconnected or not operating.

DEFINITION refers to the clarity of transmission; in television, it applies particularly to the sharpness of the image.

DELAYED BROADCAST a program transcribed by a station from the network's lines for later presentation to its audience.

DIRECTIONAL ANTENNA an antenna shielded to concentrate a station's signal in certain areas and to keep it out of others.

DISC JOCKEY an announcer on a program of recorded music.

DOUBLING performing more than one part or function in a program.

DOWN IN THE MUD refers to lines read with insufficient volume or expression, or to any program element too low in volume.

DUBBING making a record from another record.

EQUALIZE to re-establish the sounds of a radio program in their original pitch relationships.

ESTABLISH (abbreviated est.) to feature music or sound at full volume level at the beginning of a scene to indicate mood or setting; the effect is then faded down behind dialogue.

FADE to diminish (fade down) or increase (fade up) the volume of a program or one of its elements.

FEED to supply programs to a network of stations.

FEEDBACK the return of sound from a loudspeaker to the microphone that originated it, causing a high-pitched, whistling sound.

FILTER to remove frequencies from a speaker's voice and thus thin it out; the same treatment can be applied to sound or music.

FLUFF a mistake in reading.

FM frequency modulation.

FREQUENCY the number of waves of electromagnetic energy radiated per second from the antenna of a station.

GAIN refers to the volume of a program.

GHOST an unwanted image in a television picture.

GIMMICK a device or idea that gives a program an original twist.

HAM (1) an amateur broadcaster who operates his own short-wave station; (2) an actor who overacts.

IKE nickname for the iconoscope, a television camera.

INGÉNUE an actress who plays straight characters about 18 to 25 years old.

INSTITUTIONAL refers to a program or a commercial designed to promote the prestige of the sponsor rather than to effect immediate sales.

JUMPING A CUE coming in before one is supposed to.

JUVENILE an actor who plays straight characters about 18 to 25 years old.

KEY STATION a station that regularly originates programs for a network.

KILOCYCLES 1000 cycles; the frequency assignment of an AM station is stated in terms of kilocycles.

LAY AN EGG the failure of a program or part of a program to arouse the expected response; more specifically, the failure of a joke to get a laugh.

LEAD one of the principal roles in a drama program.

LEG an extension of a network, situated in a particular area, e.g. the Pacific Coast leg of NBC.

LEVEL the volume of a program or one of its elements.

LINE-OF-SIGHT describes a transmission range limited to the distance between the antenna and the horizon as seen from the antenna, a range characteristic of FM and TV broadcasting.

LIVE applied to a program received as the participants actually perform it, as contrasted with a recorded or filmed show; refers also to an open microphone or to a studio that is characterized by more than average reverberation.

LOG a record of all broadcasting activity, kept by stations for submission to the FCC when requested.

LONG HAIR refers generally to classical music.

MASTER CONTROL the engineering center of a radio station or network, to which all programs from every studio travel and from which the programs are relayed to the transmitter.

MC master of ceremonies.

MEGACYCLE 1,000,000 cycles; the frequency assignment of an FM or TV station is stated in terms of megacycles.

MIKE short for microphone.

MIKE HOG a performer who crowds other performers away from the beam of the microphone.

MIXING PANEL the control board where sounds are mixed and controlled in volume by the engineer.

MOBILE UNIT a traveling radio or television control room for handling programs originating away from the studios.

MONITOR the loudspeaker in a control room; in television, the tubes in the control room that show the director what is being picked up by

his cameras; as a verb, to listen to a radio show or watch a TV program for checking purposes.

MONTAGE a series of brief scenes to emphasize an idea or indicate a succession of events.

MUSICAL CLOCK usually a morning program that intersperses recorded music, commercials, and time signals.

OFF MIKE refers to the originating of sound, speech, or music far enough from the microphone to give a distance effect.

ON MIKE the optimum position for normal pickup of speech, sound, or music.

ON THE NOSE bringing a program to a close exactly on time.

ONE SHOT a single program not part of a series.

ORIGINATE to be the source from which a program emanates for a station or network.

