TELEVISION PRODUCTION PROBLEMS

By JOHN F. ROYAL
Vice-president, National Broadcasting Company

NBC-Columbia University Broadcasting Series

McGRAW-HILL

$2.50

Television Production Problems

In this symposium a group of eleven television experts cover the major problems involved in the production of television programs, both in the studio and on the scene of current events.

The contributors were lecturers in a course in television given by Columbia University and the National Broadcasting Company. Their lectures were considerably rewritten and reinterpreted, and additional data were supplied to bring the book up to date.

Contributors

JOHN F. ROYAL, Vice-president, National Broadcasting Company

FREDERICK COE, Director, NBC Television

A. BURKE CROTTY, formerly Director of Field Broadcast for NBC Television

HERBERT GRAF, formerly Director of Operatic Productions, NBC Television

N. RAY KELLY, Manager of Production Facilities, NBC Television

REYNOLD R. KRAFT, Sales Manager, NBC Television

I. E. LAMBERT, formerly Special Attorney, NBC Television

RICHARD P. MCDONAGH, Manager, Script Division, National Broadcasting Company

EDWARD SOBOL, Producer, NBC Television

ROBERT J. WADE, Art Director, NBC Television

FERDINAND A. WANKEL, Assistant Director, Engineering Operations, NBC Television

$4.00

Handbook of Broadcasting

By WALDO ABBOT
Director of Broadcasting Service,
Associate Professor of Speech
University of Michigan

Second edition. 422 pages, 6 x 9

A COMPLETE guidebook of broadcasting for students and teachers of speech and broadcasting, for teachers receiving educational programs in the classroom, for those in the radio profession, for the radio listener, and for those who are or who hope to be radio speakers or writers. The book presents instructive material on all phases, except the engineering, of the planning, writing, production, and performance of radio programs, and on commercial, educational, vocational, and other aspects of radio broadcasting.

This revised second edition of the *Handbook* incorporates changes and improvements suggested by instructors in 50 universities where it has been used as a text, and by former students of the author who have gone into various broadcasting stations.

Television Production Problems

By JOHN F. ROYAL
Vice President
National Broadcasting Company

FIRST EDITION

NEW YORK TORONTO LONDON
McGRAW-HILL BOOK COMPANY, INC.
1948

TELEVISION PRODUCTION PROBLEMS

THE MAPLE PRESS COMPANY, YORK, PA.

NBC-Columbia University
Broadcasting Series

STERLING FISHER AND RUSSELL POTTER

CONSULTING EDITORS

Television Production Problems

NBC-Columbia University Broadcasting Series

CONSULTING EDITORS

STERLING FISHER
Manager, Public Affairs & Education Department
National Broadcasting Company

AND

RUSSELL POTTER
Director, Institute of Arts and Sciences
Columbia University

BROOKS—Radio News Writing
CHASE—Music in Radio Broadcasting
ROYAL—Television Production Problems

History of a Book

For a number of years, Columbia University and the National Broadcasting Company have joined in a project that when it started was unique in the fields of radio and education. The aim has been to provide instruction, with as much workshop experience as possible, in all phases of radio programming and operation; to have the instruction given by *practical* experts and under the careful supervision of trained university administrators. Thus, for what I believe to be the first time, a great university offered a large variety of courses in the various phases of a practical art and a leading company in that art field recruited the complete roster of instructors from the ranks of its most expert employees. Columbia University and NBC have worked out this radio project together, and it has been remarkably successful.

It is not surprising, therefore, in view of this success in the radio field, that when a simmering public interest in television began to come to a boil and Columbia University decided to offer courses in the programming phases of this new branch of show business, the eminent institution of Morningside Heights should once more come to NBC for its instructors.

The first step was a course of down-to-earth talks—euphemistically billed as "lectures"—by people working in NBC's

television shop. These talks were designed to give the students an over-all appreciation of the difficulties they would be likely to meet in the new field. The course was called Television Production Problems. It was so popular that many suggested that the talks it featured be compiled in book form for the convenience of those who, for geographical or other reasons, could not attend the classes. We accepted the suggestion, and between the covers of this book you will find the talks, which, except for minor editing, are in the very fashion in which they were first given.

The contributors care nothing for literary style. Their only aim is to present their ideas clearly, concisely, and cogently. If, as between the views of contributors, the reader occasionally finds a hint of contradiction, he must remember that in the television studios of Radio City are a group of men who, while being perfectly willing to function as a team in order to get the program on the air, nevertheless reserve their right to be ruggedly individualistic when it comes to interpreting an art form or explaining the theories of their craftsmanship. Such individualism is encouraged at NBC and must always be encouraged in any place of show business. Otherwise there can be no progress, nothing new except the degree of dullness.

All the contributors to this book—Ferdinand A. Wankel, Richard P. McDonagh, N. Ray Kelly, Robert J. Wade, Herbert Graf, Edward Sobol, Frederick Coe, Burke Crotty, I. E. Lambert and Reynold Kraft—join with me in hoping that the reader will enjoy reading the book and perhaps profit by the views it contains.

JOHN F. ROYAL

RADIO CITY, N. Y.
May, 1948

Notes on Contributors

JOHN F. ROYAL, vice-president of the National Broadcasting Company, has been associated with that network since 1929. One of the best-known showmen in the United States, before joining NBC he was general manager for the Keith interests in the Midwest and had been a newspaper reporter and assistant city editor. He entered radio as director and general manager of WTAM in Cleveland and a few years later was named a vice-president of NBC, where he was responsible for the creation of many of radio's greatest shows. He has been associated with the television operation of NBC for many years.

FREDERICK COE, one of the youngest directors in television, comes from the Mississippi-Tennessee area, naming Peabody and Vanderbilt as his colleges. While a student he directed drama in both schools and later attended the Yale workshop. He has done extensive summer-theater work, stage-managed Broadway shows, and directed at least one Broadway production. He has been with NBC Television during the years of its most ambitious productions.

A. BURKE CROTTY, former director of field broadcasts for NBC Television, was on the staff of the network for nearly

eighteen years, serving in the beginning as photo editor of the NBC press department. In 1939 he was appointed special-events producer in NBC Television. Later he was given charge of all field broadcasts, in which position he was responsible for the operation of mobile-unit trucks and the supervision of production of many pioneer NBC Television sporting and special events.

HERBERT GRAF was born in Vienna and was graduated from the University of that city, receiving his Ph. D. in 1928. He studied music and stage directing at the Vienna State Academy and then held various positions as operatic stage director in Europe. In 1934 he came to the United States as stage director for the Philadelphia Opera Company, switching in 1936 to a similar position at the Metropolitan Opera House in New York, besides acting as guest director in many other important opera houses. In 1944 he was appointed director of operatic productions for NBC's television department, a position he held until his return to the Met in 1947.

N. RAY KELLY, manager of production facilities for NBC Television, is a graduate of Knox College and attended the Harvard Graduate School of Law. He developed the first sound effects department for NBC after joining the network in 1930. From that date until 1944 he served in many capacities, the last of which was production manager for the network. He participated in the early stages of NBC's television programming development and was appointed to his current position in 1944.

REYNOLD R. KRAFT, sales manager of the NBC television department, entered advertising in 1931. He joined the network sales department of NBC in 1936 and was appointed to

his present post in 1945. He received a degree in engineering from the University of Illinois and served as a naval aviator in the First World War.

I. E. LAMBERT for twelve years was associated with the Radio Corporation of America as assistant general counsel and vice-president and general counsel of the RCA Victor Company. He was a special attorney for NBC in regard to the legal aspects of television. After a period spent practicing law at Santa Fe, New Mexico, he returned to RCA, his headquarters now being New York City. He is a graduate of Kansas University Law School and the author of several law and business books, including "Marquis of Queensbury Rules for Modern Business," and "The Public Accepts."

RICHARD P. McDONAGH, a professional radio writer for the past sixteen years, has been manager of the script division of NBC since 1943 and has served unofficially in a similar capacity with the television department. Mr. McDonagh is also listed as an instructor in television writing at Columbia University.

EDWARD SOBOL, NBC Television producer, first joined the department in 1939. Sobol was associated for many years with Max Gordon as stage manager and director and later served in similar capacities in Hollywood. He was Broadway manager of "The Doughgirls" and "Decision," and coordinated and supervised sixteen productions for USO overseas entertainment. He joined NBC Television in 1944.

ROBERT J. WADE, art director of NBC Television, joined the staff in 1944. He was a pioneer in the summer-theater movement, has lectured at Emerson and Wellesley colleges,

and has had many of his designs and technical articles published in *Theatre Arts Monthly*, *The Players Magazine*, and *Stage*. Mr. Wade attended Boston University and was graduated from The Swain School of Design in 1928. He is a member of the United Scenic Artists, and Associated Artists, Inc.

FERDINAND A. WANKEL joined NBC as a student engineer a year after graduating from Brooklyn Polytechnic Institute. He has been prominent both in operational engineering activities and as a member of the development group assigned to electronic television study to pave the way for the new art. At the present time he is assistant director of television engineering operations, and as such is responsible for local and national phases of technical engineering operations.

Table of Contents

Introduction

BY JOHN F. ROYAL

To accomplish the technical feat of television, scores of technicians and scientists devoted more than a decade to the solution of engineering and electrical problems. They drew on the researches of forty years of experimentation with image transmissions and on the accumulated knowledge of 350 years of electrical invention and physical exploration, from the sixteenth century to the present day.

Television's growth into a large-scale service to the public has lately been hindered by the war and by postwar labor difficulties and material shortages. Yet, except for the war period, an efficient television service, acceptable to large numbers of people and within their economic means, has been in regular, if limited, operation for eight years.

Twenty years of costly research has all but ironed out the complications of transmission and reception. Reliable television receivers capable of producing clear, large pictures have been perfected and are now on the market. Transmitters and studio equipment are at the disposal of television broadcasters. A technique of programming and production is rapidly being developed and awaits only the encouraging touch of large-scale commercial support to offer as attractive a form of entertainment and instruction as is known to man. Television

is ready for immediate commercial expansion on a broad scale.

Coast-to-coast television networks are envisioned by 1950. Already New York and Washington are connected by coaxial cable provided by the American Telephone and Telegraph Company, and regular service is in operation between these two cities. Late in 1947, the AT&T opened a radio-relay connection between New York and Boston. Other regional networks, centered in such key cities as Chicago, Cleveland, and Los Angeles, are already in the offing. In August, 1947, eleven commercial stations were operating, with fifty-five more stations waiting for transmitters. These were delivered at the rate of four a month.

As new transmitters are erected throughout the country, the availability of sets will follow along as a part of the general development.

In June, 1947, the number of sets manufactured was 11,484 —more than the total production of 1946.

During 1948, it is expected that 600,000 new television receivers will be brought into use and the total number in operation throughout the country will be increased to 750,000. This means a total television audience of more than 5,000,000 people, for surveys indicate that the average audience at each receiver comprises seven viewers.

By then, television will be somewhere near a $500,000,000-a-year industry, and that will still be only the beginning. Transoceanic international television may become a reality within five years.

In the end, of course, sound broadcasting and television will be fused, just as sight and sound were completely combined in motion pictures. One day we may find an important broadcast program that we cannot see as strange as a movie we cannot hear. But that day is not yet. Sound-alone broad-

casting will continue to serve millions of people through the many hours of the day when the eye cannot be concentrated on the television picture.

Here is one fact that is, perhaps, of more immediate interest —the man who buys a television receiver today no longer need fear the cry that stifled the industry for a decade: "It'll be obsolete!" It will not!

Television standards have now been set by the Federal Communications Commission; the law relating to methods of telecasting and receiving and the making of television equipment has therefore been fixed.

Of course, improvements will be made; antennas may be changed or eliminated; color may be made practical; higher frequencies may be allotted to television, but no such changes need seriously affect the receivers being sold today. All probabilities are that, even when color comes, present-day receivers will still be able to reproduce the color transmission in black and white. If present frequencies are changed, receivers will need, at worst, only to be readjusted.

No, television is no longer "just around the corner." It is here now—this time, to stay.

Charles R. Denny, then Chairman of the Federal Communications Commission, said in Washington, D.C., on June 27, 1947: "Today thousands of American homes have a magic casement."

"Your television set," he told a large gathering of government officials and entertainment and communications executives at the dedication of the NBC television network station WNBW, "is an electronic window, through which you look from your living room beyond the horizon. Your life takes on a new dimension. In terms of mass education, information, culture, and entertainment, it has potentialities that are unsurpassed."

In its service to the public, television promises to be a new and vital factor in all our lives. Extraordinary benefits will flow from the nationwide service it will provide. Many of these benefits are obvious; others are evident upon reflection.

So far as entertainment in the home is concerned, it is clear enough that, potentially, television stands without peer. In television, as in sound radio, there will be entertainment and education for all, as the resources of the theater, the university, the concert stage, the sports arena, the rotunda, and the whole wide world are tapped by the television camera and supplemented by motion-picture film.

Television gives evidence of becoming the greatest single democratizing agency since the invention of printing. To bring drama and comedy, with appeal to both of our most responsive senses, sight and hearing, directly to our hearths will shatter isolation and broaden all horizons. Because it will enable many people to see the same event at the same time, it will build a consciousness of equality and a community of interest among peoples.

Educationally, television will enable the best of current thinking about human affairs to be presented more vividly to millions of people in their homes, as well as to children in schools. Television cameras will tap vast reservoirs of information and instruction. The curricula of the schools of the future may well include television lectures on scientific explorations, travel, art, geography, literature, geology, and archaeology, as well as exhibitions on the television screen depicting processes and methods of manufacture and experimental demonstrations in all the sciences.

Modes and methods of doing things in all fields of human activity, visits to places of historic importance, and demonstrations of new inventions and discoveries are some of the subjects that television will make available to students, in many

instances long before the appearance of such information in textbooks. Television will in fact open a vast field of supplementary education.

The proceedings of general public assemblies, public forums, round-table discussions, and gatherings of like nature will be augmented in effectiveness by sight-and-sound broadcasts. Motion pictures, charts, photographs, graphs, and other visual aids will be employed during such telecasts to make clearer the objectives of the participants. The visual assistance of television will promote more profound thinking on the issues under discussion and make these forums more valuable.

Television will also create, in newer, more intimate terms, that "church whose rafters are the sky." The fine achievements of our sound-broadcasting channels in presentation of religious ceremonies will be far overshadowed when each member of the audience can be transported to within sight as well as sound of the minister of religion who addresses him. To the sick, the lonely, and the aged this will be a boon. To the young and strong it may well bring some deeper sense of spiritual insight and of communion with their fellows.

Television will not only provide the public with a wholly new broadcasting service but also make a substantial contribution to the nation's economic welfare. The construction and maintenance of television equipment, buildings, studios, and networks will require large amounts of materials and will give employment to many thousands of skilled and unskilled workers. The production, sale, and servicing of transmitters, receivers, and associated apparatus will afford employment to factory workers, engineers, salesmen, retail and wholesale employees, and administrative staffs. The conduct and maintenance of television broadcasting services will give jobs to several hundred thousands of people. Moreover, it is likely that for every new job television creates on its own account—

in the building of apparatus and the production of programs—television advertising may create ten jobs in American factories and in the stores that distribute their output.

Advertising is the outstanding factor in American business. It is the pump primer of industry, creating new and greater markets, increasing pay rolls, and reducing both manufacturing and distribution costs. Consequently, the advent of a new advertising medium of the potential stature of television is an economic milestone of profound significance. To bridge the gap between producer and consumer is to lay the strong foundation of national prosperity. When he who makes can strikingly illustrate the merits of the products of the maker's toil to him who uses, industrial barriers crumble and commerce prospers.

Many a product and service that can be only inadequately described in words or still pictures, will, with television, be made as real as vision will permit. When a New York station televised an I Love to Eat program, about a thousand requests for recipes offered during the show were received, even though there were only a few thousand television sets in New York at the time.

Already the fact that television has concentrated on sports events in its programming has had surprising results. Wrestling in Chicago was failing badly until some of the events were telecast; within a short while great crowds were fighting to see the wrestling, and ticket scalpers were doing big business. Increases in attendance were noted in such sports as harness racing, midget-car racing, and girls' baseball immediately after these events were telecast.

In the end television will stimulate all business and industry, to an extent not altogether appreciated even by some of those active in the television field.

So far as the television art itself is concerned, the develop-

ment of program technique is dependent on the actual production and transmission of programs. Programs will not be developed by abstract thinkers in ivory towers. They will result only from the everyday efforts of active craftsmen offering their productions to the public, learning the public reaction, and becoming wise through experience. Practical television will learn more in a year of activity than in a decade of theorizing.

Regarding the social implications, television is a new art still in a highly elastic and formative condition, and therefore it seems hardly necessary to formulate more than the most general outline for television programs and commercial policies. Later, as experience ripens, it will be practicable to lay down more specific and detailed rules and regulations.

Television comes directly into the home. All the precautions that have been thrown around sound broadcasting to render it domestically acceptable may be automatically assumed to be equally essential for television. Furthermore, because the visual impression is apt to be more vivid and detailed and because to be understood it requires less imaginative response on the part of the observer than does an auditory impression, television must be much more carefully supervised if it is to avoid giving offense. This means that vulgarity, profanity, the sacrilegious in every form, and immorality of every kind will have no place in television. All programs must be in good taste, unprejudiced, and impartial.

To service its unparalleled programming possibilities, ranging all the way from important educational and cultural contributions to sheer amusement, television requires on the part of its producers a broad knowledge of our time and its needs, a sensitive taste, a lively imagination, and a courageous pioneering spirit.

Free and unshackled, television is prepared to render a

monumental contribution to public service. If the broadcaster and the advertiser combine to use it wisely and discreetly to provide clean, wholesome entertainment, high cultural and educational programs with full deference to religion, and free discussion of controversial public matters, the new service will grow into one of tremendous importance.

In the field of public affairs, where television may be concerned with such events as, let us say, the President of the United States addressing the Congress, every effort must be made to reflect the dignity of the occasion. Not that television is to be unduly solemn or humorless, but, to avoid losing caste and public confidence, it must never distort the events it undertakes to present. It must adjust the style of its presentation to the intrinsic character of the circumstances with which it deals.

Radio has been a tremendous influence in our national political picture, and television will have an even greater influence in the future. Many of the old-school type of political spellbinders may have difficulty holding attention and interest. Ghost writers, campaign managers, and public-relations experts will be hard put to make a dull figure acceptable. This is not intended to suggest that our candidates of the future must have bobby-sox appeal like Gregory Peck or Van Johnson; it is merely a reminder that sincerity, or the lack of it, on the part of public speakers will be emphasized by television. This phase of the new art will be worth watching.

When the United Nations Security Council opened its first sessions in New York, it was our privilege to have television equipment installed at the proceedings. Bringing such events as these United Nations sessions into the home is almost certain to have an important effect on public thinking. How man will use this miraculous new instrument will be a most interesting study.

Educational features must be authoritative and completely reliable. Through the assistance of teachers and other professionally competent advisers, they must be carefully adjusted to the age levels and the cultural capacities of the groups at which they are directed. Otherwise, they may miss their point and perhaps discredit the educational value of the art. This is a serious matter, for at best it will require time for teachers to learn how to use television material and to become convinced that it is really worth while and not merely novel and amusing.

Television presentations of religious ceremonies and themes must meticulously preserve and transmit the spiritual atmosphere inherent in them; only the insensitive will need further explanation of this point.

A type of spectacle very tempting to the televisor will be the fashion show, the bathing-beauty contest, and similar events. No hard and fast rule can be laid down for handling programs of this kind, but the televisor will be well advised to see that the exhibitionism is not objectionable. Other industries have burned their fingers by crude trespassing in this direction, and television will be inordinately stupid if it does not take warning from them.

The most interesting and treacherous field of television is the drama. It appeals to old and young alike. It has its own traditions based on the living stage and a secondary set derived from the moving picture. Shall television be governed by these, or must it develop its own standards, principles, and techniques? It is too early to dogmatize about all these things, yet already it seems clear that television faces peculiarities in its medium, which compel it to find its own way by bold and intelligent experimentation. It can directly copy neither the live stage nor the cinema, even if it would.

Meanwhile, television will almost certainly find it necessary to exercise caution and a measure of restraint in the plays it

offers for public consumption. The theater has achieved a license that harks back to the Restoration drama, and not a few of the things to be seen and heard there are certainly unfit for a medium that finds its way into the ordinary American home, where standards of purity and decency are still anything but extinct. Those who, to enjoy themselves dramatically, must have the extreme for "art's sweet sake" can go to particular shows that offer it. Fortunately, there is an immense amount of superb dramatic literature that lends itself to television production without raising any question of propriety.

In passing, one may remark that the question of how soon opera may be effectively televised has yet to be answered. But of one thing we may be sure—the television theater is going to revolutionize the appreciation of drama, and for that we should be profoundly grateful. It is going to bring new pleasures and new values into innumerable American homes.

If American radio has accomplished nothing more in the twenty-five years of its exciting career, history would, or should, award it a good-deed citation for its handling of controversial public matters. This is not meant to suggest that mistakes were not made; but the industry should be judged on the general over-all result. Farseeing men, who directed the early destinies and policies of radio, inaugurated free discussion without any outside pressure or influence. There was no law in this matter and no pressure at that time by any Washington agencies. It was done because the early pioneers of radio felt it was good programming and the kind of service expected by the freedom-loving people of our country.

Television will show the same consideration for public interest in the handling of controversial affairs. It is true that we have much to learn about the proper techniques to be used for the presentation of such programs, and this will apply

particularly to the dramatization of controversial problems. Totalitarian countries and dictator-controlled radio companies have used dramatized propaganda to drug the minds of their audiences. We should not permit such methods in the United States, despite the pressure groups and propaganda experts who will soon start trying. By cooperative thinking, a suitable programming technique will be found to present controversial subjects of public interest in a free and open manner by means of this new medium.

Motion pictures are, and will be, a very important feature of television programs. The flexibility of films will be an asset to the program structure. There will be features made exclusively by film and there will be interesting combinations of live talent and films, cleverly interwoven. There are many companies now available to make all the film programs television can use when the time comes. Whether the films will be made on the West or the East Coast has not been decided. There are important economic factors to be considered. It is surprising to know that the East Coast, as well as the West, can make good pictures for television.

Exhibitors are worried about the effect of television on theater attendance. As an old exhibitor, it is my feeling that people will always go to the theater, if the show is good. Going out is an event, a delightful diversion, and while we feel that television will provide programs of unusual interest, we are not so overconfident that we think the American people will become hermits and remain glued to their television sets.

The large film-producing companies are not indifferent to television. Several have applied for station permits in various cities, and all have staffs watching television development.

Theater television is also a much discussed phase of the new art. In the future, theaters will have suitable equipment to present television pictures on the regular house screen, al-

though there is still much work to be done before you can expect to see television pictures sharing interest with your favorite stars at the local movie houses.

The question of program timing is a most important one, and frequent experiments are being made. You will recall that in radio the programs are divided into 15-minute, half-hour, and full-hour units. It is our feeling that television will require a faster tempo, and the results of a 30-minute radio feature can be obtained in television with a program of 15 or 20 minutes' duration. Holding visual attention will be a different problem from retaining listeners' interest.