OWNED AND OPERATED (abbreviated 'o and o') refers to a station that is the actual property of a network, not merely tied to it by an affiliation contract.

P.A. public-address system.

PEAK (1) the highest volume that should be reached by any element on the program; (2) sometimes used to indicate blasting.

PICK IT UP an instruction to speed up delivery.

PICK UP A CUE to start a line as soon as the preceding line is finished.

PICKUP (1) the type of transmission secured by a given arrangement of microphones; (2) the point from which a broadcast originates; (3) the device that picks up sound from a recording; (4) the picture obtained by a TV camera.

PIPE to distribute a program over radio or TV lines.

PLATTER a phonograph record or transcription disc.

PLAY BACK to check a recording or transcription that has just been made, by playing it through.

PLUG (1) to mention an advertised product; (2) the commercial.

PRODUCTION the building, rehearsal, and presentation of a radio program.

READ-Y refers to saying words, rather than reading lines with meaning and expression.

REMOTE a broadcast that originates outside of a station's regular studios.

REPEAT to present a program 'live' for the second time for stations, usually in the West, that cannot use the first presentation because of time differences; often referred to as a rebroadcast.

RIDE GAIN to manipulate the volume level of a program at the control board, a function of the engineer.

ROUND ROBIN a telephone loop that makes a complete circuit, permit-

ting points of origination to change during a program without an appreciable pause.

R.P.M. revolutions per minute.

SCANNING the moving of the electron beam in the television camera and receiver.

SCRIPT the written form of the show.

SECONDARY a role of intermediate importance, falling between the 'bit' and the 'lead' in length.

SEGUE the blending of one piece of music into another without a pause; often used as a synonym for cross-fade.

SETUP the arrangement of performers, microphones, and other equipment for a program.

SIGNAL what a radio or television station broadcasts; the sound or sight impulses picked up by a receiver.

SIGNATURE music or sound used to identify a program.

SNEAK to bring sound or music in or take it out so unobtrusively that its presence or absence is not noticed immediately. Music is frequently 'sneaked in' behind dialogue.

SNOW interference in a television picture, seen as small, flickering lights suggesting a snowfall.

SOAP OPERAS across-the-board daytime serials, many of which are sponsored by soap manufacturers.

SPLIT NETWORK a network divided into two or more sections, each carrying different programs.

SPREAD (1) the time allowed for audience reaction; (2) to stretch or lengthen a show.

STAND BY an order to participants to be ready for the beginning of the air performance.

STAND-BY PROGRAM a substitute program held in readiness in case a scheduled program cannot be presented because of technical difficulties.

STATION BREAK (1) the period between or during network programs for station identification; (2) the identification of a station.

STRAIGHT a role with no particularly unusual characteristics, the opposite of a character role.

STRETCH to slow speech or the playing of music in order to fill an allotted time period.

SURFACE NOISE noise other than the intended sound or music, generated by the needle running in the grooves of a record.

SUSTAINER an unsponsored program put on by a station or network.

SYSTEM CUE the announcement of the network's name signaling the time for station identification.

TAG the final line in a joke or scene, usually requiring special emphasis.

TAKE IT AWAY the instruction to an announcer or an engineer in another studio or at a remote point to begin his part of the program.

TAKE LEVELS to determine the volume of various elements in a program and make adjustments until the program is balanced.

TELETYPE the tele-typewriter equipment used by all stations to receive news, and by affiliates to get program information from the network.

TEST PATTERN a geometric design broadcast by a TV station to identify the station and to facilitate the tuning of receivers.

THROWAWAY refers to the reading of lines in a casual manner, lacking special emphasis.

TIGHT describes a show that in rehearsal ran exactly on time with no room for spread during the air performance.

TV television

UNDER (1) describes a program that runs short; (2) refers to music or sound held at low volume behind dialogue.

V.I. the volume indicator on the control board.

VIDEO refers to television in general, and to the picture part of the broadcast in particular.

V.U. volume units; the dial on the control board that shows volume levels—similar to the v.i.