Advertising clients, their agencies, and the telecasters have made, and are continuing to make, experiments in the combination of sight-and-sound programs with suitable and acceptable commercial credits. A large percentage of the advertising will be visual and may well be an integral part of the main program structure. If the television advertiser depends upon a straight spoken commercial announcement to advertise his product, he will be wise to construct it carefully. The spoken commercial on television, to be at all effective, should be delivered without a script, and by a person who will radiate sincerity to the television audience.

The ultimate goal of the industry is, of course, full-color transmission. The entire color-television art, however, is as yet in its early stages of development. A vast amount of research still remains to be done before correct principles and methods are established, and only after that can the still-experimental systems of today be taken out of the laboratory and translated into the practical, standardized, commercial color television of tomorrow.

As is inevitable in an infant industry, rival views have been advocated as to what path television should take in order to

attain the full-color goal. Engineers differ widely in their opinions even as to the specifications of the most desirable system. Some feel that systems with mechanical moving parts and a sequence of primary-color pictures are suitable. Others believe that mechanical parts must be eliminated from the system; that the only truly satisfying transmission of color must have the advantages of silent all-electronic operation that we have in our present excellent black-and-white system.

In keeping with the American tradition, the exponents of both viewpoints demonstrated for impartial arbiters the laboratory versions of the full-color systems they espoused, and in the calm of retrospection it can be seen that all this traditional American rivalry was a good thing for the industry.

One of the most notable demonstrations referred to was the first public showing of color television pictures on a 7½-by 10-foot theater screen, April 30, 1947, when Dr. V. K. Zworykin, vice-president and technical consultant of Radio Corporation of America's laboratories division, demonstrated RCA's all-electronic system at the Franklin Institute, Philadelphia.

Motion-picture films and slides were projected with utmost realism, but Dr. Zworykin emphasized that several years would be required for development before color television would reach the present status of black-and-white television.

In the electronic simultaneous color process, Dr. Zworykin explained, three separate images of the televised picture are transmitted at the same instant over adjoining television channels of the same band width as is used in standard television. One image is in red, one blue, and one green. At the all-electronic receiver, these color signals are applied to kinescopes, or picture tubes, and the flickerless pictures formed on the faces of the kinescopes are projected to the theater

screen, where they are superimposed to form a single image blended in the colors of the original.

"This system," said Dr. Zworykin, "is completely compatible with existing monochrome television. The transition from monochrome to simultaneous color television can be made at a time in the future when color television is ready, without obsolescence of the monochrome receiving and transmitting equipment. It can from that time be developed side by side with black-and-white television without fear of obsolescence of the latter and without loss of investment by the public, by manufacturers and by television broadcasters."

Nonetheless, difference of opinion persisted and for a time it seemed as if advocacy of rival views as to what path television should take in order to attain full color would retard the progress of black-and-white television until such time as color was ready.

In the spring of 1947, however, the Federal Communications Commission chose the path. After hearing all evidence and exploring every possibility they gave a decision which, in effect, said:

"Proceed to give the public the best possible program service in black-and-white television, and, when it is feasible from every standpoint, then introduce color."

The great majority of radio and television people have applauded the commission's decision, seeing in it a valuable contribution to national prosperity. And, while they vigorously attack the many problems—particularly program problems—inherent in television as a science and an art, the people in the industry are resolved to continue the research and experimentation, which, inevitably, will result in a further improvement of the medium. Theirs is the sensible belief that television should *never* be frozen at a given level of excellence when a higher level is attainable.

Their efforts merit the wholehearted sponsorship of industry and the utmost encouragement by government.

To sum up what I have tried to say in some detail, I should like to borrow some of the most inspiring words ever uttered about the future of television, especially in their social implications.

They were spoken by Brigadier-General David Sarnoff, president of RCA who has been called "the father of American television." On December 12, 1944, at the first annual conference of the Television Broadcasters Association, held at the Hotel Commodore, New York, he said:

"I believe that television has a boundless future. I believe that it will be a greater industry and a greater art than broadcasting, but I do not believe that the two are mutually competitive or mutually exclusive.

"Rather, I believe that sight and sound will be united in order to serve the human brain by the ear as well as the eye with a message of information, of entertainment, of culture, and of government. Therefore I would not place any limits on anyone's imagination about the wide scope and the untold possibilities of this great new art."

The Second World War was still being fought when General Sarnoff spoke those words. He went on to say:

"I believe that science will help to destroy dictatorship and to preserve freedom and democracy. Science ultimately will provide man with his basic needs—food, shelter, and clothing—and thus enable world peace to rest on a solid foundation.

"In the interim, and during these periods of transition, let us not lose sight of the fact that while electromagnetic waves travel through space with the speed of light—186,000 miles a second—the radio wave can carry a lie with the same speed that it carries the truth. Since they both travel with the same

speed, the use made of these radio instrumentalities is vitally important.

"It will be of even greater importance when, to the art of exposition, there is added the art of demonstration, when sight and sound combine to bring their message into every home in our land and in the world. May that message be of good will and of peace for a world that needs both."

The Science of Television

BY F. A. WANKEL

This book is primarily written for individuals interested in the production aspects of television broadcasting. Many of you will investigate its technical phases and obtain a general knowledge of the principles involved. Cooperation between the production and technical staffs is imperative, and a mutual understanding of each other's problems will materially assist in the attainment of this objective. This chapter will strive to inform you briefly, in layman's language, of some of the major technical fundamentals of this newest and most promising broadcasting service.

When you observe a picture on a television receiver, do you ever wonder how this modern miracle is accomplished? The picture you see is an all-electronic creation from the time the cameraman in the studio focuses the image until you observe it in your home. All-electronic simply means there are no moving parts; the entire television system is made operable by the wizardry of the vacuum tube.

This was not always so, for television systems formerly employed scanning disks in the cameras and in each receiver. These scanning disks were devices rotated by an electric motor and the size of the disk determined the size of the received picture.

Engineers and technicians realized that systems of this type

would not be publicly accepted. Methods were developed which utilized new types of vacuum tubes known as "kinescopes" and "iconoscopes" and eliminated the clumsy and unstable scanning discs.

No single engineer or company claims that the present television system is exclusively its development. All the ingenuity of the entire radio industry was pooled to bring this new science to its present state of perfection. Various organizations had certain methods that they believed were superior to those of their competitors, but, until they all agreed upon a specific method or a "set of standards," commercial television was not possible.

When the human eye functions, it conveys intelligence to the brain and we "see" that upon which the eye is focused. All this information is transmitted simultaneously. Engineers have as yet been unable to devise such a simultaneous system for television. Instead, the television picture is broken up into tiny bits of information, which are progressively transmitted at extremely rapid rates, so rapid that the eye is deceived into believing that it is seeing a complete picture. This is due to a characteristic of the eye that might be called "memory" but is actually known as "retention of vision." The method used in transmitting the picture bit by bit is analogous to the reading of a printed page. You cannot read a printed page at a glance. You start at the upper left-hand corner and read each word in the first line. You rapidly move your eye from the last word on that line to the first word on the next line and in turn, read it, continuing line for line until the page has been completely read. A similar process in the television system is known as "scanning" and the equivalent of a page is called a "frame." Television reads a page or scans a frame in $\frac{1}{30}$ second.

The *number* of lines that are scanned during each frame will

determine the quantity of information that can be transmitted, just as the number of lines on each printed page will determine the amount of information in a book. The extent of this information will be manifest as fineness of detail in the television picture. The television "page" is composed of 525 lines, whether the reproduced picture is 3 inches or 3 feet high. These 525 lines, which constitute each frame, are transmitted in $\frac{1}{30}$ second.

The television serviceman can adjust your receiver so the picture is square or rectangular. If he should cause the picture to be square, you would find that the persons on the screen would appear generally tall and thin. If adjusted properly, the ratio of the width to the height should be 4 to 3. Technically, this is termed the "aspect ratio."

So far you have learned of three television "standards" from which television broadcasters must not depart and upon which the entire industry has, in this country, agreed:

1. The number of lines per frame is 525.
2. The number of frames per second is 30.
3. The aspect ratio is 4 to 3.

There are many other standards too numerous to describe in this brief chapter, but they are all equally important for the proper functioning of the over-all system.

Television programs may originate from three distinct sources: from the studio, from motion-picture film, or from remote locations in the field. In each case a television camera or cameras are employed. One of the functions of the camera is to change the optically focused picture into electrical impulses. This is accomplished through the use of a special type of electronic or cathode-ray tube, containing a plate upon which the picture is focused by the use of conventional lenses. This plate is scanned by moving a stream of invisible electrical particles or electrons (which can be focused to a minute pin

Two distinct types of kinescopes are employed in television receivers. One is the direct-viewing tube, and the other is the projection type. In the direct-viewing kinescope, which is the more familiar type, the viewer observes the end or flat face of the tube. The interior face of this tube is coated with a material that is fluorescent or gives off light when a stream of electrons strikes it. The electron stream, which is similar to that of the camera tube, is caused to scan this fluorescent screen. A valve or control grid regulates the flow of the electron stream in accordance with the received picture signal, causes the screen to vary in brightness, and thus reproduces the transmitted image. The size of the reproduced picture is dependent upon the size of the tube. At present manufacturers produce tubes from approximately 5 to 25 inches in diameter.

The projection type of kinescope is a small tube capable of producing relatively intense brightness. The small image is enlarged by optical means and projected upon a screen, which is usually an integral part of the television receiver. Projection kinescopes are not novel, since demonstrations were conducted by NBC and RCA as early as 1941 at the New Yorker Theatre, where acceptable television pictures 15 by 20 feet were viewed.

Regardless of the type of kinescope employed, it is essential that the scanning speed of the camera and receiver be identical and that both the electron beams move in unison. To accomplish this, electrical pulses are superimposed on the picture signal which cause the two electron beams to move in synchronism. The vertical-hold and horizontal-hold controls, mentioned above, are adjusted to effect this synchronization.

All radio services, whether they be telegraph, telephone, facsimile, television, or any other type of communication, must be regulated by some agency so that they do not conflict on the air and cause interference with each other. In this country, the Federal Communications Commission, the FCC, is that

agency. Each service is assigned frequency bands or channels in the radio spectrum to which it must confine itself by law. Channels for some services may be very narrow and use but little of the radio spectrum, while channels for other services may be very wide and use much. It is axiomatic that the more intelligence that is transmitted, the wider is the required channel or band width. The radio spectrum is considered presently as those frequencies between 10,000 and 30,000,000,000 cycles per second. Without attempting to define "frequency" or "cycles per second," let it suffice to say that the higher the frequency, the more the radio waves compare to light waves in their transmission characteristics. Standard broadcasting requires a band width of 10,000 cycles per second. Television broadcasting (sight and sound) requires a band width of 6,000,000 cycles per second or *six hundred times* as much space in the radio spectrum. Since it was not possible to displace radio services already established, television was required to seek space where this tremendous band width was available. Thirteen channels each 6,000,000 cycles wide have been assigned for this service. Some services other than television (FM, for instance) are "sandwiched" between the television channels. The channels are numbered for convenience, and Channel 1 is assigned the band between 44 and 50 megacycles, while Channel 13 is assigned the band between 210 and 216 megacycles (megacycle = 1 million cycles). The other eleven channels are spaced between these two, along with other radio services, including FM and one of the amateur bands.

Frequencies of this magnitude have many of the characteristics of light waves. They will not pass through objects, but tend to be reflected as light reflects from a mirror. Neither will they bend, but are generally transmitted in straight lines. This is the reason that television is a line-of-sight service be-

tween the transmitter and receiver. This is not characteristic of television, but rather of that portion of the radio spectrum in which it must operate.

This effect makes it extremely desirable that the transmitting antenna be located as high as possible, since the range of transmission and consequently the area served is in direct proportion to the height. The horizon from the top of the Empire State Building in New York is approximately 50 miles away. Reception is often possible at greater distances if altitude can be attained at the receiver location. There have been rather frequent cases of consistent reception beyond line-of-sight, which cannot be explained simply.

Standard broadcasting has expanded its service to a large number of stations by utilizing interconnecting wire lines between cities. It is natural to inquire if this is possible with a television service. It cannot be done with the same type of facilities since the wire lines used for standard broadcasting can transmit only a very narrow frequency band. Special wire facilities called "coaxial cable" make possible the transmission of much wider frequency bands, and these cables can be used for television signals. At present, WNBT in New York and WNBW in Washington, D.C., are interconnected by a coaxial cable and programs can be interchanged between the two cities. The program broadcast by WNBT in New York is also received in New Jersey and retransmitted to WPTZ in Philadelphia through a radio relay transmitter. This radio relay is necessary because Philadelphia is beyond the line-of-sight range and cannot receive the New York signals directly. A similar radio relay between Schenectady and New York permits the retransmission of WNBT programs by WRGB.

Television programs can be "networked," therefore, by means of leased coaxial cable or by radio relay stations. A

third method has been proposed in which television relay transmitters and receivers would be air-borne, and the great heights attained should give wide coverage. This method still awaits practical and extensive field testing to prove its merit.

If a local television station desires to originate a program remote from its studios, it usually employs portable field equipment and a microwave relay transmitter and receiver. These microwave relays operate on very high frequencies of approximately 7,000 megacycles and are capable of transmitting to distances of 25 miles. In metropolitan areas, special wire facilities are sometimes available for the transmission of television programs over short distances and may prove economical at frequently utilized pickup locations.

There are many technical phases of television that are not discussed in this brief chapter, but it is hoped that the reader's interest has been stimulated to the extent that he will seek further technical knowledge from the many existing texts and periodicals on the subject. A production director cannot possess too great a comprehension and appreciation of the technical problems of a television system. With an increased understanding of these problems, he can distinguish between a difficult and an impossible task and will be better able to coordinate all the factors that are involved in producing a television program.

Television Writing Problems

BY RICHARD P. McDONAGH

Man, the scientist, sired, out of knowledge and patient experiment, an infant whose potentialities for serving the human race are incalculable. He called it Television, and we, the uncomprehending members of the family, whose assistance during the blessed event was limited to extending good wishes to those more intimately concerned, joined in the warm and sincere welcome that greeted the new arrival. Our attitude since then has been wholesome and helpful. We have decked the baby out in a lot of old clothes, brightening them first with a new touch here and there; we've even made a new dress or two for it. We've fed it what little we could afford, and the baby has thrived in a hard world. We are all very happy, for, regardless of how much or how little we had to do with the parentage, we all look on it as our baby.

Now, however, we have had a chance to sit back and observe and take stock, and while our pride is as keen as ever, we are aware, nonetheless, that the new arrival threatens to be a source of embarrassment to those who sired it. The truth of the matter is that, while every member of the family is agog at the physical marvels of the baby known as television, this wonderful creation of the scientists is actually proving to be a benign young giant that threatens, economically, to eat us out of house and home and will succeed in doing just that

unless we put him to work as quickly as possible to earn his own living.

Television's needs, in terms of coin of the realm, are exceeded only by the immensity of its requirements in program content. Artistically and economically, its appetite is voracious. Thus, while we can only hope that television will hold its own in the business world, and so be self-supporting, it is up to the program builders to see to it that the new medium is *worth* the support the commercial people must give it. Those of us who aspire to work backstage in television must anticipate the needs of the camera, and we must be prepared to fill them in a manner worthy of perhaps the greatest medium of expression mankind has ever had at its disposal.

All this brings us to a consideration of an appropriate question: what are television's greatest primary needs, programwise? My answer, obviously, is conditioned to some extent by the fact that for many years I have earned my living by putting one word after another and that I am, therefore, very conscious of the importance of the writer to any of the spoken arts. Nonetheless, and despite the truth that any experienced nonwriting program person could give me a good argument, my answer is: television's two great primary needs are material and writers.

Of course, television has many needs. It needs good directors, fine actors, cameramen, prop builders, stage managers, lighting experts, and the very best technical brains America can offer. But before any of these can display their talents, they must have material with which to work—a story, a play, a turn, something that has an entertainment potential—and that material must be shaped in a manner that will make it suitable for television presentation. The person so shaping it is a television writer.

True, a television director may adapt material from an-

other medium for his own use, although television cannot continue forever to be programmed with hand-me-downs. The director may even create an original vehicle. But while he is so engaged, he is not a director; he is a writer—temporarily, at least. I repeat, then: television's primary need is material, and the one who provides that material in a suitable form may be said to be one of the most important, if not *the* most important, person in the television picture—the writer.

So far as I can discover, there is no such thing available today as an expert television writer. True, there are people who have written for television, with varying results; and, while it may be uncharitable, it is not untruthful to say that those who by circumstance have had the most opportunity in the field of television writing are not necessarily the people who could make the most of their chances in this field. Many of them are individuals who have no hankering to be writers but who are forced to write in order that they may have something on which to turn the cameras. At this time, then, no expert television writers are available, but if there were such an expert at large, I am convinced that his talents would be a combination of the visual sense of the screen writer, the ingenuity of the stage writer, and the facility of the radio writer.

Television will, I think, recruit its writers from practically every field: from screen, stage, and radio and from the ranks of the prose writers, including the lowly pulps. There will be room for all who can make the grade, for experience to date indicates that television will require more writers per day of programming than does radio. Not only is television writing more difficult and time-consuming than radio writing, thus cutting down the number of program units each writer can service, but the new medium itself demands more in terms of artistic projection than radio ever did. Consider, for example,

that great radio stand-by, the musical program. With an orchestra, a singer, and some copy for an announcer that will whet the imagination of the audience, one has all the ingredients of a successful radio program. In television these will not be enough. (Remember those boring Vitaphone shorts of 1929 and 1930?) Something new must be added if the eyes of the nation are to be trained on television musical shows, and that something new must be provided by writers. That's just a partial explanation of why there must be more writers per day of programming.

From the standpoint of efficiency, and perhaps economy as well, it may be found that it will be best for each station or network to have a staff of writers whose main duty will be that of *adapting* to television *material created by a great number of other writers*. These staff people would be thoroughly trained in the mechanics of preparing shooting television scripts. Not for a moment do I mean to suggest that they would be drudges or hacks or automatons. On the contrary, they would be carefully selected for their imaginative capacity and for their facility in creation; and there would be nothing to stop them from writing *original* television plays and other material. They would be television's assurance that unplayable material would never reach the studio. It would be their job to adapt to the requirements of television all literary material originally written for other mediums; to work with the nontelevision-trained authors of material written especially for television; to contribute to the planning of and to write any necessary scripts for all special events and for musical, audience participation, and forum programs, etc. When television can afford it, these people should be well paid!

With this nucleus of trained experts to play quarterback and run interference for him, every storyteller in America is potentially a television writer. And, considering the quantita-

tive requirements of full-time television, the medium may well need the best efforts of every storyteller in America.

At the present moment, little is being done to train the writing craftsmen that television will need. This is unfortunate, for the need will be pressing and it may be felt very soon.

At this writing there are no experts in television writing; hence there are no reliable textbooks at the student's disposal. However, pending the appearance of a really good textbook devoted exclusively to television writing, the beginner would serve himself well by consulting the standard texts in the *audio* field. One of the best of these—some of the points it makes, incidentally, will find their way into this particular chapter—is James Whipple's "How to Write for Radio." This book is held in generally high regard as a student's aid because of the simple and extremely effective way it treats the basic craft of story building in the dramatic form, and because of the precise, easy-to-understand terminology it uses in describing the various types of program with which the writer in any branch of broadcasting must be familiar.

Immediate action, industry-wide, is needed. A television workshop, supported by the industry as a whole and designed to train directors and writers, should be established at once. This project should not be left to any one company or station. In these critical days, when the industry must "sell" itself as an art form to the public, poor or mediocre programming on any station may hurt the group. That is one good reason why a workshop project, supported by the whole television industry and geared to obtain results, should be established.

Obviously, it is not possible to give a complete course in television writing in one chapter of a book, even if the author felt he were qualified to give such a course. What follows is an attempt by one whose daily work brings him in contact

with television and forces him to devote considerable thought and attention to particular problems attendant on television writing, to answer the questions most often asked by people interested in the newest entertainment medium.

WHO IS A POTENTIAL TELEVISION WRITER?

Anyone who can tell a story well, and who knows why he tells it the way he does, is a potential television writer. Such a person, to begin with, must be familiar with all the elements in any good story, *i.e.*, title, characters, theme, and conflict, all woven into a plot that has a beginning, a middle, and an end. In television, of course, there is usually the requirement of telling the story in the dramatic rather than the prose form, which calls for additional gifts, such as an ear for good dialogue. But even if one never masters the dramatic form, one can still contribute to television, as long as there exists the ability to write a good story in any form.

To be successful in television the writer must be able, through a suggestive or provocative title, to attract an audience to a group (preferably a small group) of carefully chosen characters, who, for reasons of love, jealousy, hate, or greed etc. (these emotions represent the theme of the story), will be brought into conflict (either mental or physical) with each other.

Whether or not an audience will enjoy the characters created by the writer and be interested in what happens to them will depend on the plot development—in other words, on the situations that the dramatist will manufacture either to aid or to retard his characters in their desire to accomplish some purpose—and upon how skillfully he writes dialogue.

It cannot be too clearly stated that the art of writing for television need not be listed among the great mysteries of the world. With hard work and intelligence, any person who

writes for any medium ought to be able to write for television. Admittedly, this statement leans a little toward the optimistic, but I am convinced that it will prove to be true more often than not. There is too much bunk printed about "genius." In most cases hard work and intelligence will be found to be suitable substitutes for genius.

IS IT EASY TO WRITE FOR TELEVISION?

No, it isn't. It is very difficult to write well for any medium (at least, that has been my personal experience).

Actually this is not a good question, although it is often asked. It would be much more to the point to ask, "Is it *interesting* to write for television?" The answer to that query is a definite "yes"—certainly more interesting than writing for the stage or for radio, though not more interesting, perhaps, than writing for the motion pictures.

When I use the term "interesting" here, I am not confusing it with "advantageous." I am not thinking of the opportunity for rewrites afforded the stage or motion-picture playwright, or of the glamour of a Broadway first night, with its cries of "Author, Author!," or of the earning power of the television dramatist as compared with his brother in stage or pictures or radio. Rather, I am thinking of the writer's work in terms of problems to be solved and of the aids available to their solution.

The writer's aids in television—*i.e.*, the elements of imagery that are available to him—are more plentiful and exciting than those available to the radio writer. The radio dramatist has only three aids to presentation—dialogue, sound effects, and music—while the television writer can use dialogue, sound effects, music, facial expression, gestures, costumes, scenery, lighting effects, stage properties, physical eccentricities of actors (which heighten characterization and dramatic effect),

stage business, sometimes natural scenery and locale, and that great Hollywood innovation, the close-up.

True, owing to technical limitations, the television writer may not in 1947 use all these aids to presentation to their fullest effect, and he must continue to envy Hollywood in such matters as the use of an extremely large cast, unlimited use of natural scenery and locale, unlimited changes in sets and scenery, trick photography, etc. Nevertheless, the television scenarist has plenty to work with and can find many interesting solutions to every problem. Only the individual himself can say whether or not the work is easy.

WHICH ARE EASIER TO WRITE, ORIGINALS OR ADAPTATIONS?

This, too, is a moot question. The main difference, craftwise, between originals and adaptations is that in the original the television writer must be able to provide all the elements of the story himself; whereas in adaptations another writer has provided him with all or many of those elements. It must be remembered, however, that one of the satisfactions of doing an original television script is that the television writer —not somebody else—decides just how many and what types of characters will get themselves into what situations, in what locales, for what reasons; whereas in adaptations he must, in justice, try to interpret the original author as faithfully as possible, and consequently he may find himself facing difficulties imposed by this other individual.

This business of interpreting the original author faithfully may, however, be carried too far. Too often—far too often—would-be television writers, in adapting a Broadway drama to the newer art, have adapted it in length only. They have merely *cut* the play, so that it might be completed in a given running time. They have kept acts and scenes almost intact, forgetting that the original playwright used the form he did

only because of the demands and/or limitations of the stage.

The good adapter has learned that it is not enough merely to *cut* a play for television presentation and that, in adapting a novel, it is not always wise to follow slavishly the form and plot development used by the novelist. He knows also that care must be taken to see that the adaptation does not result in a static play; and, as with radio and pictures, it is a wise writer who refuses to have the action happen off-camera. This last statement may seem needlessly elementary, but it is a warning that should ever be kept in mind. As Edward Sobol points out, it is surprising how often a character in a television play will come into a drawing room and make a long speech about how he stopped at a bar on the way and met a most unusual character, who acted in a most mysterious fashion. The television dramatist might better show us the barroom scene and let us enjoy the mysterious actions of the unusual stranger for ourselves, especially if the incident is not included just for color, but actually advances the plot.

What all this adds up to is that the television writer, in doing a really skillful adaptation of another author's work, may well investigate the possibilities that lie in creating new scenes and situations—yes, even new characters. His only obligation to the original author is to be as faithful as possible to the original work in making his adaptation. Actually, in justice to the original author, an adapter should refuse to display in one medium a work just as it was written for another, if he can improve its total effect by making changes. Naturally, in writing any additional scenes or dialogue, care must be taken to follow the style of the original author.

IS THE TITLE IMPORTANT IN TELEVISION?

Yes, it is. As mentioned previously, the title is the device by which a writer attracts an audience. Therefore, the title should

be arresting, suggestive, challenging. It may either immediately suggest the subject or theme of the play, as in "Elizabeth and Essex" or "The Last Man Off Wake Island," or it may serve its purpose best merely by being intriguing—for example, "Some of My Best Friends Are Soldiers."

In television, as in radio, the playwright will want a complete newspaper listing, so he would do well to keep his titles short. Newspaper listings, being one column wide, can take only so many words.

WHAT OF CHARACTERS?

The fewer the better, mainly because of physical limitations. (This will be discussed later.) No policies have yet been set about such questions as the use of repulsive-looking characters, and this must be given some thought by anyone writing for television. An obvious example of what might be avoided is a story whose central character is hideously diseased in a way that calls for horror make-up.

The writer will be required to give some thought as well to the problems imposed by biographical studies that begin in childhood and end with old age. In such cases, the director should be consulted to determine the possibilities of suitably casting a character who must be presented at, let us say, the ages of five, fifteen, twenty-five, sixty, and eighty-five. The television dramatist should also check with the director before writing a play done in flashback technique, when any of the main characters appear in both framework and story proper, and when age or costume differences, as between framework and flashback scenes, are marked. Obviously, unless one set of scenes is prefilmed, the chances are that multiple casting for the main characters will be necessary, and this problem might be so difficult that it would result in the rejection of the script. There are few tragedies greater in the professional life

of a writer than to have an otherwise fine script rejected for things he could have guarded against had he taken the trouble to ask questions. A rejected script may often represent weeks or months of work. In line with this discussion, there is another question that, unfortunately, is not asked often enough.

WHAT THEMES WILL BE ACCEPTABLE IN TELEVISION?

It will help the writer to remember that, as in radio, television programs go into the home to be heard and seen by all the family. For that reason, the prudent writer will be on guard against offending.

He will not use, or he will be careful if he does use, such themes as religion, sex, crime, deformities and insanity, narcotic addiction, etc. To be more specific, the successful television scenarist will not make fun of any religious ceremony; he will not use adultery or free love in an attractive or glamorous way, nor as subjects for comedy; he will not present divorce or suicide as the easy solutions of any problem; he will keep his sex themes devoid of scenes of passion and lust or intimacy (intimacy in the legal sense); he will not use the crimes of seduction or rape as subjects of comedy; he will not deal with white slavery or sex perversion.

Television scenarios will not be acceptable if they present the technique of murder, theft, robbery, and poisoning in a way that will inspire imitation, so the smart writer will not be too specific when covering such crimes. Television will, of course, rule out all sacrilege, blasphemy, profanity, or other language of doubtful propriety. Insobriety and excessive drinking should not be portrayed as desirable or as prevalent factors in American life; and narcotic addiction must never be presented except as a vicious habit.

In television it is extremely important that material which depends on physical or mental imperfections or on deformities

should not be used in such a way as to give offense to sufferers from similar defects. In addition, there are many other angles dealing with good taste which the writer should keep in mind, as well as those very important laws having to do with slander and libel.

Having an acceptable theme, however, will not be enough, at least not when advertisers have come fully into the television picture. Then the emphasis will be on themes that have mass appeal. Reams can be and have been written on this subject, much of the argument based upon impressive piles of statistics compiled from nationwide research, surveys, and analyses of mass reactions. It is a risky subject to touch, but nevertheless most radio and television showmen do seem to agree on the following points:

The masses want entertainment—they don't want to be educated unless it can be done in a highly palatable way; they prefer comedy to tragedy; they like the happy ending; they like to shed tears but not too many of them and only if they are allowed to laugh immediately after; they relish most situations that are within their own experience; they demand that the villain always get it in the neck; and they like to shudder, which explains why the mystery story will always be with us.

The reader of this book may protest to the radio and television showmen that these findings are not true, but the R. and T. S. will wiggle out of that one neatly by assuring the reader that he, the reader, is not a member of "the masses"; that, instead, he belongs in what is known as a "class audience."

WHAT TYPE OF PROGRAM WILL BE MOST POPULAR IN TELEVISION?

That question is difficult to answer with certainty. I have passed it on to a number of television showmen, and the consensus must be reported as constituting almost a direct evasion.

It is to the effect that television, like radio, must offer a carefully balanced schedule of entertainment, including special events, drama, musical programs, novelty programs of practically all kinds, and, of course, the weightier public-service variations of these types of programs.

While television's crystal gazers refuse to be pinned down on the question of which type of program will be most acceptable to the audience, they do seem generally to be in agreement on the types of dramatic offerings that will have the greatest mass appeal. The mass appealers in television drama would seem to be headed by the following:

The unit drama. The unit drama is a play consuming the whole broadcast time, complete in itself. It has nothing in common, other than stylized opening and closing, with scripts that are presented the week before it and the week after it on the same series. Examples in radio: Armstrong Theater, Hollywood Theater, Authors' Playhouse, Words at War, etc.

The episodic serial. This is made up of unrelated stories, each complete in itself, but having one thing in common each week—the same set of characters or at least the same main characters. Examples in radio: Mr. and Mrs. North, The Aldrich Family, The Shadow, Sherlock Holmes, etc. Examples in the movies: Andy Hardy, Dr. Gillespie, Maizie, etc. The chief advantage of this type of program over the unit drama is that the audience comes to know and like the major characters and enjoys watching them wiggle out of different difficulties each week. A secondary advantage lies in the fact that because the audience likes the main characters, it is less inclined to be severely critical of the story itself. Generally speaking, experience has proved that the unit drama must be stronger in plot line than the episodic serial.

The serial drama. This type of drama may still carry such

titles as John's Other Stella Dallas, but it will probably be broadcast at night rather than in the daytime, as at present.

Some of the reasons for this probable change in time are summed up as follows:

The daytime serial, as now used in radio, has been described —perhaps unjustly—as a soporific for the overworked housewife. However true or false that may be, it *is* known that the daytime serial appeals mainly to women, and one of its virtues is that day after day the housewife may agonize with her favorite heroines as they meet up with crisis after crisis and yet never miss one lick of her housework. All she has to do is turn up the radio good and loud and she can work in practically any room in the house and get her entertainment as she works.

With television, the appeal is to the eye as well as to the ear. As presently constituted, the audience must watch a television play in order to receive full enjoyment. And if the housewife does that for too many hours each day and for too many days each week, the divorce rate may skyrocket, as irate husbands and neglected children begin to register protest.

Perhaps the answer will lie in the evolution of a new kind of visual drama, a combination of the radio and television forms in which, although visual aids are used, clarifying lines of dialogue would accompany them in order to keep that portion of the audience which is unable to watch the program aware of what is transpiring. Such a thing seems ludicrous now: but in the history of mankind, necessity has been known to inaugurate and perpetuate many a strange custom.

It would seem, then, that these three types of dramatic programs are likely to have the greatest mass appeal and, for that reason, will fill the bulk of the time given over to drama in the television schedules in the years ahead. The writer who is a highbrow and desires to reach a more cultured au-

dience may, of course, try his hand at the biographical dramas, documentaries, and dramatized narrations.

One advantage of the latter types of program, by the way, is that often they deal with historical scenes and places of interest in the current news, which allows the use of photo film shots within the framework of the production. One of the obvious disadvantages is the difficulty in casting inherent in some programs of this type. (It is a fact, for example, that none of the radio actors who sound most like the late President Roosevelt look in the least like him.)

Before leaving this subject, I should like to suggest to the television writer-to-be that musical programs will continue to be favored by a great audience. But because of their static nature, as now presented in radio, because the picture possibilities they offer are dull and boring when viewed for any length of time, new devices and methods will have to be conceived for the television presentation of songs and music. Conceiving, adapting, and perfecting these new devices and methods offers a challenge to everyone who has a yen to get into television.

A word of warning in regard to musical programs: be careful about "grand rights." Generally speaking, in order to dramatize a copyrighted song one must obtain special permission and pay a royalty—often a very heavy royalty—for the privilege.

WHAT OF FILM IN TELEVISION?

This question is of interest to the television writer for the reason that many future television programs will be filmed in their entirety. Based on present-day standards and prices, the over-all cost of filming a half-hour drama for use in television would be considerably greater than the cost of televising it live in the studio. But there are many brave spirits in the

field who are convinced that the cost of film for television use can be cut and cut again to the point where it will be economically sound to use film.

If these people are right, if the cost of film production can be lowered, there is no doubt that such a method of preparing programs will in many ways be more desirable for both the advertiser and the broadcaster. In the first place, as many scenes, as many sets, as many actors may be used as required. Secondly, the timing can be fixed to the split second. Thirdly, those responsible for the production may employ all sorts of trick shots and effects, such as are now impossible in live television. Further, it is important to consider that the use of film will solve many problems for the small television station far removed from the centers where entertainers, artists, and writers concentrate.

Moral: it ought not to hurt anyone interested in a television writing career to learn something about screen writing.

PROBLEMS PECULIAR TO TELEVISION

Earlier, this chapter enumerated a good many aids to presentation that the television writer has at his disposal. Now a word about some obstacles that the dynamics of the medium places in his path and some problems that he will have to meet.

Limitations of the iconoscope. These limitations are particularly severe in the matter of depth of focus. Without going into an engineering discussion, what this means in nontechnical language is that, unlike the motion-picture camera, the iconoscope cannot see with clarity beyond the object on which it is focused. For this reason, the writer should not indicate two simultaneous, significant pieces of action, one taking place behind the other. Example: Camera is focused on detective who is dialing headquarters. Criminal

stands 5 or 6 feet behind him, tears up paper evidence, and devours it. Because the focus is on the detective, the criminal will be a blurred and hazy figure, even though the whole of his body is pictured in the frame. Result: the actions of the criminal will not be clear. Such a sequence as this, of course, can be covered adequately with different shots; but the writer who is out to make a name in television will remember that, in the matter of depth of focus, the iconoscope has definite limitations.

Limitation on cast. Again because of deficiency in the camera, television plays should be written so that no more than three or four (tops!) action characters are pictured at once. Most television work is done with close-ups or semi-close-ups. A maximum of two people will come through best in a close-up; a maximum of three in a semi-close-up. When a large number of people are shown together, they will either be out of focus if a close-up is used or lack definition if long shots are used. Therefore, while it is not necessary to keep the size of your cast to any specific figure, it is very necessary to keep to a minimum the number that need to be picked up by the camera at any one time.

Conservation of space. In television dynamics, à la 1947, one of the principles that must be kept in mind is the size of the studio. Usually the studio is small, and the action is confined to a small number of sets—generally to the number of sets that can be constructed and placed in advance of the broadcast. Most often this number will not exceed four. There are, of course, ways of overcoming this difficulty in television, but because they add complexity to an already complex picture, it is best for the beginning television writer to plan his action in such a way that it may all take place within a small number of sets.

Maintenance of continuity. Continuity must be maintained

at all times. This is a problem peculiar to television. It does not have to be met by the stage dramatist nor by the screen writer. In the theater, tradition allows the continuity to be broken by one or more intermissions, which solves the problem of scene changing and costume changing, among others, for the stage playwright. In the case of the Hollywood dramatic product, the continuity that is apparent is not real, because the usual motion picture is really a collection of takes spread out over a period of days or weeks.

The problem of how to maintain continuity is a knotty one for the television dramatist and has already been met in a variety of ways. In an early television adaption of a stage play, for example, time out was needed for the actors to make a complete change of costume. Repeated tests revealed that a minimum of three minutes was needed to effect the change. So, when the time came, the television director simply placed a clock in front of the television camera and blithely announced that there would be a three-minute intermission. That gave the television audience time to shift around in their chairs, answer the doorbell, or get a drink of water. At the end of the three minutes, a warning bell was sounded and the drama was resumed.

Obviously, this device isn't the best way out of such problems as scene changes, costume changes, and the like. One reason is that if only one three-minute intermission per thirty-minute program is used, one-tenth of the valuable story time is consumed. Another is that by the use of such a device, the writer, or the director, loses his hold on his audience and makes it easy for them to switch to another station.

How then, if faced with a need for a complete change of costume on the part of the actors, would a writer grant them time in which to do it? How would he provide continuity of drama?

Consider the following example. Scene 1 of a drama is laid in a golf clubhouse, and all the characters are dressed in golf clothes. A murder is committed. The district attorney, who happens to be one of those present, proceeds to investigate, and as the scene ends he instructs all characters to be at his office the following morning.

Logically, the next scene should show the characters arriving at the DA's office the next morning, but that can't be done because they must have time to get out of their golf clothes and into dress more suitable for a morning call at the DA's office. While they are making that change of dress the drama must be continued. What to do?

The number of devices that are open to the television writer to effect this continuity of drama is limited only by his own imagination and the budget of his program producer.

He may, for instance, open his next scene (in the DA's office) with a variation of the old legitimate-theater device of some years ago, in which one or two servants were always discovered at the beginning of a scene, busily dusting the furniture and hashing over the lives and dispositions of the main characters. These servants provided comedy relief and, at the same time, explained the play. In the case we are discussing, the writer might arrange to have two charwomen in the DA's office, who would discuss the horrible murder and the fact that the poor DA worked most of the night on it and has gone home to freshen up, but will be back to start questioning the suspects in a few minutes, etc. This sounds corny, I admit, but it is strictly off the cuff and is meant to stimulate better thinking in others. The scene may be written just long enough to allow the suspects to change their clothes and make their entrance.

Or the television author might arrange some sort of a montage, with a newsboy selling papers announcing the

crime and various citizens reading about it, listening to annoucements of it over the radio, telephoning their best friends to refer to it, etc.

Or—and, for my money, this device is most workable in most cases—the writer might have prevailed upon his producer to have photographed the main characters in advance in a transition scene. This might have been done by carting the characters and cameraman out to the local golf club, having them emerge from the clubhouse and walk out to the first tee. One or two of them might be shown in the act of driving a ball out onto the fairway. Then, after some dialogue calculated to heighten the suspense and enhance the mystery of the story, the film might end on a slow fade-out as the golfers walk off the fairway. This film footage, which had been prepared in advance, would be used the night of the broadcast—inserted into the live dramatic presentation and run off during the time the actors were making the necessary change of clothes.

It was suggested in the last paragraph that some dialogue might be used at the first golf tee. However, it is important to remember that film with a sound track is very expensive to make. It is always best, therefore, to make silent film and to dub in the sound effects in the studio. Obviously, synchronizing a dialogue record with silent film is quite risky, so one should be extremely careful!

Mobility of drama. The human eye is a very critical organ. It feeds on any action that keeps it busy. It becomes very tired when it is forced to watch still life for any length of time. Therefore, there is the need for what has been called "mobility of drama."

There are various simple methods of achieving this mobility of drama, such as keeping the actors moving or employing a story that demands action for its development—*i.e.*, in-

stead of having the detective sit in an armchair while he deduces the whole case, we have him examine one clue after another as he walks about the room, pointing them out to another character who may be there; and/or we invest him with some unusual characteristic, such as always filing his nails, or having a mania for tossing a half dollar in the air, or what have you. In other words, we let him deduce with action. Practically any story may be twisted to include a physical tussle, good-natured or otherwise, between characters; the whipping out of a gun; the washing of dishes; the mixing of drinks; etc. There are millions of interesting things that characters can do that will delight the eye and take a play out of the static department. It is needless to point out that the less contrived these actions appear, the better all around.

Some mobility can be effected by camera action alone—*i.e.*, switching from one camera to another. In addition, the writer and director can also introduce moving-picture sequences, sight effects, diagrams, and still pictures. To repeat, all of these delight and rest the human eye, but, in addition, they should help to advance the story. If *carefully* worked out, they will do just that.

MORE TIPS TO TELEVISION WRITERS AND THOSE WHO HOPE TO BE TELEVISION WRITERS

The television screen is small. Therefore details of action or facial expression are not so readily discernible as they would be on the movie screen. The result is that television drama must use a lot of close-ups; otherwise, facial expressions and reactions of the cast members will not register.

Try to write your story so that the characters can stay close together. A tug of war is difficult to photograph for television —too much rope and space between characters.

Keep in mind that extremely fast action, particularly on a

horizontal plane, is not desirable. This explains why, most often, trained dogs and jugglers are not particularly good television entertainment. Beware of fast "panning."[1]

Try to arrange your story in such a way that, when you use more than one set, your action moves from one set to another, though only when such a move seems logical and plausible.

Camera directions should not, primarily, be your concern. Unless specific camera shots are necessary to the advancement of your plot, leave them to the director. If you *must* insert camera directions in your scripts (and the chances are that they will be discarded during rehearsals!), you should know that in many successful scripts the switch from one camera to another occurs quite often, possibly four or five times a minute. It is seldom indeed, particularly when there is little mobility on the part of the actors, that the director will televise the action with one camera for longer than a minute.

You may increase your knowledge of the theory of television writing and production by learning the definitions of such expressions as close ups, medium close, medium shots, long shots, full figures, high angles, high hat, blur pans, dolly shots, travel shots, running shots, moving shots, fades, dissolves, etc. Today, or in time to come, shooting scripts in the television studio may be dotted with such phrases, but the writer—the beginner, at least—would do well to forget about them completely. The tyro could take no better advice than this: *leave the technical and production details to the men best qualified to handle them—the directors.*

Don't, however, go off the deep end and ignore *all* directions. Be sure to include enough stage directions to clarify ambiguous dialogue.

[1] See Glossary.

SUMMARY

If you will think back over what you have read, I think it will add up to this: The successful television scenarists will come from the ranks of those men and women who can write a good, soundly constructed story for *any* medium. If such people know all the ins and outs of technical television equipment, if they understand thoroughly the principle by which the electron gun beams the electrons on the photosensitive mosaic plate and how this beam of electrons is then made to describe a pattern of several hundred horizontal lines by means of magnetic fields created by coils encircling the neck of the iconoscope tube and from there are strengthened and sent on their way to the television transmission system—if the writer has a thorough understanding of all this, swell! But I doubt very much that the possession of this involved technical knowledge is going to make anyone a better television writer, so leave the gobbledy-gook to those whose stock in trade it is.

Remember the limitation the studio imposes on the number of sets that you may use.

Remember the limitations of the iconoscope on depth of focus and on the number of people who can readily be televised at one time.

Remember the need for continuity of action and the need for mobility of drama.

And try to develop a visual sense.

Given this comparatively simple knowledge—and, incidentally, it is best to implement that knowledge by observation in the television studio—and given the ability to write a play having all of the necessary elements for good drama in any medium, a writer may expect to be able to produce satisfactory television scenarios.

Television Production Facilities

BY N. RAY KELLY

Without question, the technical aspects of television transmission may reasonably be considered an exact science. Although each day sees the accomplishment of refinements in circuit design and improvements in component physical elements flow from the laboratory in an uninterrupted stream, all of these changes are effected through the application of recognized physical laws and are based upon known behavioristic qualities of the electron.

As a consequence, we can foresee with a reasonable degree of clarity wherein our transmission medium will undergo future changes and refinements: the production of larger images, the refinement of resolution resulting from an increase in the number of scanning lines, the expansion of contrast ranges to accommodate subtleties of tone value impossible at present, and, finally, the reproduction of full spectrum color images—to mention only a few that have been the subject of wide discussion among technical men as well as the general public. The mechanical means of television transmission and reception, if not fixed, are at least pointed in the direction of their eventual development.

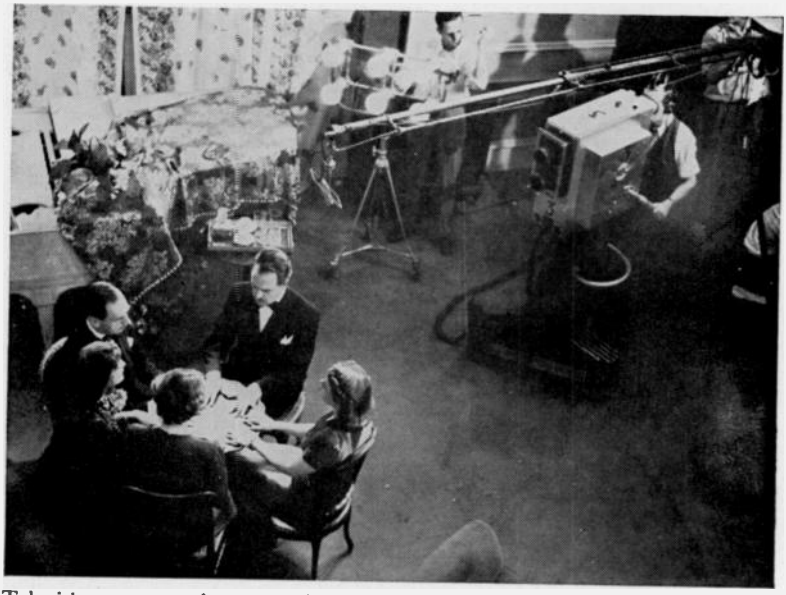
Perhaps, fortunately, programming and production techniques are not governed by such exact and immutable laws. The present is truly a period of experimentation for the builder

and producer of television programs, one in which he is free to determine standards, evolve techniques, and establish operating principles for his own guidance, and to explore, perhaps even contribute to the formulation of, public taste with regard to the television program fare of the future. Any discussion of the program and production aspects of television, at the present time, if it is to have any value other than that of the sometimes amusing reminiscences of the pioneer, must of necessity be highly conjectural. It must, of course, recognize the factual experience that we have gained to date but it must also draw conclusions that will serve as signposts for future progress.