WARM UP the period before a show during which the performers get the studio audience into a responsive mood.

WATT a unit of measurement for indicating a station's power (a kilowatt equals 1000 watts).

WAVE LENGTH the distance between the crests of successive radio waves, determined by the frequency (the higher the frequency, the shorter the wave length).

WEB a network.

WOODSHED to practice material by oneself before a broadcast.

WOOF the word used most often to test microphones.

WOW the sound produced when, because of inaccurate cueing, sound or music is heard before the record has reached its proper speed of revolution.

A Selected Bibliography

The publications listed in this bibliography, which is limited to those books considered to be most helpful in each field, are grouped under the following headings: (1) About Radio in General; (2) Business Side of Radio; (3) Education and Radio; (4) Radio Directing and Production; (5) Radio Speech; (6) Radio Writing; (7) Script Compilations; (8) Television. For a more complete listing, see the bibliographies listed below under the names of their compilers, Oscar Rose and Gertrude G. Broderick.

About Radio in General

Abbot, Waldo, *Handbook of Broadcasting,* McGraw-Hill Book Company, New York, 1941.

Archer, Gleason L., *Big Business and Radio,* American Historical Society, New York, 1939.

—— *History of Radio to* 1926, American Historical Society, New York, 1938.

Broderick, Gertrude G., *Radio and Television Bibliography,* U. S. Office of Education, Washington, D.C., 1949.

Cantril, Hadley, *Invasion from Mars,* Princeton University Press, Princeton, 1940.

—— and Allport, Gordon W., *The Psychology of Radio,* Harper and Brothers, New York, 1935.

Chappell, Matthew N., and Hooper, C. E., *Radio Audience Measurement,* Stephen Daye Press, New York, 1944.

Columbia Broadcasting System, *Radio Alphabet,* Hastings House Publishers, New York, 1946.

Eisenberg, Azriel L., *Children and Radio Programs,* Columbia University Press, New York, 1936.

Landry, Robert J., *This Fascinating Radio Business,* Bobbs-Merrill Company, Indianapolis, 1946.

—— *Who, What, and Why Is Radio?,* George W. Stewart, New York, 1942.

Lazarsfeld, Paul F., and Field, Harry, *The People Look at Radio,* University of North Carolina Press, Chapel Hill, 1946.

Lazarsfeld and Kendall, Patricia, *The People Look at Radio—Again,* Prentice-Hall, Inc., New York, 1948.

Ranson, Jo, and Pack, Richard, *Opportunities in Radio,* Vocational Guidance Manuals, Inc., New York, 1946.

Rose, Oscar, *Radio Broadcasting and Television: An Annotated Bibliography,* H. W. Wilson Company, New York, 1947.

Seldes, Gilbert, 'How Dense Is the Mass?' *Atlantic Monthly,* vol. 182, pp. 23-7.

Siepmann, Charles A., *Radio, Television, and Society,* Oxford University Press, New York, 1950.

—— *Radio's Second Chance,* Little, Brown and Company, Boston, 1946.

U. S. Federal Communications Commission, *Public Service Responsibility of Broadcast Licensees,* The Commission, Washington, D.C., 1946.

Waller, Judith, *Radio, the Fifth Estate,* Houghton Mifflin Company, Boston, second edition, 1950.

White, Llewellyn, *The American Radio,* The University of Chicago Press, Chicago, 1947.

Williams, Albert N., *Listening,* The University of Denver Press, Denver, 1948.

Business Side of Radio

Dygert, Warren B., *Radio as an Advertising Medium,* McGraw-Hill Book Company, New York, 1939.

Hettinger, Herman S., and Neff, Walter J., *Practical Radio Advertising,* Prentice-Hall, Inc., New York, 1938.

Midgley, Ned, *The Advertising and Business Side of Radio,* Prentice-Hall, Inc., New York, 1948.

Reinsch, J. Leonard, *Radio Station Management,* Harper and Brothers, New York, 1948.

Sandage, C. H., *Radio Advertising for Retailers,* Harvard University Press, Cambridge, Mass., 1945.