It is with this point of view that I wish to approach the field of television production facilities. It may seem that the only known quantities in this field are problems, handicaps, and difficulties; however, as in any field of original endeavor, an incisive and analytical recognition of limitations and specific problems is a vital prerequisite to their resolution. With this approach in mind, let us examine and define our subject.

"Production facilities" is a term specially coined to cover a particular phase of television operation and it encompasses a wide variety of functions and materials, which, with live performers, comprise the visual and audible content of a television show. Specifically, it includes scenic design, construction and execution of settings, dioramic and model miniatures, and other visual effects required as means of scenic or dramatic delineation, set dressing of all kinds, furnishings, properties both mobile and stationary, make-up, wardrobe, costume design and execution, sound effects, titling, and incidental art material in a wide variety. Its activities include not only the acquisition of all materials in the above categories for each individual television broadcast, but the conduct of all physical staging operations and the handling and

coordination of personnel engaged in the construction and installation of these materials or in their operation in the television studio during rehearsals and broadcasts.



Television actors and cameras during operations. The photograph, taken within the television setting, shows the relationship of players to microphone boom and cameras.

THE STAFF

Although the relatively small volume of production that even the larger television organizations find it feasible to undertake at present does not warrant the building of large staffs of specialists and skilled artisans with which to carry on the multifarious operations represented in the planning, preparation, and presentation of even a simple television broadcast, our experience has enabled us to define the scope of these operations and to visualize the organization of the future toward which we may rationally build as the expanding

volume of our operations requires. The inherent nature of the various activities that comprise the production-facilities function indicates that basically the personnel that handles these operations may be divided into two groups—a technical staff and an operating or staging staff.

The term "technical staff" includes the art director and all those engaged in scenic design and drafting or who work with various materials in the execution of scenic designs. It is made up of artists, construction workers, skilled artisans, mechanics, and technicians, who, working in wood, plaster, metals, paint, and plastics, transform the plans of the designer into physical materials and forms. Other groups within the technical staff are wardrobe workers, responsible for the design and execution of all costumes and for the handling, care, and distribution of all wardrobe materials; visible and audible effects technicians; property custodian and assistants, who handle the acquisition, storage, cataloguing, maintenance, and disposition of furnishings and decorative and practical articles of all types and historic periods; make-up artists; title letterers and commercial artists—in short, all those who are engaged in planning and carrying out the physical activities required to supply the material components of a prospective television broadcast prior to its actual production phase.

The operating staff for an individual program is headed by the staging coordinator, who, working in close cooperation with the director, the technical director, and various members of the technical staff from the inception of the program, coordinates and supervises the preparation and assembly of all necessary equipment and manages the staging staff, made up of carpenters, property men, electricians, special effects men, and technicians responsible for the installation, operation, and placement of production facilities during rehersals and broadcasts.

In an ensuing chapter, Robert J. Wade outlines the procedure through which a program idea is invested with scenic appurtenances especially designed and executed to reflect the character of a prospective broadcast. Each individual phase of the facilities operation is carried on with the same painstaking, cooperative effort. Costumes, furnishings, set *décor*, effects, titles, display and illustrative materials, make-up, and properties are designed or selected only after comprehensive and intensive discussions with the producer to the end that the broadcast may emerge as the integrated development of a single, homogeneous program idea.

THE NATURE OF THE TELEVISION PROGRAM

I believe that much false emphasis, not to say misinformation, may be attributed to the self-styled "television expert" who has attempted to create in the minds of the general public the impression that in television we find ourselves in possession of a new "art medium." With this point of view I take violent issue. The true meaning of television is implicit in its name; *tele* (far) and *vision* (sight). Whatever novelty attaches to the medium lies exclusively within the instrumentality rather than in the material of sight. In short, with television we have opened up only a new medium of communication.

What we televise is regulated and prescribed by the same standards of taste, judgment, entertainment or educational value, popular appeal, and showmanship that apply to other entertainment fields. Essentially, a television program is only a vehicle of entertainment embodying sight, sound, and motion. Assuming this premise, we are well advised to examine the allied arts for points of similarity and to borrow applicable techniques that have been developed and proved through years of practical experience. Only in adapting these techniques to our own medium or in devising new methods to

satisfy special conditions and requirements that are peculiar to our technical system can we truly be said to work in an original field.

In some respects, television resembles each of the major entertainment mediums—the stage, radio, and the motion picture. Its materials are people, scenes, motion, and sound as are those of the theater. Its programs originate in remote locations and are transmitted instantaneously over distances to become available in the homes of its listeners, a quality that it shares only with the radio. But in the actual character of its end product, television's similarity to the motion picture is the most striking. Through the instrumentality of the camera, the viewer is not committed to a fixed point of view, as in the theater, but is allowed a constantly changing and intimate view of both people and locations. This fact alone dictates the adoption of moving-picture techniques in the selection of properties, costumes, and physical detail, as well as in basic scenic conception, which will bear the closest and most critical scrutiny without the loss of realism or effectiveness. Orthodox stage painting and decorating techniques, commonly called "faking," are ineffectualized by the camera, which, in utilizing radical changes in the line of sight, reveals the falseness of forced perspective or discloses the faked door, molding, or panel as having no more actual relief than a coat of paint. Cinematic principles that have been discovered to convert the motion-picture camera from an optical device that merely takes a picture to an active agent in developing story plot and creating mood through judicious sequences and treatments of scenes apply to the television camera as well as to its movie counterpart.

When the novelty of the television picture and its fascination as a miracle of scientific ingenuity have lost their luster, the critical faculties of the public will be concentrated upon

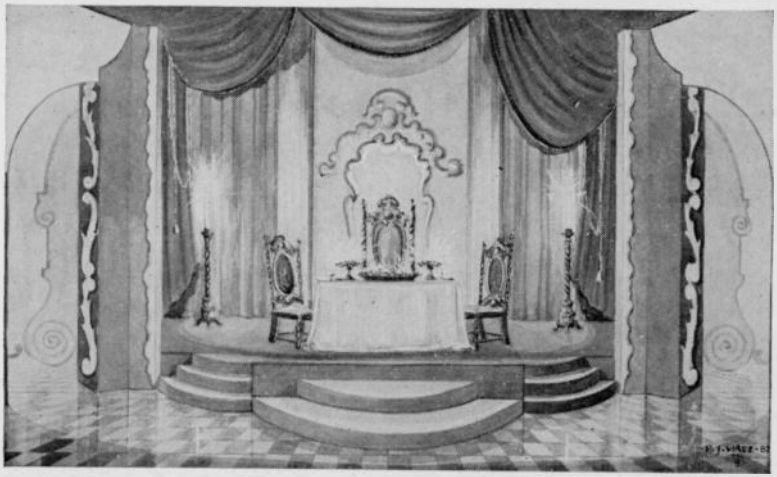
the quality of the program alone. When that time comes, the extremely high artistic standards that, fortunately, the motion-picture industry has encouraged the general public to expect will be applied by that public with equal rigidity to the "moving pictures" that come to them through their television receivers. In consequence, we would be most ill-advised not to adopt whatever we may of those methods and cinematic techniques, through which the movie industry has reached its high degree of qualitative achievement.

PROBLEMS AND SOLUTIONS

Adopting the motion picture as an arbitrary norm, let us look more closely into the special conditions that are indigenous to the television process and determine wherein these special conditions require that we diverge from the standard production methods of either the motion picture or the stage. Already we have mentioned briefly the problem that arises merely from the fact that both the movie and the television cameras introduce intimate points of view that are denied the theatergoer and have indicated that, as a direct result, standards of reality accepted on the stage are inacceptable when subjected to the more critical scrutiny of the roving camera eye. This requires a departure from the stage scenic technique utilizing paint to simulate relief detail and the adoption of the alternative practice of applying three-dimensional moldings, cornices, and pilasters, in which actual relief assures the maintainence of reality, notwithstanding varying camera angles and distances.

Continuity of action. One condition that is inherent in a live television program is that the broadcast, once started, must continue without interruption to its conclusion. In the production of a motion picture, succeeding scenes may be photographed in locations that are miles apart. Transportation

between locations may require hours. Each individual shot may require days for filming, and long delays may punctuate a sequence of shots that requires only minutes for projection. Each camera angle is especially arranged and lighted with no regard for production delays incident to these special prepara-



A television set design. The main scene in the NBC production of "Le Bourgeois gentilhomme," reproduced from a set of drawings by Robert J. Wade, showing many unconventional uses of the stock scenic elements. Note the attempt by the artist to provide contrasting areas of value through the use of a limited gray scale.

tions. Such is not the case with a television program, and this inability to stop, once the program is initiated, affects every phase of its conception, preparation, and production.

In laying out scenic ground plans for even the simplest program, the scenic designer must bear constantly in mind the sequence in which individual settings are to be photographed and he must provide adequate means for the immediate movement of actors, properties, cameras, and lighting equipment from one scene to the next. Though sets must necessarily adjoin, extreme care must be exercised to avoid placing multi-

ple sets in positions where elements of one scene might obstruct the photographing of another.

Not only in the placement of multiple settings, but in the arrangement of wall contours and furnishings within a single set, strictest technical expediency must be observed. This is a basic contrast to motion-picture processes, in which it is the common practice, at the conclusion of one shot, to move cameras for succeeding scenes into positions where they would have been visible in the earlier shots. In order to effect new camera placements, furnishings may be rearranged or removed and lighting or sound equipment moved into locations where they could not possibly have been placed during preceding scenes. In television, where one camera view succeeds another instantaneously, such practices as these are naturally impossible, and all camera approaches must be "built in" by the designer in order that at no time may the rapid movement of cameras to preplanned positions be obstructed. Frequently, to facilitate this uninterrupted flow of continuity, sets may be fully or partially duplicated, eliminating, in the duplication, those features of the original setting that would obstruct photographic angles required in later scenes.

Not only designing but make-up, costuming, and property provisions are necessary to assure continuous action, as exemplified in a recent NBC presentation. In this broadcast the exigency of rapidly changing camera angles required not only the duplication of sets but also the use of three separate actors to portray the hands, feet, and face of a single character within the space of a few seconds. Here the combined and coordinated skills of the designer, the make-up artist, the costumer, and the property man were required to make this triplication effective. Close cooperation with the writer and the director to determine the nature of photographic sequences and with the technical director, who is responsible for the delivery of these

sequences from camera and lighting personnel, is vitally essential and accounts for the great amount of conference and planning time that ideally should precede even the least intricate television production.

Instantaneity. The quality of instantaneity fundamental in live television programs, the fact that, at the instant action flashes across the television screen, that action is occurring at a remote point, though it contributes immeasurably to the fascination of television to the public, constitutes an inherent problem in the medium, which those engaged in the production of television programs must tax all their ingenuity to overcome.

Let me again resort to the analogy of the motion picture to illustrate. The film editing and cutting process is a fundamental operation in the production of motion pictures, almost as necessary to the completion of the modern film presentation as the camera itself. The faculty of "editing in time and space" enables the movie producer to combine unrelated scenes into geographically and chronologically homogeneous sequences impossible to accomplish by any other means. As an example, the Russian film, "Potemkin," in developing its dramatic plan, portrayed the breaching of the gates of a Russian city by naval gunfire. This sequence displayed a view of the actual gates of St. Petersburg, one of the muzzle of a naval gun at the moment of its discharge, and a second of the city gates at the instant of their destruction by the exploding projectile. Though these scenes achieved every conviction of reality in their final combination, actually they had no real relation in either time or locality. The original view of the gates of St. Petersburg was factual. The shot of the firing of the naval cannon was also factual, although the film had been exposed some years previously. The scene disclosing the breaching of the gates was photographed from a full-scale reproduction of the St. Peters-

burg portal located in a distant city. Through editing, these three scenes, requiring only seconds for presentation, achieved homogeneity, though in reality no one location was closer to another than a thousand miles, and months separated their filming.

Hypothetically, and actually, to transport an audience from a living room to a distant mountaintop or from the turn of the century to the present constitutes no problem for the motion-picture producer. For photographic expediency, the yard of a ranch house in Arizona may be used for one scene, while the following sequence may be filmed in the kitchen of that ranch house on a sound stage in Hollywood. Editing will allow the smooth and uninterrupted transition from one scene to the next without regard for disparity in actual time or locale.

The ability to edit in time and space, which is an integral part of the process of motion-picture production, has no counterpart in television, where every action must occur and every scene must be photographed at the instant it appears on the television screen. Since the absence of this faculty necessarily requires a radical revision of staging techniques to which it is requisite, let us examine the specific restrictions that its absence imposes upon television production and explore alternative means that may be resorted to to achieve comparable versatility of scene with equal reality.

The outside location is immediately eliminated, since all broadcasts may not be originated at a time when natural lighting conditions are favorable or when the weather will permit. As a result, all exterior locales in which action takes place must be built in essentially natural scale in interior locations if we are to maintain any semblance of reliable broadcast schedules. Within reason and subject only to limitations in preparation time and in the physical size of television studios, such an operation is feasible.

Although the relatively restricted size of current television studios has ruled out exhaustive experimentation with "interior-exteriors," the practical possibility of producing such sets effectively has been demonstrated. At the NBC, with a minimum of floor space at our disposal, we have produced a ski slope, a picnic ground, and several yard and garden locations, as well as a camp site on the Illinois prairie. These sets have proved scenic techniques employing three-dimensional fore- and middle-ground detail in combination with backgrounds executed on flat surfaces in matching perspective. The authenticity of these scenes may be materially enhanced through the use of enlarged photographic reproductions, commonly employed in the movie industry, or of background projection as the definitive background surface. The use of the latter of these two is limited at present by two factors: (1) the high intensity of light required for the effective operation of current television cameras, which washes out the projected light image; and (2) the restricted size of television studios, which does not allow adequate areas behind sets for the satisfactory performance of projectors. The relaxation of both these restrictions is assured, however, with the acquisition of larger studio quarters and with the further development of improved camera tubes already well through their experimental stage.

Whereas motion pictures utilize dioramas, model sets, and still or animated miniatures, as a matter of either economic expediency or convenience, the use of these devices is obligatory in television when expansive exterior visualizations, materially impossible of full-scale construction in even the largest studio, are required. The effectiveness of such production devices was demonstrated in a scene from "Tristan and Isolde" produced at the NBC as early as 1933. In this production, I believe for the first time in television, the technique of using a miniature set to establish over-all locale and a full-

scale studio reproduction of a small area of the miniature as an action stage was introduced. A scale model of a castle courtyard was employed to visualize the general location, after which the cameras were trained upon the real Tristan and Isolde seated upon a bench beneath a tree in the shadow of the castle parapet, all of which were executed in full-scale accurate detail from the miniature setting.

The "interior-exterior" setting with or without special effects devices provides at least a partial solution to the scenic problems inherent in the instanteity of the live-talent television program. Where wide action exteriors are required or where other dramatic considerations make its use practical, the specially prepared film insert provides the remainder of the answer. Radical changes in situation are ideally accomplished by this means. A broadcast of the "Adventures of Sherlock Holmes," which was presented several years ago from the NBC studios, illustrates the utility of this expedient. The dramatic plan of this play required that Holmes be seen preparing to leave his Baker Street apartment and immediately afterward hailing and entering a cab on the street below. The physical impossibility of transporting the actor instantaneously from one such location to another dictated the use of a special film sequence, which was prepared some days in advance and simply inserted between live scenes produced in the studio at the time of broadcast.

The limitless variety of locations which are possible through the three methods suggested above is obvious and provides a substitute for the editing process that is denied us in supplying instantaneous scenic elements, both interior and exterior, for the television play.

We have touched so far only upon the exigencies involved in changes of scenic location, particularly those of an exterior nature. Radical changes in time, as they effect not only scenic

facilities but make-up, costuming, and property requirements, also demand the utilization of special techniques to compensate for our loss of editing in time and space as a means of achieving unbroken continuity of action.

Instantaneous alteration of either costume elements, make-up, properties, or scenic detail to indicate the changes incident to the passage of time are, of course, impossible. All entail the completion of physical processes that cannot be accomplished without the passage of a reasonable period of time. In writing and production planning for television, reasonable limitations must be observed. Nevertheless, the ingenuity and imagination of those responsible for these particular phases of the production-facilities operation are directed toward cutting time requirements to irreducible minimums.

In planning wardrobe layouts for individual programs, the costume designer also must work in closest cooperation with other program personnel in order to acquaint himself fully not only with the historical and photographic qualities that his creations must embody, but also with the frequency and rapidity with which changes must be accomplished. The use of zippers and other quick fastening devices and of special design and construction must be considered as means of expediting costume variations.

The same requirements must be borne in mind in planning make-up operations and in selecting and laying out materials. Effective changes in age, within restricted limits, may be simulated by the application of various hair devices such as wigs, beards, and mustaches, together with preplanned lining and shadowing, which may be applied with great rapidity. As an example, in a recent production of "Abe Lincoln in Illinois," during an interval of less than three minutes a specially constructed beard was cemented to Lincoln's chin and blended with his basic make-up to indicate the passage of

several months. More radical alterations cannot be realistically and convincingly achieved in so short a time.

However, the dramatic development of some plays hinges on immediate and radical alteration in the appearance of both characters and scenes. If we are not to accept permanent elimination of these plays as possible television material, thus admitting a definite limitation in our medium, means must be developed to produce these instantaneous changes. The use of film, of course, offers one solution; however, the amount of film that might be required could well detract from the appeal of the live performance, or the production operation entailed in its preparation might make its use impractical. Here doubling not only of settings, but also of actors, costumes, and properties may be resorted to. Such an expedient was practically applied to produce "Copperhead." In this play a farmhouse seen first in 1864 was converted to a modernized suburban dwelling, and the protagonist aged forty years in the flick of an eyelash through the use of duplicate settings, altered superficial decoration, and a character double.

Although we may not go exhaustively into the minutiae of production operation within the short space of one chapter, I believe that it is demonstrable that, though special characteristics of television make it impossible to employ ready-made processes and techniques employed expertly in other entertainment mediums, these characteristics require changes only in the production method, not in the quality or character of the television program material.

High key light intensity. The intensity of light required for the effective function of present-day television studio camera equipment poses something of a problem in set design and decoration. Although some effect of directional lighting may be achieved, the use of light as a scenic device, per se, is extremely limited. Shadow, which performs an important func-

tion as a basic element of any scenic conception, cannot be utilized to any appreciable extent, since to produce it either the intensity of key lighting must be reduced to a degree that would induce flare in the inconoscope tube or the intensity of the major light source must be increased to a point where combustion would inevitably result. If essential, synthetic shadows may be produced. Such shadowing is achieved through the use of contrasting tone values in paint and may take the form either of wholly artificial shadows or of accentuation of naturally cast though insufficiently distinct shadow images.

A far more troublesome result of high-intensity illumination is the practical elimination of light as a means of accentuating depth perception. Although the image created by any camera, in reality, possesses only two dimensions, height and width, a high degree of third-dimensional quality, depth, may be seemingly achieved by subjecting basic planar depths of the photographed object to varying amounts of light. This treatment lends distinctness to each plane through contrast and assists the imagination of the observer in ascribing to them an arbitrary differential in position that does not actually exist. This phenomenon is utilized with a high degree of effectiveness in both motion- and still-camera photography. However, in television, the extremely narrow latitude between the lowest minimum of necessary light and the highest practical illumination intensity results in essentially uniform lighting. Neither may different areas within a set or fore- and background subjects be lighted separately with a degree of variation sufficient to be obvious or effective.

Although some measure of varying depths may be achieved in settings by a judicious selection of wall treatment and color tones, even the unrestricted use of this perogative is proscribed by technical considerations. Assuming that in normal black-

and-white photography one hundred distinct tonal values are discernible between pure white and black, television's detectable light-value range is represented by a maximum of only twenty steps. Add, further, that extremely dark tones may not be utilized because they induce flare and that the very light values are not too practical to use because of their tendency to "bloom," and the effect of this limitation on the use of paint as practically the sole means of indicating depth through differential light values is obvious. The telechrome scale of tone values, described more fully by Mr. Wade in the chapter on scenic design, has been evolved as a means of utilizing our restricted tone latitude to its fullest advantage. Through this system we attempt not only to satisfy our present requirements by establishing a specialized palette for television painting that takes advantage of the texture qualities, which vary even in colors with identical light values, but to foresee the future needs of color television by originating pigment combinations that have "natural-color" reactions to the eye as well as comparable gray value to the present television equipment.

The "flattening" effect of uniform, high-intensity lighting as applied to scenic techniques must also be considered in costuming and make-up. In these fields, also, color and tonal contrast, used to counteract the uniplanar effect, are subject to all the restrictions outlined above. The basic problem is that of providing costumes and make-up with qualities of definition that will prevent the merging of characters with background and impart a third-dimensional position to actors with respect to the scenic and decorative detail that surrounds them. The responsibility for achieving this effect is a cooperative one, which demands close coordination between scenic, costuming, and make-up personnel, in order that full advantage of our contrast range may be applied to achieve outline

definition. Full use is made of contrasting patterns as well as tone variations, so that the interrupted linearity in background treatment by plain objects or the superimposition of figured objects on plain backgrounds may accentuate their relative

A scene from a Molière classic, part of the inscenation, lighting, and camera activity involved in the NBC studio production of "Le Bourgeois gentilhomme."

positions. The use of actual or forced perspective detail and the installation of three-dimensional decorative materials by the scenic designer also materially enhance the effect of depth beyond the foreground subjects. Floor treatments that accentuate receding distance have also been found most efficacious.

Though much care must now be taken to overcome the difficulties arising from current lighting standards, these standards and their attendant problems are temporary. Refinements in lens systems and tubes already perfected in the

engineering laboratories indicate that, in the not too distant future, subtleties of lighting technique surpassing even those of the film camera may be possible in television.

Picture size and resolution. The public has been treated to a great deal of discussion, pro and con, of the adequacy of present-day television equipment, the size of receiving tubes, and standards of resolution. It is true that certain limitations exist in the medium, but the medium itself need not be inadequate if operated within those limitations. The fact that an airplane won't beat eggs does not prevent its being an excellent flying machine, and the fact that television doesn't possess the optical qualities of a microscope does not prevent its producing excellent pictures of the type for which it was designed, and *that* it does do in a most adequate fashion. If negative reactions to television's technical standards are justified, they are so only through the injudicious selection of subjects and materials by producing personnel, a fault not of the system but of the people who use it.

If transmission facilities are correctly installed and operated, and if receivers are efficiently adjusted and are located within the effective transmitting range of the television station, the pictures that develop upon the kinescope tube will be preeminently satisfactory to the television audience. Naturally, we are fortunate in being able to look forward to technical refinements. The fact that television can and will be improved is not a criticism but a welcome advantage. When those improvements materialize, the principal change for the viewer will eventualize as an increase in the variety rather than the quality of the things he may see. The greater change will accrue to the program producer, who will find it possible to do the same things that he now does but with infinitely less difficulty.

Let us admit the existence of these difficulties as they apply

to production facilities and discuss the discretionary processes through which they need be no bar to excellent entertainment and picture quality.

Tube designs and lens placements employed in present-day camera equipment do not permit a range of focal adjustment that will result in the appreciable enlargement of any object beyond its actual size. Basically, then, in selecting various materials used in television we must avoid those which require ever to be exhibited in enlarged sizes to assure clarity and recognition.

Occasionally, it is true, it is vitally necessary, for dramatic reasons, to show magnified detail not directly possible through straight television photography. This problem has been surmounted through a process called "magniscale reproduction," which in effect is simply the construction of a large-scale replica of a small object. The replica that is actually used before the camera then assumes the proportion of the entire camera field, although the original may have occupied only a fraction of that area. This expedient was used on two occasions recently, in one case to bring a match folder into distinct detail as a titling device and in the other to show an extreme close-up of a ruler used as a pointer for a local area on a large wall map. To illustrate further, in the latter instance, a scene from the "Life of Stephen Foster," Morrison Foster picked up a ruler from his desk and used it to indicate a point on a large wall map of the United States. An ensuing close-up disclosed the area as the course of the Swanee River. Since this area on the map measured actually 4 by 5 inches, it could not be directly photographed to fill the entire television screen. To accomplish this increase in size, a photographic enlargement of the map segment, measuring 9 by 12 inches, was employed. In order to preserve realistic proportions, the tip of the ruler,

which was also visible in the simulated close-up, was constructed in magniscale proportionately enlarged.

The magniscale is only a trick devised to meet a special requirement. Normal conditions require no special treatment other than the exercise of reasonable discretion. In scenic design it is not difficult to avoid the use of material details that lose their significance when subjected to reductions in size. Moldings and other superimposed decorative elements should be selected for boldness of detail and wall and fabric patterns of reasonably large figuration utilized as required.

The same general considerations of good judgment apply to the selection and use of costuming materials and properties. In these fields, also, materials that depend for recognition upon subtlety and fineness of detail may be easily avoided because they are quite unnecessary.

In the layout and execution of titles and display materials, the size and resolution factors of the television screen must be scrupulously considered. In titling, in order to assure complete legibility, no lettering less than one-fifteenth the height of the field of vision should be used. Smaller letters, as a result of the diminution in the number of scanning lines actually used to materialize them and as a result of spreading or blooming, tend to lose clarity. Judgment must also be used in the selection of type patterns, and lettering designs employing fine serifs or minute lining in their composition should be avoided in all except the larger point scales. The use of large lettering naturally reduces the amount of material being displayed in a single title. However, the use of "roll" titles or the process of dissolving from one title to another minimizes the importance of this restriction.

Small detail must be avoided in the execution of other display material, particularly maps. The ordinary commercial

map may not be satisfactorily photographed, and programs that require graphic material of this nature require special preparation. However, if, in the preparation of these exhibits, an effort is made to indicate only the detail that is requisite to convey the intended information, no difficulty may be encountered.

Program volume. Our discussion so far has concerned itself with present problems for which ingenuity may provide the solutions or with difficulties, purely temporary in nature, that will be obviated by engineering improvements already predictable. A far more serious problem lies in the future and will become more stringent as the volume of television broadcasting grows. The physical volume of live talent, special event, and film broadcasting schedules that we may reasonably expect to produce is staggering when judged by any known standards.

Already the executives of the NBC are engaged in practical speculation as to the physical and personnel requirements of fifty hours of television programming per week. This is a gigantic undertaking when one considers that the largest motion-picture organization, occupying acres of plant space and employing thousands of people, produces only a fraction of this amount of finished and edited film in each seven-day cycle.

Our problem is not simply one of providing physical and human facilities to carry on such a titanic operation, but one of devising new methods and means of operating with great rapidity without compromise in qualitative standards. A feature-length motion-picture film may require months for production. Comparable production time for our prospective live-talent television schedules would require the simultaneous preparation of approximately four hundred programs and a plant outlay only slightly smaller than the island of Manhattan. We are challenged, thus, with the necessity of develop-

ing techniques that will enable us to operate expertly and efficiently and in definitive detail within drastically curtailed time limits.

* * *

In beginning this discussion, I stated that there was a grave risk that problems, handicaps, and difficulties might seem to comprise the body of our knowledge about television procedures. I hope that I have been able to make this risk an actuality. I use the word "hope" advisedly, with the conviction that much of the fascination and certainly all of the opportunity attaching to this new medium lies in its challenge to the imagination and ingenuity of those who are fortunate enough to be associated in its early development.

Settings for Television

BY ROBERT J. WADE

Although there are many phases and ramifications in the field of television background designing still to be investigated, present-day programming includes five basic types of scenic investiture. Some are newly created and seem indigenous to the video medium; others are borrowed in style and in technique from the stage or the motion picture.

1. *The realistic or stylistic setting*, suitable for plays, dramatic sketches, operas.
2. *The abstract or decorative background*, best adapted to musical acts, fashion shows.
3. *The cartoon background*, for use as settings for children's programs, variety and novelty acts, magicians, acrobats, etc.
4. *The display setting*, including counters, shop windows, and the like, designed to exhibit merchandise, or to serve as background for mechanical devices, toys, or animated displays.
5. *Miniatures*, models, and title backgrounds.

The conception, design, execution and final completion of television scenery is comparable to, but decidedly more complicated than, the process of creating the theatrical *mise en scène*. The lack of precedence, the limiting sizes of many present-day studios, and the variable lighting and engineering

problems present difficulties that are not easily overcome by the artist, who must adapt himself to the requirements of a new medium that combines the photographic essence of movies, the restricted movement of the stage, and the immediacy of vaudeville.

Nor is the time element in television programming the same: to be economically suited to the medium, television sets must be conceived and executed quickly, often within two or three days, and must be so designed that they "strike"[1] easily in order to make way for subsequent productions.

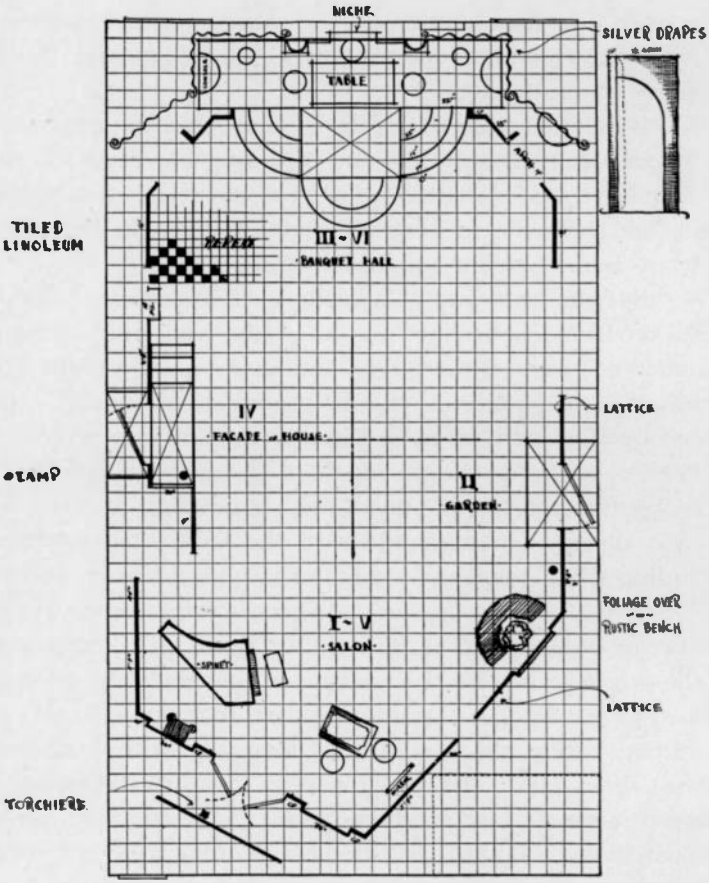
Perhaps the best way of describing the processes of design and execution is to select an exemplar; and since dramatic sketches or plays allow for rationalization, the recent NBC production of Molière's "Le Bourgeois gentilhomme" (produced by Herbert Graf as first in a series of classic revivals for television) seems to reveal much of the activity involved in bringing the script to life on the video airways.

At a meeting with members of the facilities department, including the manager, art director, scenic designer, costume designer, studio director, *et al.*, the producer presents a general picture or style, based on the script or based on his conception of the original. In "Le Bourgeois gentilhomme" the producer wished to televise the play in a modern manner as to sets and costumes, rather than as a museum piece with historically correct *décor*. Here, then, at the very first, is established the mode or style of any production; in this particular case the decision to use a slightly distorted blend of baroque and rococo architecture and furnishings served to unify the entire pictorial aspect of the program.

With this general feeling for the play in mind the designer reads the script for entrances, furniture locations, windows, and large props, frequently following rough floor plans pro-

[1] See Glossary.

NBC TELEVISION
STAGING PLAN



Program "BOURGEOIS GENTILHOMME" Date 6/17/45.

Designer Bob Nade Director HERBERT GRAF

File No: J-3 Approved

Mgr. Production Facilities

For explanation, see opposite page.

vided by the producer; soon follows the first scaled floor plan, showing entrances, chairs, tables, etc., and the relation of one set on the studio floor to another.

The tentative plan is approved by the producer, by the facilities manager—who tests it for sight lines with a specially designed scale—and by the technical director, who checks on possible camera (iconoscope) angles and problems of moving video and sound equipment. The latter may frequently suggest alterations or additions to make certain technical difficulties easier to overcome.

Thus checked, the plan is ready for development on the artistic side; in the case of "Le Gentilhomme" additional platforms, steps, columns, etc., were integrated into the basic design in order to achieve proper articulation as well as the required stylistic feeling. This last-developed plan is again rechecked and if found correct it is made up into blueprints, similar to architectural ground plans, rendered at a scale of ¼ or ½ inch to the foot. Frequently, scaled elevations[1] are blueprinted when information not inherent in the plan must be given to the master carpenter in some detail.

The designer prepares visualizations rather than sketches (there is hardly time for the latter) in order that the producer may preview the backgrounds for his program. Frequently pencil drawings suffice, although, if time allows, wash drawings in full values serve better to illustrate details of the projected setting. Rough, scaled *maquettes* (cardboard models) are

[1] See Glossary.

Staging plan for dramatic program (opposite page). Four settings are grouped in one of the NBC television studios. The order of scenes is indicated by the Roman numerals I to VI. Note that the center area of the studio has been kept clear for three cameras and the microphone boom. Under ordinary conditions, scenery for programs of this type may be assembled in the studio and dressed in nine to twelve man-hours. The preparation, construction, and painting of sets of this type may involve two to three days of shop time. Few dramatic television programs, however, are similar, and a new pattern of staging procedure is usually established for each production.

perhaps ideal for visualizations as they encompass the three dimensions, but rarely can time be taken for their execution; often crude "cutups," however, save a great deal of unnecessary construction and waste. In preparing sketches of designs in perspective, the eye level should probably always be located at normal camera height. Like the stage-design sketch, the television sketch is merely a statement of an idea; it is not a finished and separate work of art. It is a proposition.

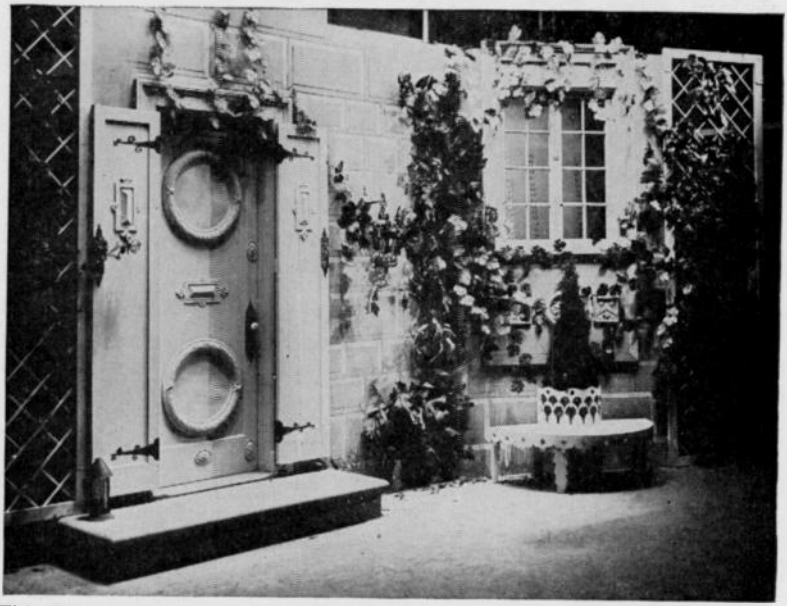
Thus far our consideration of a design for a television background is expressed in two dimensions. The problems and difficulties of making an actual setting from plan and sketch are similar to those involved in the execution of all physical objects from public buildings to plastic collar buttons; anyone with talent and imagination can design, but skill, coordination, materials, and money are required to turn blueprints into actuality.

In actual practice, then, the designer confers with the studio coordinator, who breaks up the main blueprint into working drawings to be distributed to assisting carpenters. Since the basis of each set is usually constructed from stock units, these elements are checked for availability, and special or new building laid out. Often an entire set may be assembled from stock units without special building; at other times, an entirely new set is made for some special requirement.

THE UNIT SET

The exigencies and economy of television programming hardly allow for the construction of new scenery for every play, opera, sketch, or variety show. At NBC, scenic units are employed in conjunction with special building to achieve the effect of new and different settings. These elements, developed by N. Ray Kelly, manager of television facilities, consist of interlocking wall units of various sizes, doors, arches, book-

cases, steps, French windows, etc.; in other words the units include stock items adaptable to the demands of most ordinary programs. Fastened together by an ingenious device and fabricated from materials heavier and stronger than those used



This NBC studio exterior set illustrates the use of the stock scenic elements, assembled here as part of the background for "Le Bourgeois gentilhomme."

in theatrical construction, these architectural units have been found satisfactory and artistically effective during a long experimental period.

But how do plain wall sections, stock doorways, bare steps, and odd-sized plugs[1] develop into the four required rococo sets for our previously mentioned Molière comedy? Obviously applied superficial decoration is necessary: painting, painting in perspective, and the addition of three-dimensional ornamen-

[1] See Glossary.

tation, moldings, plastic *décor*, trim, paneling, and plasterwork.

Let us take, for example, the garden set in "Le Gentilhomme." The producer wants romance. Stock units, as indicated in plan, are a plain door, a stock casement window, several plain stock wall sections, and a step—definitely unromantic.

But design takes a hand to develop bareness into a pleasant French exterior: the carpenter assembles the units as indicated, adds prescribed shutters to the door and plastic period ornaments to door and lintel and under the window, the painter executes quaint rustications on the house wall and repaints door, window, and shutters to the required values, and the property department places potted trees, vines, and roses in indicated places. Curtains appear at the window and grass mats on the ground, and an antique lantern depends from a wrought-iron hanger near the doorway. The set is ready for the actors.

The above-mentioned set elements, door, window, and walls, it must be understood, have served previously in other programs and may carry fifty to sixty coats of paint. At the end of each program, and before units are reassembled, molding and plastic ornaments are removed and stored for future uses. Surfaces are merely repainted.

Distempera[1] may be used in television painting, but the recently developed casein products are superior. When this latter paint is thoroughly dry it is not soluble in water and subsequent coats do not "brush up" undercoats.

Tints and shades (values) of black and white are usually used in television background painting, although many studio designers are attempting work in color. A present-day compromise is the mixture of black and white with a limited color palette, selected for advantageous use within the requirements

[1] See Glossary.

of a given studio. Since lighting conditions (and other technical conditions) vary, tones suitable in one studio are ineffective in another. Standardization in the future will correct such discrepancies, and this is especially necessary in case a production is taken as a "road show" to another studio.

At NBC the designing staff has originated a paint of its own mixing, termed "Telechrome," with a group of related and numbered values. Thus the designer may indicate *T*-3 *cool* or *T*-4 *warm* and be readily understood, as expressions like "a warmish gray" are confusing and mean different things to different persons.

Painting, however, is usually insufficient by itself to achieve actuality. It is effective in purely abstract sets but is impractical for the realism demanded by most ordinary settings. Therefore "practicable" moldings, plaster, and *papier-mâché* ornaments must be used to build out detail. Moldings should be bold, and all details must have been executed in deep relief to be effective. Here the designer may well copy the style, if not the manner, of Hollywood, and execute his doorways, window trim, and paneling in prominent ogees and protruding bosses.

To sum up: the adaptable, multiple-unit set serves as groundwork for a setting; the superficial decoration delineates period and character; dressing and properties complete the picture in detail. It may be of interest to note that the foregoing units, assembled for M. Jourdain's garden, were used on a subsequent program for a street scene in an Illinois town, circa 1860. The basic units were unchanged; the surface treatment was entirely different.

SET DECORATIONS

After a television set is constructed of units, necessary new building, and incidental elements such as columns, pilasters,

architectural trim, etc., it is usually as bare and as uninteresting as an actual undecorated room or apartment. It is therefore necessary that suitable properties and "set dressing" be selected not only to provide actors with mobiliary objects

An eighteenth-century American interior scene used as a setting for the NBC studio program, "The Patriots." Here, against a formal arrangement of the stock scenic elements, have been arranged authentic antiques of the period. It should be noted that actual mouldings have been applied to the wall areas and that over fifty-five pieces of set dressings and hand properties had to be assembled to complete this simple setting.

essential to the play or sketch, but to indicate quickly to the viewer the type or period of setting he is being shown. In other words, the set serves as actual exposition. It reveals characteristics, tastes, and condition of the dramatis personae.

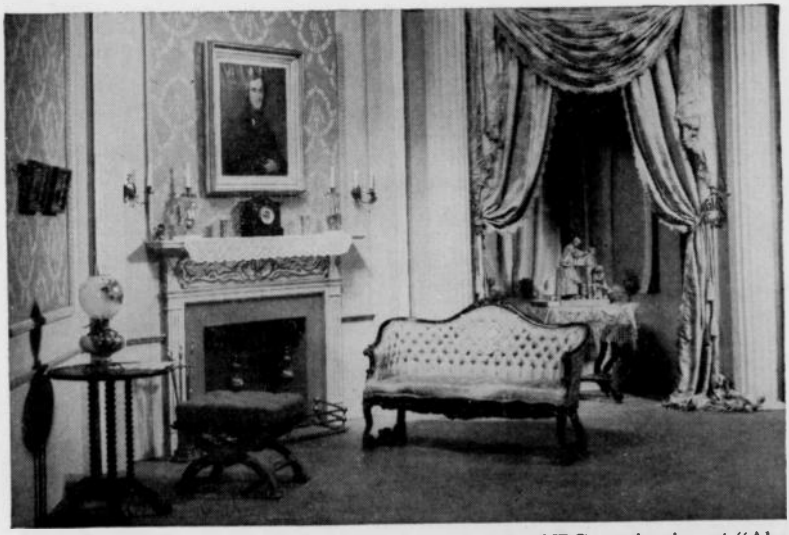
For example, the setting (see illustration) executed for the NBC "The Patriots" is most conventional as to wall treatment; with modern adaptations of Georgian furnishings and different pictures and *objets d'art* the interior might be a present-day, run-of-the-mill English or American room. Or, with suitable

desks, bookcases, and dressing it might easily become an office in a hospital, an executives' board room, or (with Victorian or Phyfe furnishings) yet another type of historical interior.

It is one thing for the designer to indicate in a sketch the disposition of furniture and *décor*, but quite another to assemble varied articles, antique or modern, in a short time. Obviously certain pieces of furniture will be stocked by television studios; others will be rented as required from interior decorators, from antique dealers, and at times from theatrical storehouses. The television designer, like the stage designer, will have to reserve a large part of his time for the searching out of period furnishings until such time as broadcasting studios may find it practical to operate storehouses and property departments similar to those of the movies.

The effectiveness of many interiors certainly depends on the choice of the right kind of furniture and decoration; pieces may not be chosen by the designer simply because he admires Chippendale or Swedish Modern personally, as the requirements of the sketch, play, or opera indicate (often with considerable latitude) the types, periods, and conditions. Nor may the set be arranged according to the tenets of interior decoration only: the designer must take into account (1) the physical action involved in the program itself, (2) the problems of arrangement for best camera angles, and (3) the practical considerations of setting and striking quickly.

For example, the NBC "Abe Lincoln" set (see illustration on page 82) seems lacking in furniture, especially when one considers that the mid nineteenth century tended to overdress and to elaborate on the curvilinear. But a television set is not a museum display; physical action (business) here required some simplification of furniture. The arrangement shown was also good for effective camera work, involving scenes between individuals and small groups. Further, it was necessary to clear



A typical studio set, part of one of the scenes in the NBC production of "Abe Lincoln in Illinois," directed by Edward Sobol. Note the superficially applied mouldings and period wall paper. This production, presented in its entirety on three different nights, involved a total of ten different settings, all of which require period *décor*. A program of this sort requires close cooperation between the producer or director and the designers and craftsmen in the production-facilities division, especially as the work of procuring costumes, properties, and set dressings must be completed within a time period shorter than is allowed in any other producing medium.

part of the furnishings later in the program to make way for an additional unrelated set, a move that might have been difficult and noisy had heavy tables, cluttered whatnots, etc., been used in the "Abe Lincoln" set. It must be remembered that *all* the set was not seen at any one time.

The arranging of furnishings for realistic sets is not difficult, as the designer may rationalize about furniture and set dressing. For the NBC production of "The Black Angel" (see illustration on page 83) the script required a room in a woman's apartment. She was not wealthy, or socially prominent, or harassed by poverty. She did not live with a maiden

aunt or a married sister with three children. She apparently just lived alone in a modestly furnished apartment, decorated inexpensively in good taste. Here the script aids the designer in selecting definitive properties.

The effective dressing of exterior sets is quite another matter, and one in which experimentation is still going on. Obviously, realistic exteriors, created in a studio, require real or artificial foliage, built-up ground, and atmospheric effects not so easily assembled as properties for an interior, which, whether a television set or a real room, is man-made. New studios and equipment for devising realistic exteriors based on the knowl-

A living-room-corner set showing the NBC scenic elements arranged with furnishings, set dressings, and draperies for a section of a dramatic program. Frequently groupings of this type are used for studio interviews, fashion shows, and other programs requiring a simple and neutral background.

edge of the economic structure of television programming will no doubt help to create techniques similar to those used in motion pictures.

Already NBC has developed successful snow scenes, and a set devised for a lecturer on skiing techniques drew some comment for its verisimilitude. A street scene for the play "Birthday" showed not only deep drifts of snow on sidewalk and street, but falling snow as well, which sifted down from above realistically. N. Ray Kelly, manager of television facilities, developed for this effect a motor-driven "snow-effect machine," which operated in conjunction with fans, preset at determined angles.

Other visual effects such as rain, lightning, falling plaster (as the result of an explosion), etc., have been used, but development of methods and techniques must await larger studios and shops.

PRESENTATIONAL AND ABSTRACT SETTINGS

One of the present staging problems in the television programming of variety, dance, revue, or vaudeville numbers is the designing and the executing of suitable backgrounds possessing interest, novelty, and pictorial quality—settings that are purely presentational rather than imitative or dramatic. Unfortunately most theatrical sets of the decorative or "show" types are impractical for television because of their great reliance on dark draperies with involved and confusing patterns or on painted drops, decorated at some expense to last for a continued run of weeks or months.

The abstract sets designed for motion-picture shorts that feature dancers, orchestra, and entertainers may perhaps serve as exemplars of nondramatic settings, as these movie backgrounds are both decorative and neutral. Adapted physically and economically to television, such arrangements fill the

background needs of variety, fashion-show, and revue numbers better than theatrical prototypes, which, in their day, as "olios," "street advertising drops," "travelers," etc., did very well in another medium, vaudeville.