Sill, Jerome, *The Radio Station,* George W. Stewart, New York, 1946.

Wolfe, Charles Hull, *Modern Radio Advertising,* Funk and Wagnalls Company, New York, 1949.

Education and Radio

Atkinson, Carroll, *American Universities and Colleges That Have Held Broadcast Licenses,* Meador Publishing Company, Boston, 1941.

Boutwell, William Dow, *FM for Education,* U. S. Office of Education, Washington, D.C., 1944.

Callahan, Jennie Waugh, *Radio Workshop for Children,* McGraw-Hill Book Company, New York, 1948.

Federal Radio Education Committee, *Educational Radio Script Exchange,* U. S. Department of the Interior, Washington, D.C., 1940.

Frost, S. E., *Education's Own Stations,* University of Chicago Press, Chicago, 1937.

Harrison, Margaret, *Radio in the Classroom,* Prentice-Hall, Inc., New York, 1937.

Levenson, William B., *Teaching through Radio,* Farrar and Rinehart, New York, 1945.

MacLatchy, Josephine H., ed., *Education on the Air: Yearbooks of the Institute for Education by Radio,* Ohio State University, Columbus, 1930 to date.

Power, Leonard, *College Radio Workshops,* U. S. Federal Radio Education Committee, Washington, D.C., 1940.

Willey, Ray Deverl, and Young, H. A., *Radio in Elementary Education,* D. C. Heath and Company, New York, 1948.

Woelfel, Norman, and Tyler, I. Keith, *Radio and the School,* World Book Company, Yonkers-on-Hudson, N. Y., 1945.

Radio Directing and Production

Barnow, Erik, *Handbook of Radio Production,* D. C. Heath and Company, New York, 1949.

Carlile, John S., *Production and Direction of Radio Programs,* Prentice-Hall, Inc., New York, 1939.

Chase, Gilbert, ed., *Music in Radio Broadcasting,* McGraw-Hill Book Company, New York, 1946.

Creamer, Joseph, and Hoffman, William B., *Radio Sound Effects,* Ziff-Davis Publishing Company, New York, 1945.

Crews, Albert, *Radio Production Directing,* Houghton Mifflin Company, New York, 1944.

Kingson, Walter Krulevitch, and Cowgill, Rome, *Radio Drama Acting and Production,* Rinehart and Company, Inc., New York, 1950.

La Prade, Ernest, *Broadcasting Music,* Rinehart and Company, Inc., New York, 1947.

McGill, Earle, *Radio Directing,* McGraw-Hill Book Company, New York, 1940.

U. S. Office of Education, *Handbook of Sound Effects,* U. S. Government Printing Office, Washington, D.C., 1940.

Radio Speech

Anderson, Virgil A., *Training the Speaking Voice,* Oxford University Press, New York, 1942.

Bender, James F., *NBC Handbook of Pronunciation,* Thomas Y. Crowell Company, New York, 1943.

Cott, Ted, *How to Audition for Radio,* Greenberg: Publishers, Inc., New York, 1946.

Duerr, Edwin, *Radio and Television Acting,* Rinehart and Company, Inc., New York, 1950.

Ewbank, Henry L., and Lawton, Sherman P., *Projects for Radio Speech,* Harper and Brothers, New York, 1940.

Fairbanks, Grant, *Voice and Articulation Drill Book,* Harper and Brothers, New York, 1948.

Gilmore, Art, and Middleton, Glenn, *Radio Announcing,* Hollywood Radio Publishers, Hollywood, 1947.

Henneke, Ben G., *The Radio Announcer's Handbook,* Rinehart and Company, Inc., New York, 1948.

Herman, Lewis and Marguerite S., *Manual of Foreign Dialects for Radio, Stage, and Screen,* Ziff-Davis Publishing Company, New York, 1943.

Hoffman, William G., and Rogers, Ralph L., *Effective Radio Speaking,* McGraw-Hill Book Company, New York, 1944.

Zimmerman, Jane Dorsey, *Radio Pronunciations,* Columbia University Press, New York, 1946.