The conception of abstract backgrounds from a design standpoint is wholly arbitrary. The representational set, indicated for realistic dramatic programs, purports to show a definite locale; the presentational set is merely a setting—a window display made up to house performers as unobtrusively and as tastefully as possible.

In making frequent use of presentational sets, NBC television has found limitless stylistic patterns inherent in its stock of scene elements.[1] These scenic units, which have been steadily used under a wide variety of conditions, are assembled to fit the demands of each program and lend themselves to rapid rebuilding and repainting. Frequently they are resurfaced with wallpaper, fabrics, or other material as well as with many kinds and styles of wooden or plastic architectural trim. Articulated by suitable conventional plugs or inserted units, such as fireplaces, doors, windows, arches, and the like, the scene elements form the basis of practically all imitative settings for dramatic programs.

By omitting the conventional plugs and experimenting with only the resultant geometric elements, it was found that there existed in the master group of units great possibilities for the creation of abstract backgrounds. Here, then, is a practicable application of variegated pieces of equipment in a field allied to, but entirely different from, initial intention. Partly with the view in mind of adding to the stock of decorative elements as well as to the master group of units, the NBC staff has recently developed new interlocking geometric pieces of great and interesting decorative value.

[1] See "Television Scenery Design," by N. Ray Kelly, in *Radio Age*, July, 1945.

Since variety and musical numbers require a minimum of rehearsal (assuming that the act, as such, has been in existence for some time) and because of the general, unrelated nature of a group of revue, night-club, or vaudeville acts, it is usually desirable that television backgrounds for variety programs be assembled quickly and economically (see opposite page). These settings may vary from a single unit to back a girl singer (who may be shown only in close-up) to an area perhaps 300 square feet, enclosed on three sides by scenery, for the purposes of dancers, skaters, or chorus. Frequently the individual performer will appear in the same set as the group, a fact that necessitates the creating of various *cartouches*, or nearly flat decorated panels or backgrounds where the close-up occurs.

While it is probable that a presentational set composed of three-dimensional units might be designed as a permanent arrangement for most types of variety and kept solely for that purpose, it is extremely likely that such a scheme, no matter how abstract in its original conception, would lose a great deal of its novelty after repeated use. Although more time and artistry might go into a stock variety background, its use in television over a period of weeks might seem to the viewer to smack of cheap production, unless, of course the set were associated with one particular program, which is another matter entirely.

Naturally there are types of settings, seen only in small detail, that might be repeated with impunity.

The practical advantages of adapting stock units to the requirements of variety seem to be three in number.

1. The ready-made quality existent in simple, solid interlocking elements eliminates 80 per cent of normal building and carpentry.

An NBC studio variety setting for a program of Central American songs and dances. This small setting, approximately 20 feet wide, was designed, built, painted, and dressed with properties in a relatively short time by the production-facilities division. This setting, as well as other designs shown in this book, was constructed of the NBC stock scenic elements described in the text.

From this rough scene design, details of set dressing and properties are developed, and the sketch may frequently be used by the director to preplan certain effects of picture composition. This sketch is one of several *maquettes* prepared for approval by the director. The Central American variety setting (shown above) was executed from this design.

2. These units, being essentially plain and geometric, lend themselves to abstract, stylistic, and "modernistic" arrangements, associated in the minds of viewers with night-club or musical entertainment.

3. The assembled units may be repainted in an abstract manner, which further camouflages their intended functions.

As may be noted in the illustrations, back lighting in decorative sets is effective in areas where it is not planned to use close-up shots. Abstract and baroque pottery, vases, and other plastic ornaments may be used to advantage in presentational sets, as well as a minimum of gold or off-white furniture when room permits.

When studio space allows it is safe to assume that these decorative sets will include the use of pretentious colonnades, arcades, steps, platforms, and balconies, somewhat in the Hollywood manner but with an eye to economy of purpose and to novel repetition in daily or weekly changing patterns.

OF DESIGN

Since a set for television is probably never seen in its entirety, it may not be compared to a stage setting, yet the two are somewhat similar in conception. Sets for a single television program must be related to each other in plan so that actors may make their way from one set to the next in the least amount of time and so that cameras may make convenient transitions quickly and efficiently. Often great detail is necessary in video staging because of the frequent close-ups, especially where verisimilitude is indicated in both scenery and props.

Very generally speaking, however, and disregarding technical considerations, designing a large television setting is not

too different from planning a stage set. The methods of approach and execution vary, but the basic principles remain. The reader is referred, then, to any of the several works on stage design if he contemplates serious study of video backgrounds. It is extremely likely that, in a short time, the television set will resemble the motion-picture background more than the theatrical inscenation, but, again, there are basic techniques and concepts inherent in stage design that are always true and applicable.

At the beginning of this chapter there are listed five types of television sets, and as this material is being prepared many other types are being developed to satisfy program requirements. For the moment, these five may be considered. The first type, the realistic or stylized[1] has been covered briefly in the description of the garden set in "Le Bourgeois gentilhomme."

The second, the abstract or decorative background, is easily understood. Fashion shows, musical acts, and the like require a backing that usually cannot be rationalized. It may be a room, or it may not. It may be an exterior, or it may not. It may consist of decorative stairways, ramps, backings with modernistic designs painted on, or silhouettes of characters, skyscrapers, or whatever the imagination brings forth. Plain, flat decorative painting suffices for this type and is economically feasible as well as laborsaving. Expensive construction may be reduced to a minimum for simpler sets, although larger and more ambitious abstract sets may involve the

[1] Stylization in this sense is used to mean distortion of something real to express the meaning in a play or television script. For instance, the rococo sets in "Le Gentilhomme" were not authentic architecturally; the rococo quality was achieved by overemphasizing definitive details, incidentally revealing some of the character of the protagonist.

carpentry of stairs, platforms, and various runways and levels.

The third, the cartoon background, is not a setting at all, in the accepted sense, but a flat-painted backing on which a suggestive, amusing, or distorted line drawing has been rendered. It is applicable only to variety acts of an amusing or satirical turn, although the writer has used cartoon sets recently in a serious play, "The Veteran Returns," produced by Ernest Colling for NBC, in which a stark stylistic manner seemed appropriate.

The cartoon background is eminently suitable for children's programs, vaudeville acts, comedy monologues, and possibly certain commercial programs, where the merchandise offered is of an amusing nature—witness the comic-strip advertisements of soap, cereal, and hair-pomade manufacturers—or where a light touch might attract attention. Cartoon backings may be of varying sizes; those at NBC have ranged from 8 by 11 feet to 12 by 11 feet. The rough line drawings, usually executed with a well-filled brush, reduce nicely on the kinescope and happily seem to suggest more detail and range of values than they actually possess.

The fourth type, the display setting, needs little exposition of means or method. It usually requires a counter, part of a salesroom, or other area where goods are apparently offered for sale. Demonstrations may take place, kitchen devices may be shown, etc. Frequently a shop window, as seen from the street, is effective. This type of setting requires realistic treatment and cooperation and coordination with agents or sales departments of sponsors or manufacturers. Display sets were used successfully in the NBC "Christmas Shopper" series.

The fifth type, the model or miniature, is not so frequently used as an actual setting as for a prologue or title background. As a case in point, the producer of an NBC operatic sketch (the first act of "La Bohème") wished to show a view of Paris

rooftops outside Rudolfo's high studio window. Such a backing was prepared, and a model was constructed, approximately 40 by 30 inches, of Parisian rooftops covered with snow, with planes of houses and chimneys diminishing in forced perspective.[1] During the short musical prelude, the camera picked up the miniature; another camera was ready on the window backing. On cue the picture was switched, and the camera at the window dollied away to show the poet, Rudolfo, writing at his desk in the cold attic. By this device, time (winter), place (Paris), and atmosphere were established in a matter of seconds.

Miniatures and models do not require expensive materials—cardboard, plaster, glue, and balsa wood—but they involve time and labor and much painstaking hand craftsmanship.

Title backgrounds are not sets at all, except in a limited sense. In NBC's production of "Birthday" it was desirable to establish in the title background the fact that the action of the sketch took place in a little Alsatian town. The designer painted in tempera on a card 30 by 40 inches a scene showing a street, inn, houses, etc. Titles were superimposed on this painting, *a part of which* was actually developed into a full-scale studio setting. Here is a relation between title and set that helps to establish place, time, and atmosphere. Another title background, executed for a one-act play, "The Coiners," produced for NBC by Edward Sobol, used a similar device. A card was painted showing a little Irish cottage by a road. Titles were superimposed (on film) and the camera dollied toward the door. Animated rain and lightning were added on film, and, as the camera approached the doorway, the producer cut to the live set in the studio, the *interior* of one room in the cottage. Here were established place, time, weather, and atmosphere.

[1] See Glossary.

The writer would like to say in conclusion that it must not be assumed that the foregoing review of television background types and processes presents more than an introductory picture of present conditions. It is extremely likely that the future will provide many other types of settings and many ways of executing them.

The field of investigation and development is a large one, including as it does the diversified arts and crafts of make-up, scene design, interior decoration, costume design, architecture, titling, commercial advertising display, and many others.

But the television artist of the future will have to be trained and conditioned through exposure to this new sight-and-sound medium. It is not without its complications and difficulties.

A NOTE ON THE FUTURE OF DESIGN

During the last several years of television experimentation two factors have prevented the art and scenic director from complete realization of his designs and projects: (1) flat studio lighting, and (2) the lack of color. The latter is not necessarily so serious a drawback as might be supposed, but the intense illumination required in the studio to provide sufficient light to operate the cameras with their iconoscope tubes unfortunately succeeds in washing out architectural details and in eliminating both actual and painted shadows. In the past, sets have been subjected to a flat flood of light that no background, however rich in ornament, could withstand.

Even decorative painting has suffered from this even lighting, which has prevented vignette effects and the soft-focus effects so valuable to the scenic or motion-picture designer. In atmospheric settings, such as cabins, old houses, churches, and exteriors, dramatic lighting as such has been nearly impossible to obtain, for reasons pointed out by Mr. Kelly in a previous chapter.

Painted and air-brushed shadows have helped create illusion. In staging "Angel Street" the setting had to be decorated in tints of gray (*T*-3 cool) and subdued slightly with the air-brush. The effect fell far short of the intent, as the old room suggested somewhat the air of faded gentility rather than that of mystery and horror.

Similarly, in the inn scene in "Carmen" it was necessary to paint shadows on the walls to suggest the age of the structure, and also in the attic of "La Bohème" in order to strengthen the moonlit-shadowed walls.

It is fairly safe to say, however, that, with the coming of the image-orthicon tube and its adaptation to studio purposes, greater possibilities will be open in the lighting field. There will, of course, be many, many programs in which lighting effects, per se, play no part. But on the other hand there will be operas, plays, and dramatic sketches in which lighting, increasing and decreasing in intensity, will act with the actors and aid the designer in establishing mood and atmosphere.

Already experimental scenes have been played only with the light from a match or candle, and it seems not at all speculative to anticipate a tremendous advance in television lighting techniques within a short time.

The use of the telechrome color scale has already been briefly described. It has been found that certain colors, in addition to the previously mentioned black-and-white grays, televise successfully in good gray tones. Actually, there are thousands of values resulting from the admixture of black with white in varying amounts. Practically, in the physical mixing of pigments there are few, and the use of supporting colors seems to add to the present value scale. Green, for instance, is effective at the NBC studios and photographs as a pleasing gray (depending on its intensity); it is highly useful both in settings and costumes.

The production staff at NBC hopes, therefore, by experimenting with grays and with supporting colors, to prepare for the time when color television will be commercially possible. Demonstrations at the RCA laboratory in Princeton have already revealed the kaleidoscopic wonders of scenery, draperies, and costumes when they are seen through the color system. The results, even on an experimental scale, are rich, deep, and dramatic. It is likely that in the future the designer, in color work, will have to hold his color sense well in hand lest he steal the whole show with chromatic brilliance.

In the meantime, black and white may serve the art director very well, provided new methods of lighting allow for natural shadows and dramatic effects. Textures will become increasingly important, and painting in perspective will be impractical *except* under conditions made possible by dim or atmospheric lighting, when it will be more effective than at the present.

Production of Dramatic and Variety Programs

BY EDWARD SOBOL

What makes up a variety program? It can be almost any program made up of short nonrelated subjects. The program can consist of

Educational features
Fashion shows
Demonstrations of developments in various fields, such as education, science, industry, agriculture, health, adventure, exploration, fashion.
Musical soloists or groups
Specialty or vaudeville acts

In the first group, education, care should be taken that programs are not predominantly just talk. This makes them too static and very often dull. Wherever possible the dramatic form should be introduced. The use of interesting films, working models, or any visual aid helps these programs greatly. In fashions, of course, the use of live models or the actual making of the particular piece of wearing apparel adds to the interest of the program.

In presenting discussions or forums, wherever possible use should be made of well-known or at least dynamic personalities. This factor may often be used as a substitute for motion. In the final analysis it is the addition of dynamics in another form. Educational programs give a fine opportunity to use a commentator. The living newspaper or "March of Time" technique is often effective for this type of program.

Musical soloists, as a rule, are not very good for television. Music, per se, is basically best for radio. Of course, here again, a dynamic personality helps to get this type of program over. There is no question but that Heifetz, Iturbi, Pons, and others of similar appeal would be good on television, but they are the exception. As a rule, the musical soloists restrict you to a very few shots. After you have shown a long shot, a close-up, or, in the case of a pianist, the action of the hands, you are stopped. You find yourself forced to repeat these shots.

To exhibit the difficult fingering of a piano player is to point up something that is not the prime purpose of the performing artist. He is not there as a gymnast but rather as an interpreter of a musical composition, and to emphasize anything but that interpretation is missing the real point.

Singers, especially operatic or concert singers, often go through all sorts of facial contortions, particularly when reaching for high notes. That is why the motion pictures learned to dub in sound and photograph the singers while they are singing their numbers three or four tones lower than the tones used on the sound track. These artists can be used to best advantage by casting them as part of a story rather than as soloists.

Opera and musical comedy will not be discussed here, since they are the subject of another chapter.

On the face of it the vaudeville act appears to be a "natural" for television. However, such acts are essentially built for theater or night-club presentation. What you generally see is

the result of many years of building up and perfecting. This building up is generally based on audience reaction. Taking the audience away generally leaves the performers at a loss. Again, since these acts are accustomed to the freedom of movement allowed by the stage or night club, it is difficult to restrict them to the television playing areas. Because of habits established in long years of playing it would take too long to rehearse the acts enough to establish the new habits that are necessary. Most vaudeville acts are built like a show, *i.e.*, they start slowly, gradually progress, and are, in the words of *Variety*, a "socko" in about the last three to five minutes. For television those three or five minutes would be all you could use. This means that for a half-hour show you would need six to ten acts. You might tie these together with a master of ceremonies, but you would get, all in all, a rather bad program. A good way to present specialty acts is to integrate them into some sort of basic idea and have them do their specialties for some logical reason embodied in that idea. A barn dance, a rodeo, a night club, and a canteen are examples. But do not use them as just a string of acts. In the night club, the juggler can be a waiter, for instance, the tumbler a drunken customer, etc. The best method, I think, is to take just one or two acts and write a special story around them, building it up so that the specialty becomes the climax or leads directly into it.

We now come to plays, one-act and full-length, comedy and drama. The first thing, of course, is choice of script. This is basic: your program will be only as good as your script. Try to get action plays as often as possible. The old-fashioned drawing-room play, where people just sat and talked while they poured tea by the hour, is no good for television. In television, as in any other medium, comedies are likely to be more popular than serious dramas, and melodrama will appeal more widely than tragedy. Because very few original stories are

being written for television, stage plays, radio scripts, movie scenarios, or stories already produced or published are generally used at present. After you have found your script, your next step is to clear it—*i.e.*, get permission from the various people involved to use it for television. This generally means a royalty to the author. Sometimes the producer of a play or the publisher of a story has rights that must be cleared. Often a play or story has been sold for motion pictures and the motion-picture company will demand payment before releasing it for television. If you are thinking of adapting a play or story for television, be sure you get the rights to it.

Having cleared the script, your next job is to adapt it. Whatever its present form, it must be reshaped to fit the requirements of television. Inasmuch as plays are more readily adapted, let us consider the problems of adapting a stage play.

Many plays because of theater economics are confined to one set. Many have large casts with a great many minor or incidental characters. Here are two apparent drawbacks to good television. One type of play lacks variety of background and restricts action. The other, unless crowd scenes are absolutely necessary, will crowd your television picture, necessitate many long shots, and make it difficult for your television audience to follow the story.

In the one-set play you will find that the author has had to use a great deal of explanatory material. The critics say, "Too much happens off stage." In the parlance of the theater, "It happens in the next block." This is obviously no good for television, so it is up to the adapter to dramatize the explanations. For example, a character might say, "I met him in Joe's bar. He was having a few drinks and feeling kind of high. The music was playing and it was difficult to hear, but I told him. . . . " Instead of a long explanation of this kind, for television you should show Joe's place, with the music playing,

the man drinking, etc. This explanation overlaps the chapter on script writing, but today the television director often does his own adapting, so it bears repetition.

It will be impossible, of course, to translate all explanatory material into terms of action, and some locales might be impossible to set up in the studio. This can be helped very often by the use of film. Special film can be made up using your own actors and this film integrated into your presentation.

In the play "Milky Way" there is a sequence in which an important fight is described by means of a radio broadcast. On the face of it this is bad television, so when we did it, we put the whole fight sequence, using our own actors, on film and it was very successful. Film can easily be introduced and integrated in a studio show.

Most stage plays run from about 95 to 110 minutes, not counting intermission, which is much too long for a television show. A full-length play in television should be restricted to one hour and less if possible, so it's up to you to cut. When you consider that, in presenting the play originally, the producer, director, and author tried to eliminate all extraneous material and to make everyone of the 95 to 110 minutes important, you can see that your cutting will not be an easy task.

In cutting, however, the first things to lop off are the small characters, or bits. If they are necessary for atmosphere, use them only where you can do so safely. If you can eliminate them, do so unhesitatingly. If what they say seems important, try to give the lines to other characters. If you can make one character do the work of two, do it.

Some of you will say it's an impossible job. It isn't really. Let me give you an illustration of what can be done in a pinch. The USO did many legitimate plays for overseas. Because of transportation limitations, the casts had to be cut. "Three Men on a Horse" was cut from fifteen to seven people and

yet the show was so good that more companies were sent over. So, you see, it can be done.

When you have your script your next step is getting your sets. In television, the size of the set is quite important. Remember that, as in pictures, an establishing shot is essential, so figure your set in such a way that your establishing shot does not have to be a very long shot. Try to arrange your sets so that your playing areas as much as possible will always show some characteristic of the set or locale. Of course you don't design your set, but you must know what you intend doing in it and how your actors are going to move around in it and be able to give the scenic designer a very good idea of just what you want. Don't leave it entirely up to him or your set may outweigh your play. In laying out your sets bear in mind the movement of cameras and lay them out in such a way that the cameras need not jump around from one end of the studio to the other and back again.

The next step is casting. Of course I don't have to tell you to get the best actors available, particularly in your leading roles. If you are working on a small budget, cut cost in the unimportant characters and spend all you can for your main characters. Don't make the mistake so many young directors make and take a long chance on an unknown. Even though it does work out at times and the director gets an extra pat on the back *when* it does, be careful. We have found that stage actors make the best television actors. Stage actors memorize lines more easily, they know how to sustain mood, and they know how to build up a characterization progressively. They move about freely and naturally. The only thing you must be careful of is too much mugging and too broad gestures. Also you will find that they are accustomed to projecting their voice across the footlights and you will have to tone them down a bit in volume.

In casting for television, it is best to cast to type. Many stations will not have good make-up men available. Nothing can ruin a performance quicker than bad make-up. Wigs, beards, and mustaches, unless carefully used, can easily look amateurish and phony.

The matter of costumes is not difficult and will be discussed in another chapter. This also holds for furniture and furnishings.

Now you are ready to put your play into rehearsals. Full-length plays need about ten to twelve days for rehearsals. Only two of these days are for camera rehearsals. The rest are away from the studio and are called dry rehearsals. About four hours a day are used for the first five days and about six for the remaining days. Of course rehearsal time can be cut down by very careful planning and blocking. The general rule holds, however, that a television show, other things being equal, is as good as it is rehearsed. In the rehearsal hall you mark out the floor plan of your sets and after the first few days begin using regular or substitute props.

All through rehearsals remember you are planning for cameras, so your direction should be camera-minded. Think of composition. When playing two or three-people scenes, don't have the characters widely separated or wandering away from each other constantly. Think always in terms of picture. Of course don't at any time sacrifice important dialogue or situations for the picture. Remember all the many advantages the television camera allows you, such as close-up, dolly and truck shots, cutting from character to character, etc.

As you progress in your rehearsal, plan your camera shots. This can be done by eye in the rehearsal hall or by floor-plan models. When you are sure of your camera angles and shots, mark them in your script. This is important. Do not trust to

memory or try to ad-lib a studio show. If you forget one camera movement, you can easily ruin your whole show.

In placing or moving your actors around, keep them away from the walls; otherwise you'll have a flat picture. It is even a good idea wherever possible to place your furniture away from, instead of against, the walls.

If you are in doubt about your camera movements or about just what you can do technically, have your technical director sit in on your rehearsals and explain the situation to him and let him advise you. Above all, don't wait until the last minute and take a chance that something you are doubtful about will work.

Now you are ready for studio and camera rehearsals.

Your play is most likely in three or four scenes. A good idea is to run through the play one scene at a time for the benefit of the cameramen and the rest of the studio crew. Let me quickly give you the studio set up. You work directly with a technical director, or TD, and with a stage manager. The TD has full charge of cameramen, sound men, lights, and all engineering facilities. He is in communication with them, and it is to him you address all your requests for camera movements, etc. Your contact with the actors during rehearsals is either through your stage manager or direct to the actors by means of a private line or PL system.

In running over your scene, without cameras, you permit your studio crew to get acquainted with your play, with the characters in it, and with all their movements. Before this they just saw a set with doors, windows, furniture, and actors all unrelated. After the run-through they see what doors are used, what furniture is used, what characters the various actors are playing, and their relationship to each other. Now when you get ready to call camera shots, they know what you are talking about. Remember it is just as necessary

for your cameramen to be thoroughly rehearsed as it is for your actors.

Now you go up to the control room and try the shots you have planned and marked in your script. As careful as you may have been, you will find that changes are necessary. As you make them, be sure you change your original script and set down the new camera shots. Be sure you give the cameras sufficient time to move from one place to another. When you switch from one camera to another and want the first camera to move to another spot, release him as quickly as possible and direct him to his next shot.

In the use of cameras several basic principles should be borne in mind. Your audience will want to know quickly where the action is taking place and what your various actors look like. So first try wherever possible to set up an establishing shot showing the locale, its characteristics, etc.

Next, as quickly as possible after the introduction of a character, give the audience a good look at him or her so they will remember the character. If you wish to establish any particular characterization, do this by means of enough close-ups so that it is firmly imprinted in your audience's mind. In cutting from one camera to another remember that you only cut when you have a reason for cutting. Your No. 1 camera at present, because it is mounted on a dolly and is more flexible than the others, is your most important camera; use it as such. You can stay on the No. 1 camera and paint a long sequence with it, dollying in and out and panning, and allowing your actors to move around a great deal more while the No. 1 camera is on them. In planning your shots remember that very often reaction to a speech is more important than the speech itself.

It isn't necessary to "stay on" the person talking all the time. That is another reason for establishing your character thoroughly vocally as well as visually. Then when you "cut

away" from this character even while he is talking the audience recognizes him or her.

As with motion pictures you will find very little use for full-length shots, so don't use too many long shots.

After about ten hours of camera rehearsal, you are now ready for a dress rehearsal. Try to make this as nearly perfect and as much like the broadcast as possible. Have your actors in full costume and make-up, all your sets properly dressed, all your props set, all your cues properly marked in your script and then shoot. In the control room you will notice two screens, one the preview screen and the other the broadcast screen. Set up your shots on the preview screen before you take it on the broadcast screen so that you are certain that the next shot you get is the one you want. Be sure this shot is ready when you take it, because once it is being broadcast there is little you can do about it. Try to have your dress rehearsal in time to give the actors a chance to rest before the broadcast. Now you are ready for your broadcast.

Opera in Television

BY HERBERT GRAF

CONCERT MUSIC

The big field of concert music, which includes singers, instrumentalists, choruses, and orchestras, poses various problems for television. For instance, should we do anything except merely show the performing musician? It is likely that this will prove visually sufficient only in rare cases, when the artist possesses a fascinating personality as well as musical genius. Instead, the camera might wander around to show close-ups of the face, fingers, or certain instrumental groups. But the use of this technique is also limited, for, in my opinion, it is most disconcerting to listen to a sweet, pastoral melody being played and at the same time to see the strained, distorted face of the flutist.

Camera switches during a musical selection can often prove distracting, as I soon discovered when I was in charge of a concert by the young pianist, William Kapell, in our NBC studio. My constant camera changes detracted considerably from the music the artist was trying to convey. The same is true, I believe, in certain portions of the Toscanini film made for the Office of War Information, where the effect of the conductor's unique personality and beautifully played music is often distorted by the visually uninteresting faces of the players.

There might be another way: dramatization of concert music by visual illustration of the contents of the music, rather than actual views of the musicians. We have seen a great example of this kind of visual interpretation of music in the Stokowski-Disney film "Fantasia." But this again is a delicate problem, since it is one of the happy advantages of concert music that each human mind can wander in its own wide paths of imagination. While one person might be satisfied with one form of visual illustration, another might feel quite differently about it. Therefore visual interpretation of concert music becomes, in most cases, something imposed on the individual mind. Remember, for instance, the interpretation of Beethoven's Pastoral Symphony in the film *Fantasia.* There was predominant an entirely Greek conception, with nymphs and sea tritons, which shocked me, who, as a born Viennese, knew well the type of landscape in the vicinity of Vienna that inspired Beethoven to this pastoral mood.

However, if it is well done, there is, in spite of all these dangers, sometimes a possibility of showing the surroundings and even the contents of concert music in a realistic, or surrealistic, way. For instance, we produced at NBC a Stephen Foster program based on his "Swanee River." Two approaches seemed to be available: (1) to produce an old American home as the frame for a group of singers, who would sing the songs; or (2) to illustrate the contents of the songs by showing the cotton fields, rivers, Negroes, etc., on film or in still pictures. To do this kind of illustration well is more difficult than it might seem, and probably the combining of both ideas is advisable. This we did, adding live scenes to dramatize various episodes in the life of the composer.

Summing up, three ways of handling concert music are available:

1. Concert photography, as if we were attending the concert with a camera in the concert hall.

2. Producing suitable optical background for music, as was done by Ernest Colling in "Barn Dance," showing a barn as a frame for barn dances, or "Singing War," where a little French café was used as a background for the most popular songs of the First World War.

3. Visual illustration of the contents of music either by realistic treatment, showing the subjects (Negroes, plantations, etc.), or by surrealistic treatment, like that in Disney's Fantasia, or by a kaleidoscope.

The best way, however, might be a combination of all three ways, used in accordance with the character of the music to be performed.

DRAMATIC MUSIC

It is obvious that television offers, more than radio, the golden opportunity for those forms of music which are meant to be visual: musical comedies, operettas, ballets, and opera. For, naturally, radio cannot do them real justice, although it has found clever ways to substitute narration, sound effects, and other suggestive acoustical devices for the missing vision. Here television ought to become a really legitimate medium.

Before going into the main subject of this discussion, I wish to make it clear that I see opera in a somewhat different way than is usual in this country. I do not look upon opera merely as that form of "grand" opera which is performed at the Metropolitan and by other opera companies, separated by a wide gap from light opera and "Broadway" musical shows. I feel strongly that this gap ought to be bridged, and I believe that this is now actually being accomplished. Opera is any form of musical drama in which music is not incidental but

essential, whether it is "grand" opera like "Aida" or "Carmen," light opera such as "The Bat" ("Rosalinda"), or American folk opera such as "Porgy and Bess" or "Showboat." So please accept the term "opera" in this broader sense in the following discussion.

An opera broadcast: a scene from a condensed version of Bizet's "Carmen," as directed by Dr. Herbert Graf for NBC television.

First, I should like to illustrate the particular operatic situation in America with some personal experiences.

It was in the summer of 1930 that I came for the first time to America from my native Vienna. Of course, I was fascinated by the wonders of the New World, by the architecture and the modern ways of life. I heard a new standard of sound pictures (it was "The Rogue Song" with Lawrence Tibbett), wonderful orchestras, a moving musical play, "Green Pas-

tures." All this conformed with what I had visualized as American musical theater.

But I could not understand why this most modern country had, speaking in general, an old-fashioned form of opera, which was even behind European standards. This opera, which belonged only to a limited, wealthy society, was imported and presented in its original European forms, sung in foreign languages, and produced in a way that was far behind the accepted Broadway standards. Obviously, this type of opera was far removed from the feeling of the American people, and it seemed that the famous critic was right who gave the definition of opera as the art in which everything that is too stupid to be spoken is sung.

At that time, I expressed my opinions frankly in some interviews, but I received bad notices. For instance, one paper made fun by saying, "Graf Plans New Deal for Opera in America." So, instead of continuing my arguments, I got to work and staged operas and operettas all over the country, in order to learn the particular American conditions.

Meanwhile, times changed. Radio made millions of new listeners interested in music, including opera. In fact, it was this new audience that saved opera when its existence was endangered by the changing fortunes of its original sponsors, during the depression. At this time, a change began, which is still in progress, toward a more democratic form of opera.

The success of the nationwide Metropolitan Opera broadcasts on Saturday afternoons, the new popular-priced opera at the New York City Center, Billy Rose's production of "Carmen," Gershwin's "Porgy and Bess," "Oklahoma," revivals of classic operettas, such as Johann Strauss's "Rosalinda" and Lehar's "Merry Widow," and the success of "Song of Norway" on Broadway show this trend.

This popularization of opera and operetta will, in my

opinion, be greatly expanded by television, which, by adding sight to sound, makes the picture of an opera performance complete.

Some television companies have already made interesting experiments in this field. NBC first televised opera by producing scenes from "Pagliacci" with a Metropolitan Opera cast on March 10, 1940. General Electric followed with a number of opera and light-opera productions under Robert E. Stone, who has a fine sense for music.

I produced at NBC, during one summer, four different types of operatic programs: a thirteen-minute scene from "La Bohème," one dramatized aria (Figaro's song from the "Barber of Seville"), one condensed version of an entire grand opera (in forty-five minutes) "Carmen," and one condensed version of an operetta—Johann Strauss's "The Bat." We hope to do more grand and light opera at NBC in the future.

The experiments have proved that opera can be natural and that television forces it to become so. But it also has become obvious that television requires new methods of operatic production, at least as far as present opera telecasts, which originate from television studios, are concerned. Telecasts from an opera house seem, for technical reasons, to belong to the future, and even if this should later become technically possible, it is doubtful whether such television broadcasting of opera will look satisfactory, from the artistic point of view, on the television screen. The methods of operatic production required in the near future can be summarized as follows: lesser quantity and more quality of voice, diction, gesture and personal appearance. Questions about grand opera that are still heatedly debated, such as those regarding the language problem, are decided in television by the medium itself. For television, being a technique that

stylistically lies midway between *opéra comique* and film, is a natural technique, favoring realism more than the usual production of grand opera. As such, it gives preference to dialogue over recitative, to the use of the language of the audience rather than a foreign language, to realistic gesture before operatic stylization. It also requires a well-rehearsed ensemble with exact planning and placing of every detail of action for the establishment of camera shots, which cannot, as in films, be corrected once the performance is under way. This practically excludes last-minute improvisations of stars, however brilliant they may be on an operatic stage, and requires accomplished artists willing and able to subordinate themselves to the ensemble idea. For these reasons, quite a different type of singer is needed, good in looks as well as voice, with a relaxed facial expression while singing. You can well imagine, that many well-known singers, in spite of their musical ability, will not get rich in television because their appearance or gestures are not suitable to the medium. Of course, it is not a simple matter to get singers who, in addition to having good voices, good looks, and good acting ability, will be required to memorize new versions and go through many rehearsals, under comparatively modest financial conditions.

There is a wide field opening up for producers, writers, composers, and artists. There is a wealth of vocal talent in this country, for whom, when properly trained, television will offer a real opportunity.

Television, on the other hand, opens a new outlook in addition to the technical need of new production methods for the reproduction of old operas. A new type of opera is now required, namely, original television opera, to be written especially for this medium. In this respect, it is hoped that writers and composers of the future will take full advantage

of the new technical possibilities, the combination of dialogue and music, variety of scenes, the use of slides and film. Most valuable of the potentialities at this disposal is the possibility of the full facial expression and details of action by means of camera close-ups, such as cannot be realized in the vast spaces between stage and audience in the opera theater.

But I believe that we shall have to be careful in the way we modernize old operas, in order not to ruin them. We shall need people who know operatic techniques of the past and yet have the courage to go ahead on the basis of those and far beyond them, and who, in addition, are practical enough to operate under reasonable financial conditions.

Summing up, I should like to say that the American people are a most musical people, and the popularization of music, including opera, has made great progress during the last ten years. Radio has popularized concerts, and now television will, in my opinion, have the same influence on opera, both grand and light. It will bridge the unnatural gap that exists today between these two forms, which makes many believe that opera and common sense do not go together.

Television will be the democratic medium that will make opera take off its top hat and speak in every way the language of the people. By so doing, it will contribute decisively to the opening of a new chapter in the history of opera in this country, which might be called "Opera as an art of the people."

Problems in the Studio

BY FREDERICK COE

You are the director of a play that is to be televised. Your play is good. It has the qualities of every good dramatic script. It has a premise; the characters are well developed; there is growth and interest in the story; the conflict is exciting. Your script has been adapted to the boundaries of television. This means, for one thing, that you have been allowed to stage your production more efficiently and more realistically than on a theater stage. Your dialogue and action have been revised to the mechanics of the cameras; it has been your duty to choose the angle and distances from which your audience will observe a scene. Unlike the theater, where each member of the audience watches the play from one stationary point of observation, in television your audience will be enabled, through your skill as director, to enjoy selectivity in their viewing, for you, the director, may, at will, move them closer to the action. It is within your power to assist your audience by pointing up a line through the device of cutting to an extreme close-up of the actor delivering it or to the reaction of another actor.

Your cast has been well chosen, with you and the casting director collaborating in the selection. Most of your players have had experience on the stage, and this will give them an advantage in your television show, for the experienced stage

actor reacts favorably to the continuous action of television (as opposed, for instance, to the artist who has formerly worked exclusively in motion pictures), and he understands the problems involved in sustaining a performance.

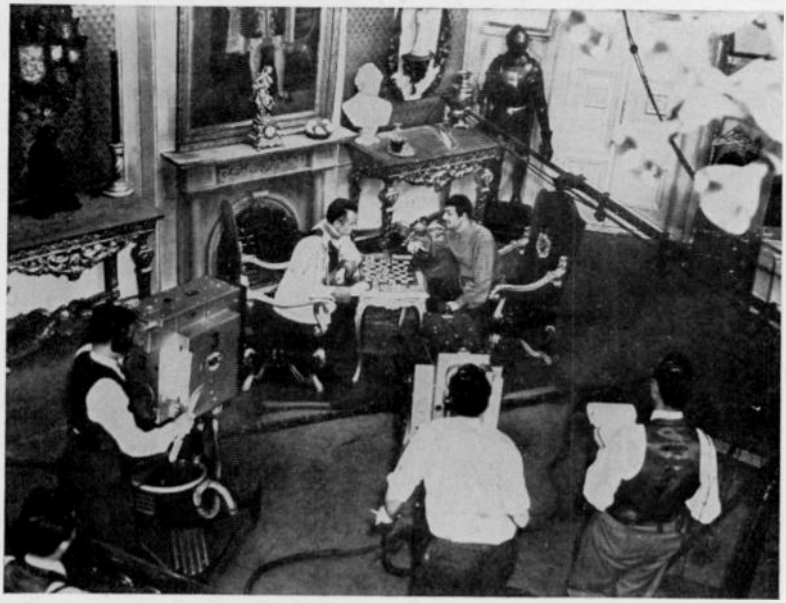
Your sets have been well designed and dressed. Gone are the conventional three-cornered box sets of the theater; they have been constructed so as to give the cameras an opportunity to move about inside them. This realistic type of construction will present an illusion to the audience that they are inside the room where the action is taking place, not on the outside looking in. The sets are architecturally complete. They have structural solidity. The numerous angles from which the cameras will shoot demand solid walls for backgrounds. A painted molding may escape the attention of an audience in the theater, but the prying eyes of the television camera will discover its one-dimensional flatness.

These are the results of a production staff's plans—good script, good actors, good sets—and now there are only 10 minutes left before these physical properties must be welded into an illusion.

You look about the studio. A visitor might very well consider it to be tangled in its own confusion. To the outside observer the webs of camera cable on the floor, the battery of lights in its ceiling, the endless walls of sets and props, and the last-minute actions of the technicians and performers could hardly add up to anything less than a new form of confusion.

But this "confusion" observed by the visitor will be resolved into order when the studio is given the signal that it is on the air. As a television director, achieving that order will be part of your job. The coordination of all the separate mechanical devices—cameras, microphones, lights, sound effects, music, and camera editing—is still to be done. A stage director's work is finished after the curtain rises on his play (of course,

there might be restaging after opening night), but you, the television director, will still be active until the final fade-out. Actually, during a telecast, you will largely discard the role of director and become mainly a coordinator and editor. The



A studio program with exotic furnishings: a scene from the NBC television program "A Game of Chess," directed by Frederick Coe, showing background, set dressings, and properties in a period treatment. At one point in the action, the No. 1 camera (center) "dollies in" to pick up a close shot of the chessboard.

television play will use the services of about twenty engineers and a cast of ten. It will be up to you to coordinate the functions of your stage manager, technical director, and video and audio engineers, and they in turn will direct the cast, cameramen, light men, prop men, stage crews, sound, and special effects.

This is what lies ahead of you. In your hand is the script

for the evening's play. From the control room you will have to follow the lines and action carefully, for there are more than two hundred cues and directions that you must give during the 60-minute broadcast. All these cues and directions you have noted carefully in your script. Some you will direct to your stage manager in the studio, through a telephonic system, and others you will impart to your technical director, who in turn will inform his cameramen through a similar communication system. It will be from the control room that all your work henceforth will be done. For a moment you wish desperately you had the advantages of the films—a mistake by an actor or a cameraman, and the scene is photographed again. In television, of course, such retakes will not be possible, but in this new medium your play will have an impetus of its own—the intimacy, excitement, and immediacy of a live show.

There are voices and confusion all around you in the studio —the checking and rechecking of camera angles, mike levels, sound effects. Through all this you hear your stage manager announce the first call.

"Places, please, places!"

You manage to squeeze through a small opening left between the acoustically conditioned wall and the scenery and make your way up a steep stairway to the darkened enclosure of the control room. You have left the hubbub of the studio, but here in the control room you discover another kind of confusion. In front of you is the audio engineer making microphone tests. To his right is the video engineer talking to the technical director (TD) about lighting on a particular scene.

"Five minutes!" the audio engineer announces.

You verify this statement by the clock in front of you. Five minutes before your play is on the air!

You glance at the three screens that will carry the pictures.

The screen on your right is used only by the video engineer. He will control the lighting, shading, and contrast on each picture before it is sent out on the air. The remaining two screens are for you and the TD to use. One will carry the

The television floor director, whose duties correspond somewhat to those of a stage manager in the theater, cues a news commentator, indicating that he is "on the air." The floor director receives cues and other necessary information from the director in the control room through a telephonic or radio-wave system.

preview shots—the picture you are planning to "cut" to next. The other is the air monitor—the picture that is actually being televised.

Right now the air monitor carries a newsreel that is being televised from a film studio in another section of the building. With less than 5 minutes left before you are on the air, it is difficult for you to concentrate on the important events the

newsreel is reporting. Instead, your eyes go to the 100-page mimeographed script lying on the console before you. Feverishly you check it, making sure it is in proper order. No time to straighten it out after you are on the air. You thumb through the pages—page 1, 2, 3, 4. . . . At this point in the show, your stage manager will expect a cue from you. You swallow a little of your nervousness; you have a good stage manager. He knows the mechanical procedures of the show even better than you. He has worked with you from the very first script conference, has contributed suggestions on many phases of the operation, particularly on laying out the scenery in the studio, so that the actors and cameras may move easily from one set to another. This is important to him, for it is his job to see that the actors and props are in place at the right time. Your stage manager understands the multiple problems involved in a transition from one scene to another. Unlike the theater, where a scene shift is made by lowering the curtain until the change is made, television fades out one scene and, a second later, fades in another. Your job will be difficult during such an operation. You and your TD will be cueing camera, audio, and video changes, so that you will leave the burden of the floor cueing to your stage manager.

Sound may have to be faded out at the end of one scene and conversation cued in on the following one. For example, you may have a machine shop operating in one set. The sounds from such machines should be faded out with the fade of the picture and not allowed to be heard as the picture is faded up on the scene entitled, perhaps, "A fancy-dress ball, two years later." It will be the duty of your stage manager to regulate the sound effects of the first scene, as well as the action and conversation of the second, so that your transition (fade in—fade out) will create the proper illusion of "elapsed time —another locale." Too many times you have seen a picture

faded up, and the actor is looking into the camera, dumb faced, waiting for a cue. He is there for a second or two, looking wooden and somehow stupid, and suddenly he goes into his act. This results from poor cueing on the part of a stage manager. In such a case, the stage manager has failed to understand the rhythm or timing that is so necessary in television cueing.

Your stage manager has made certain that the actors understand their floor positions. Television, because of close-up and dolly shots, demands that at a given moment the actor be in a specific spot on a specific line. All your camera work—your cuts, dollies, pans—has been rehearsed a certain way. So far as the mechanics of movement and placement are concerned, it will be important for the actors to play the show exactly as they did in rehearsal. Although you have rehearsed these mechanics off camera and again on camera, your stage manager has been able to supplement your directions from the studio floor.

You know that the props, titles, displays, and special effects will operate as they should and when they should, for the stage manager is also responsible for their contributions to the show. Two separate worlds—the control room and the studio floor—are linked by your stage manager. He must be good!

Four minutes. . . . The audio engineer speaks calmly through a chest phone to master control. His audio peaks must match those of the film studio that is already on the air. . . . The objective voice of the newsreel commentator continues speaking to the audience that will soon be watching *your* show.

The audio man turns to the TD, saying, "Audio ready for the channel."

You can barely make out a tiny, unconcerned voice from

the master control at the TD's earphone, "Stand by for the channel."

Subconsciously, you explore your scanty technical knowledge. The channel switch will mean that the air control is being routed through your studio. You will not be able to speak through the loud-speaker to the studio again. All your instructions must go to your stage manager via earphones.

"We have the channel," announces the TD.

The audio engineer's work has begun. His eyes are constantly surveying a small needle that bounces from side to side indicating the volume and frequency of the newsreel's voice and music. The audio engineer sits in front of you. Suddenly you realize how important his contribution is to this coordinated adventure in showmanship. In the next few minutes he will be giving instructions via earphones to the engineer operating the studio boom mike, and on him will rest the responsibility for properly mixing this mike pickup with sound effects, narration, music, and the sound tracks from film clips you will be using as inserts in your play. But he appears relaxed in his work. His quiet confidence breeds the same in you and you turn back to check your script again.

Page 12, 13, 14. This is the end of the first scene. The video engineer will have to fade the picture on a cue from you. You look over to your right and watch the video man previewing the opening shot of your play on his small screen. In the semidarkness his hands move quickly and gracefully from dial to dial, shading the proper whites and blacks in and out of the image. The TD calls for more contrast on the picture that will carry the opening titles. The video engineer's answer is in one swift movement of his hands. The picture suddenly takes on a sharp etched quality. The video man pushes a button, and another picture springs to his monitor,

replacing the shaded picture. An adjustment here, another there, and this second picture is clean and ready for the air. He clicks a switch and speaks quietly into his phone. You cannot hear his words, but you know that they are instructions to the lighting engineer on the bridge above the studio.

You look out into the studio through your glass-paneled enclosure and watch the light man's expert manipulation of a large, diffused spot. He focuses and angles it and your attention is brought back to the picture that the video man is shading. Now it has depth, produced by light and shadow.

You realize that these two men are much more than operating engineers; they are highly skilled craftsmen who understand pictorial values. In their field they are artists.

The TD announces, "Three minutes—stand by."

You return to your script—page 20, 21. . . . This will be a tricky spot. The TD will dissolve from a scene in the studio to film clips that will be aired from another studio. A "roll cue" (trade slang meaning "start film rolling") will be necessary to start the film moving in the projector. You turn to the TD at your right. He is testing his dissolve mechanism, which will simultaneously fade in one scene while fading out another. He is giving final instructions to his cameramen.

"Remember, don't dolly back from the opening shot until I cue you."

He speaks to the cameraman by numbers—1, 2, and 3.

"Number 2, did you get your commercial spot marked?"

He receives his answer on the preview screen. The cameraman "nods" his camera up and down, moving the picture. Your TD has been with you (like the stage manager) during all the discussions of the play. He, too, has contributed to the scenic layout in the studio, for he will cooperate with you in directing the cameras in and out of the sets. He has watched you block the action of the script and suggested changes that

will work out on camera and visualize your lines and action more effectively. He has helped you express your ideas pictorially and relieved you of solving the vast mechanical intricacies that are involved in televising a play. He has worked in all the engineering departments—lighting, camera, video, audio—and understands the technical problems that will be involved in carrying out your ideas.

You hear his low voice: "Two minutes."

You return to the pages of your script—97, 98, 99. Here is the final shot of the play. Will No. 1 cameraman be able to regulate his camera in the proper position? He will dolly it in and up, panning the actress up the stairway and holding his shot on the chandelier. Again you peer down through the glass panel. Number 1 cameraman is looking into his viewfinder. He is set for his first shot. A dolly man is ready to push or pull the truck that the camera and cameramen are on. The other two cameramen are operating pedestal cameras that will be used primarily for your close-up shots. You remember the hours of rehearsal that have been used to line up the camera shots and the help these men have given you in working out interesting composition and camera angles. Although they will be receiving instructions from you and the TD through their earphones, it is really they who are responsible for the camera work. You have watched them at work before, and their skill and artistry is now something you expect rather than hope for.