Radio Writing

Barnouw, Erik, *Handbook of Radio Writing,* D. C. Heath and Company, New York, 1947.

Brooks, William F., *Radio News Writing,* McGraw-Hill Book Company, New York, 1948.

Crews, Albert, *Professional Radio Writing,* Houghton Mifflin Company, New York, 1946.

Lawrence, Jerome, ed., *Off Mike,* Duell, Sloan and Pearce, Inc., New York, 1944.

Niggli, Josephina, *Pointers on Radio Writing,* The Writer, Inc., Boston, 1946.

Warren, Carl, *Radio News Writing and Editing,* Harper and Brothers, New York, 1947.

Weaver, Luther, *The Technique of Radio Writing,* Prentice-Hall, Inc., New York, 1948.

Whipple, James, *How to Write for Radio,* McGraw-Hill Book Company, New York, 1938.

Wylie, Max, *Radio and Television Writing,* Rinehart and Company, Inc., New York, 1950.

Script Compilations

Barnouw, Erik, *Radio Drama in Action,* Rinehart and Company, Inc., New York, 1945.

Boyd, James, *The Free Company Presents,* Dodd, Mead and Company, New York, 1941.

Calhoun, Harold G. and Dorothy, *Let Freedom Ring,* U. S. Office of Education, Washington, D.C., 1937.

Corwin, Norman, *More by Corwin: 16 Radio Dramas,* Henry Holt and Company, New York, 1944.

—— *Thirteen by Corwin,* Henry Holt and Company, New York, 1942.

Coulter, Douglas, ed., *Columbia Workshop Plays,* McGraw-Hill Book Company, New York, 1939.

Kozlenko, William, ed., *One Hundred Non-Royalty One-Act Plays,* Greenberg: Publishers, Inc., New York, 1940.

—— ed., *One Hundred Non-Royalty Radio Plays,* Greenberg: Publishers, Inc., New York, 1941.

Liss, Joseph, *Best Radio Plays,* Greenberg: Publishers, Inc., New York, 1947.

Oboler, Arch, *Fourteen Radio Plays,* Random House, New York, 1940.

—— *Ivory Tower and Other Radio Plays,* William Targ, Chicago, 1940.

—— *Oboler Omnibus,* Duell, Sloan and Pearce, Inc., New York, 1945.

Seldes, Gilbert, *Americans All—Immigrants All,* U. S. Office of Education, Washington, D.C., 1939.

Weiser, Norman S., ed., *The Writers' Radio Theatre,* Harper and Brothers, New York, 2 vols., 1941-2.

Wishengrad, Morton, *Eternal Light,* Crown Publishers, New York, 1947.

Wylie, Max, ed., *Best Broadcasts of* 1938-39, McGraw-Hill Book Company, New York, 1939. Similar volumes published for 1939-40 and 1940-41.

Ziebarth, E. W., and Erekson, Reid B., *Six Classic Plays for Radio and How to Produce Them,* Burgess Publishing Company, Minneapolis, 1939.

Television

Allan, Douglas, *How to Write for Television,* E. P. Dutton and Company, New York, 1946.

Bettinger, Hoyland, *Television Techniques,* Harper and Brothers, New York, 1947.

Dunlap, Orrin E., Jr., *Understanding Television,* Greenberg: Publishers, Inc., New York, 1948.

Dupuy, Judy, *Television Show Business,* General Electric Company, Schenectady, 1945.

Eddy, William C., *Television: The Eyes of Tomorrow,* Prentice-Hall, Inc., New York, 1945.

Hubbell, Richard W., 4000 *Years of Television,* G. P. Putnam's Sons, New York, 1942.

—— *Television Programming and Production,* Murray Hill Books, Inc., New York, 1945.

Hutchinson, Thomas H., *Here Is Television,* Hastings House Publishers, New York, 1947.

Royal, John F., *Television Production Problems,* McGraw-Hill Book Company, New York, 1948.

Sposa, Louis A., *Television Primer of Production and Direction,* McGraw-Hill Book Company, New York, 1947.

INDEX