You hear a voice in the control room, "One minute."

The words of the newsreel narrator become more important now, for you can tell by his inflection he is summing up his report. You look below. The studio is so still it has the appearance of a snapshot. The stage manager's hand is raised to keep the studio quiet. Your TD has his index finger pointed toward a button on the console. When he presses it your first shot will

go on the air. The video and audio men are watching their dials and indicators. The newsreel fades out.

A voice from the master control in the TD's earphone says, "Take it!"

And as quickly as it might take the eye to travel from this word to this one, you realize that you've been thinking all along of *your* play when it should have been *our* play, for it will take the abilities of these technicians, engineers, and artists working as a unit in this mechanically complicated medium to solve the many problems facing the director in the studio and to create a program that is artistic, exciting, memorable.

"We're on the air! Fade in picture and sound!"

Television Mobile Unit Broadcasting

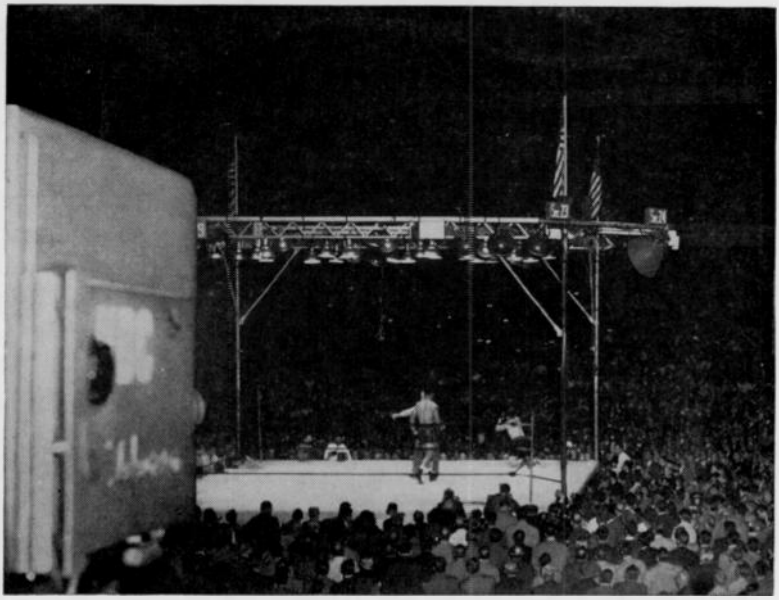
BY BURKE CROTTY

There is a definition that states that television is a system whereby an image, either moving or still, is instantaneously converted into electrical impulses for transmission by wire or radio for reception back to the image at a remote receiving point. This is a very factual definition in itself, yet seven years of television broadcasting make it appear somewhat stilted.

While other portions of this book deal with the more prosaic forms of television entertainment, it is the purpose of this chapter to discuss mobile or special-event broadcasting. As opposed to other types, this represents pure, unadulterated television. It is that function which it seems is implied by the very word itself. The act of taking the viewer elsewhere as an event is taking place unstaged and unrehearsed, timely and immediate. In this last, immediacy, we have the key to really successful television.

On the whole, mobile-unit broadcasting encompasses a truly unlimited field. As time goes on even things that we had heretofore considered unsuitable gradually, because of new techniques, new equipment, and added experience, find a right and suitable place in the television scheme of things.

With more facilities at our command we shall undertake programs that today we pass by for a variety of reasons. In the early days we found it both uneconomical and impractical to broadcast a mobile-unit program that would not hold for an



The mobile unit televises a prize fight. NBC cameras, mounted at a vantage point and equipped with a variety of lenses, pick up the thrills and excitement of popular fights and other sporting events.

hour. Today we frequently make a setup for a half-hour show and tomorrow we will do the same for fifteen-minute spots.

To understand mobile-unit broadcasting at its present stage, it is advisable to have some knowledge of our conditions at the outset of this type of television. Mobile-unit broadcasts began in 1939; in fact the first television broadcast on any regularly scheduled series was that of the opening of the New York World's Fair, April 30, 1939. Our equipment at that time was

carried in two large vans. They were rather huge affairs but, at the time, remarkable creations. A tremendous amount of credit is due the engineers who designed and built the unit. The first truck housed the pickup and control equipment, while the second contained the transmitter. In some respects they were too heavy and bulky, but they were the first, and for some time, the only mobile units in America. They served us well for many months and strangely enough had incorporated in them features we are having difficulty in developing in newer and smaller equipment. The interior of these units housed standard floor-to-ceiling racks such as those in use in the studios, and the size and weight of these were responsible for some of our early difficulties. In subsequent equipment this has been overcome, but there are several innate problems that at the moment we have no means of overcoming. Foremost is that, in doing a radio frequency relay, we must have direct line-of-sight from the relaying antenna to the reception point atop Radio City. The cables running from the control equipment to the cameras have been reduced in size considerably but still constitute a major problem from the standpoint of speed of installation and convenience of operations. In some programs, while it is frequently advisable to supply the electric power for the equipment from a gas-driven generator, we have found that in operating in and around New York it is simpler to obtain the source of power from some near-by building. This can, on occasion, constitute a limiting factor in selecting vantage points for broadcast.

While our original equipment was in two trucks with a gross weight of approximately 10 tons, experience and rapid development enabled us to replace this within a very few years with a set of portable equipment, which we have come to call "suitcase" gear, housed in approximately twelve cases each no larger than a Gladstone bag, with a total weight of about

1,500 pounds. The only thing that makes "suitcase" an apt name is the fact that we have handles on each case.

In operating with our present equipment we select a control room out of which to run the cables to previously selected

The mobile-unit cameras show news as it happens, picking up scenes of current interest—fires, accidents, parades, and other special events—for news and other programs. Here NBC directors and engineers are using the facilities of a mobile-unit truck.

vantage points as camera positions. On the majority of programs we use two or three cameras, and the director in the control room sits at the controls with three or four pictures before him; the first pictures are from each of the cameras, while the last is a duplicate of one of these, showing the picture that happens to be on the air at the moment. By simply pushing a button the on-the-air picture can be changed instantaneously from one camera to the other. The unit has been

designed to accommodate four cameras and with slight rearrangement can handle actually an unlimited number.

We feel that, with the facilities available, we have turned in a reasonably good job today, but we are not at all unmindful of the fact that given additional equipment we can improve immeasurably upon any job done in the past. Limitations imposed upon us by the war resulted in our progressing at a much slower rate than we had originally anticipated. It is interesting to note, however, that despite these drawbacks we have increased our activities from a schedule of two programs a week out of the mobile unit to a point where today we frequently handle eight to ten outside pickups per week. It is certainly our intention to continue to increase our efforts as new equipment becomes available.

It requires the combined efforts of twenty-two people for each outside broadcast. They are as follows: director, assistant director, announcer, engineering supervisor, technical director, two video engineers, one audio engineer, three cameramen, three setup men, two transmitter engineers. These sixteen are all employed at the point of pickup; however, no program is on the air until it has passed through Radio City and has been broadcast from the Empire State transmitter. To accomplish this requires the services of four engineers at Radio City and two transmitter engineers at the Empire State Building, bringing the total for the job to twenty-two.

Over a period of several years we have organized our efforts to the point that we have established responsibility for various operations and follow a routine procedure in planning special-event broadcasts. The responsibility for origination of programs rests with the program producer. It is his task to determine which programs are of the greatest interest and value to the audience. It is his duty to keep abreast of day-to-day events and select those which are the most likely prospects for our operations.

Having decided to make a pickup, the program producer causes a survey to be made at the spot. All such surveys are made with two considerations in mind—firstly, engineering, and secondly, program. Practice has proved that these are best handled as a joint affair, with a program producer and an engineering supervisor examining the location with their particular problems in mind. While there are special features involved in almost any survey, usually the items checked can be easily listed.

Those of the engineering department are as follows:

1. *Power.*—to determine the availability and location of a suitable source of power and to make any necessary arrangements for running such power to the selected control room.
2. *Control room*—the selection of a spot in which the control equipment can be most easily placed with consideration of the various points of importance. Occasionally we have found it advisable to install the equipment in one of our trucks parked on the street, but usually it is more desirable to select a location within the building or stadium for use as a control spot.
3. *Antenna location*—bearing in mind that if the program is to be beamed to Radio City for rebroadcast the relaying antenna must be located within reasonable distance of the selected control room.
4. *Cable lines*—Because of the inherent necessity of connecting the cameras and the control equipment with cables it is essential to plan the route of these so that the greatest speed of installation may be achieved, that hazard to spectators and pedestrians be kept to a minimum, and that the least possible strain be exerted on the cables.
5. *Transmission test*—The likelihood of electric interference is such as to make it inadvisable to schedule a program with-

out advance transmission test from the spot. In a city such as New York, various kinds of interference may be encountered, which, if known about in advance, can sometimes be overcome. This test must be made, except under ideal conditions, to determine the existence of such interference and to plan the means of combatting it.

6. *Facilities required*—the engineering department determines during the survey the amount of equipment required to satisfy the requests of the program producer and also such facilities as are necessary for the consummation of the broadcast. These include in addition to our pickup equipment such things as communications, phone circuits, and cue channels.

Program-department considerations are checked by the producer during the survey and, except for unusual cases, consist of the following:

1. *Subject*—in checking the event the program producer must examine the location, bearing in mind the exact action that is to take place, the time of the broadcast, and the special activities that he plans to pickup.
2. *Camera locations*—the program producer has the responsibility for the selection of all camera locations and will indicate to the engineer those spots which he believes are the best points of vantage. Under various conditions it will be found that because of engineering limitations the original selection cannot be used and an alternate spot must be chosen, hence the joint survey.
3. *Lenses*—in consideration of the type of program involved, the distance from the cameras to the point of activity, the size of image desired, etc., the program producer will select the lenses to be used on the cameras. In so doing he must bear in mind the location of the sun, hour of the

day, and the necessity for possibly changing lenses during the course of the program.

4. *Continuity*—unlike newsreel operations, where only the high lights of an event are photographed, our problem consists of carrying an entire smooth-running pictorial coverage of an event from the moment we take the air until the very close, when the announcer signs the program off. To assure intelligent continuity throughout the program, which frequently runs as long as two and one-half to three hours, the producer must, in planning the broadcast, pay particular attention to expected slow spots, intermissions, and delays and plan accordingly to prevent such occasions from working to the detriment of the broadcast. A change of lens can very often be accomplished to spruce up the show by adding variety or novelty in the subsequent change of perspective. While television is essentially a close-up medium, slow spots can frequently be glossed over by throwing in pictures of spectators, near-by surroundings, or any other incidental human-interest shots.
5. *Possible changes*—adverse weather conditions, poor lighting, or a multitude of other things can be responsible on occasions for a complete change in the timing or running of some events. In planning a show it is important that consideration be given such possibilities and emergency measures be arranged lest the director find himself in the middle of a show with that unforgivable sin of television, a blank screen.

Having completed the field survey and assuming we have found no obstacles in the way of the intended broadcast, the program department will then book the show. The communication and wire circuits recommended during the survey are

ordered. At that time the producer will assign a director and turn the show over to him.

With the survey report, circuit orders, and other information needed the director's first chore is that of preparing a complete and conclusive routine sheet for the show. Such routine sheets must show all switches between the mobile unit and the other sources of program employed, such as the film studio, the live-talent studio, and the studio announcing booth at Radio City. Rarely do we schedule a show without using these facilities and since each involves approximately six people the routine sheet must be exact so that such switches can be made as smoothly as possible. The routine will also show the use of various commercial slide cutins, motion-picture cutins, and audio announcements that might originate at these spots. The assignment of the announcer is attended to as early as possible, so that he will have ample time to study any material or to obtain spotters to assist him in identifying players or events. Customarily the routine sheet is so detailed as to require no explanation to experienced operators, but where unusual circumstances are involved it is customary to supply explanatory notes to the technical director. Assistant directors are assigned to work with the director, generally one at the camera locations and one at our master-control unit in Radio City.

We have maintained very flexible operations on program control up to the present date, switching production occasionally from the main control room in Radio City to the mobile-unit control room, although we feel that in the final analysis the logical spot for production control will be at the site of the pickup.

A complicated communication system is provided the operating personnel. The director on location is in communication by phone with his assistant at Radio City and has

another line, which goes simultaneously to the camera operators and to the assistant director working at the camera position. The switches between cameras are made physically by the engineer on the order of the director. On most programs this system works without difficulty, although on occasion we find the delay to be too great for satisfactory operations and in such cases a switching routine is provided for the guidance of the technical director.

During the course of the program it frequently becomes necessary to change from one lens to another. Since we feel television to be specifically a close-up medium, we endeavor so far as possible to provide as large an image as practical. The very laws of optics, however, are such that the longer the lens used the more light we require and this must always be kept in mind.

Throughout the entire program the director issues instructions to the cameramen and in this way provides a smooth pictorial continuity. At the same time through his assistant director he coaches the announcer so that so far as possible he does not talk about things that are not shown by the camera. To accomplish better this critical coordination between camera and announcer, a viewing screen is provided into which the announcer can glance from time to time to be certain that both he and the camera are looking at the same things.

In an industry that has for so many years successfully conducted a business dependent entirely on sound, we occasionally are prone to overemphasize the audio portion of the broadcast. Television is a pictorial medium and we like to think of our announcer as a host and pointer for the audience. Too much conversation is very annoying, yet we do expect him to point out those things of importance which are not readily apparent in the picture.

In all forms of television other than mobile-unit broadcasting, rehearsals and scripts are the order of the day, but in this spontaneous type of program such things are out of the question. With so many persons involved the main chore of the director becomes that of carefully analyzing in advance every moment of broadcast time and laying it out for each man in blueprint fashion, so that so far as possible he will know what to expect and what to do at any given moment. All the men involved today are extremely well trained, each has a particular job, and in a like manner for each job we have a man. It is imperative that the director learn to rely on all of them, for here, more truly than in any other business, individual responsibility results in group efficiency. Our mistakes are not retractable, and our only insurance is thorough planning and complete understanding on the part of those involved.

For a somewhat general analysis of the types of special-event programs to date, we can in the main break them down to three categories; they are sports, news, and human interest. Our prime concern to date has been that of providing for our audience as many of the things they want to see as possible. The viewers of our audience count on seeing all events of importance throughout the entire year. Standard broadcasts are those of the major-league baseball games, professional football, college football, basketball, hockey, horse races, championship boxing bouts, wrestling, tennis, parades, news events, etc. NBC's television mobile unit is a frequent visitor at Madison Square Garden, Yankee Stadium, Polo Grounds, Ebbets Field, Belmont Race Track, New York's Central Park, Waldorf Astoria Hotel, Times Square, and most other points of interest.

Among the more spectacular programs of the past are: V-J Day, V-E Day and New Year's Eve crowds in Times Square; meetings of the General Assembly and Security

Council of the United Nations at Flushing Meadow; President Truman's addresses to the joint houses of Congress on the State of the Nation and on Aid to Greece; and a program from the U.S. Submarine *Trumpetfish*, which actually submerged during the broadcast while three cameras aboard continued to bring a pictorial account of the activity inside the ship, even under water.

The scope of field operations was vastly increased in 1945–46 by the arrival of the new image orthicon tubes which, used for the first time at the Navy Day Banquet in the Waldorf-Astoria Hotel, provided clear pictures of prominent guests under candlelight illumination. Since then these sensitive tubes have become standard equipment for all types of field pickups, traveling around to cover important events in such widespread locations as Baltimore, West Point, Washington, and Philadelphia. By means of the coaxial cable between New York and Washington and radio relay links between Philadelphia and New York and between Schenectady and New York, many outstanding events have been transmitted simultaneously by local stations to audiences in all of these cities.

Thus the scope of programs and the extent of the audience have been steadily increasing since the war. The record of past years speaks for itself, but the future holds a promise for the television audience that every event of importance will be brought to the home receiver. The area of pickup and the area of broadcasting will increase tremendously, and with it our techniques and our programs will improve to a point far beyond the average person's expectations.

Legal Problems in Telecasting

BY I. E. LAMBERT

It is axiomatic that the science of law must advance to meet the progress of society. In the current scene, broadcasting is playing a role of great social significance. Developed as a private enterprise, it has created legal problems that run almost the entire gamut of domestic and international law. When television becomes a commercial reality new principles of law will evolve in connection with it as an entertainment and as an advertising medium.

The task of predicting the various legal problems that may confront the telecaster is a rather arduous undertaking, mostly because of the following reasons:

The difficulty of forecasting the future of commercial television

The uncertainty of what policies the Federal Communications Commission will adopt on telecasting

The impossibility of the telecaster's determining at this time the many basic commercial and operational problems that will be involved in commercial telecasting

However, one might say that the legal foundation for television has already been laid by the radio industry. The same legal principles applicable in sound broadcasting should apply generally to television.

FEDERAL REGULATIONS

The jurisdiction conferred by Congress on the Federal Communications Commission, under the Communications Act of 1934, over broadcasting, predicated upon the statutory requirement that broadcast operations comply with the standard of *public interest, convenience* or *necessity*, applies to television. The Federal Communications Commission has authority to make and promulgate rules and regulations for telecasting. The commission policies on sound broadcasting and court decisions applicable thereto will serve as precedents for television. It is hoped that the commission will realize that chain broadcasting is essential to the success of television; that chain broadcasting is necessarily a joint enterprise, and as such, it must be connected in such a way as to accomplish its mission. This can be accomplished only by contracts. The contracts must be fair and workable. The duration of station licenses from the government (now one year) and the length of the contracts between the individual broadcaster and the chain organization should be of sufficient length to ensure success of the enterprise. There should be incorporated in the contracts reasonable covenants to ensure stability. An organization too loosely constructed is ineffective. The enterprise should not be the target of unscrupulous competitors, who seek to destroy the venture and obtain a free ride without contributing to the art. The commission should consider the enterprise in its entirety.

Will the public be benefited by a larger and more effective use of television?

Will the art be furthered or retarded?

What will be the nature of the services that individual licensees are rendering communities reached by their broadcasts?

Service to the public is, and always will be, the test of *public interest*, *convenience*, or *necessity*.

Unfair methods of competition and unfair or deceptive acts or practices in interstate commerce are unlawful. Congress, however, in passing the Federal Trade Commission Act, deemed it unwise to attempt to define the many different kinds of unfair competition, but made the general prohibition condemning all *unfair methods*, leaving it to the Federal Trade Commission, created by the act, to determine, subject to the review of the courts, the fairness or unfairness of specific practices presented.

The Federal Trade Commission has not had to pass on many practices employed in the sound-broadcasting industry. This is for several reasons: the broadcasters have been extremely cautious; the relation between the advertiser and the broadcaster is not such as to hold the broadcaster responsible for the practices of the advertiser; then, too, the Federal Trade Commission has been very cooperative. Television may have a tendency to complicate matters. Unfair practices in the realm of sight will make their first appearance in broadcasting. Film broadcasting is a medium easily subject to deception. Contractual relations with advertisers may change.

If the broadcaster produces his films, then he is in the motion-picture business, so to speak. Members of this industry have been on the carpet on numerous occasions. Many of their methods of competition have been condemned by the courts and the Federal Trade Commission. Space does not permit a review of the various decisions. The broadcaster will have to become familiar with the legal aspects of many trade practices peculiar to the motion-picture industry. It is believed, however, that the most common method of unfair competition that will confront the broadcaster in the early stages will be false and misleading advertising. It will be necessary for the broadcaster to check and double-check all advertising and make

certain that the relationship with the advertiser is not such as will create a liability on the part of the broadcaster. This will be a difficult task.

STATE AND MUNICIPAL REGULATIONS

The courts have consistently held that communications by radio constitute "interstate commerce."

Congress, recognizing that radio communication is interstate in nature, has passed several regulatory laws. Federal legislation dates back as far as 1910. It was not until 1912, however, that a general regulatory law was passed. In 1927 Congress created a Federal Communications Commission and endowed the commission with wide licensing and regulatory matters. In 1934 Congress passed the present Communications Act and incorporated in the law the basic provisions of the Radio Law of 1927. No substantial changes have been made in the legislation of 1934. There exists today a unified and comprehensive Federal regulatory system for radio communications.

The jurisdiction of the several states to regulate in various fields has been preserved many times by the police-power doctrine. The "police power of the state" may be shortly defined to be the power of the legislature to make such regulations relating to personal and property rights as appertain to the public health, the public safety, and the public morals. This concept, however, cannot be extended to include the power of the several states to regulate telecasting in such phases as have been the subject of federal regulation by the Communications Act of 1934. The police power of the state can be exercised to regulate only those subjects which have not been embraced by federal legislation, *e.g.*, Congress has passed laws regulating railroads and state laws are invalid that are in conflict with such legislation.

The following illustrations are given to show the remote

possibility of states or cities exercising regulatory control over television broadcasting.

Broadly speaking, a television broadcast from New York City is not subject to the laws of the City or the State of New York nor the laws of adjacent cities or states. The transaction is purely interstate and is governed only by federal regulations. This illustration applies to television broadcasting in its present status. Chain broadcasting would not change the conclusions arrived at from these facts.

A television broadcast from a transmitter located in the center of Texas and not operating as a part of a chain would present a very interesting question. Because of the terrain and the low carrying power of the transmitter the program could not be received outside the state. At first glance it appears that the transaction is intrastate in nature and subject to the laws of Texas. It is believed, however, that the courts might hold otherwise in many instances. The commerce involved is more than a mere fiction of interstate commerce. The broadcasting station's very existence and authority to operate is derived from the Federal government—license to operate on a specific frequency from the Federal Communications Commission. The station is obligated to abide by the rules and regulations of the commission. Its very essence is a component part of an organization of frequencies that are national and international in character. The Texas broadcasting station might easily commit an act that would interfere with other broadcasting stations engaged in foreign and interstate commerce. It is believed that in such a case some regulatory laws of the State of Texas over the station's broadcasting activities might be construed to be within the police power of the state, while others might fall within the well-established rule that a state or city cannot burden interstate commerce under the guise of regulating intrastate business.

FILM CENSORSHIP

The broadcasting of films will be extensively used in television programs. In the Federal Communications Act there is a congressional warning that television is to be free from censorship. Section 326 provides that

> . . . Nothing in this chapter shall be understood or construed to give the Commission the power of censorship over the radio communications or signals transmitted by any radio station.

Motion pictures are in some states and cities subject to censorship. What will transpire when a film is televised?

Official film censorship boards have been created in seven states: Kansas, Louisiana, Maryland, New York, Ohio, Pennsylvania, and Virginia. The Louisiana board set up by the late Huey Long, has never functioned actively. Massachusetts achieves Sunday censorship under its Lord's Day statute. Florida has an ostensible censorship arrangement, but it lacks vitality because approval of a film by the National Board of Review suffices, and that board "passes" every film it views. Municipal censorship devices are more numerous than state agencies. Approximately eighty cities now have censor boards. Penal statutes, while not providing for censorship, are nevertheless effective devices for controlling cinema content. Many states have statutes prohibiting obscene or indecent theatrical performances generally, while a few refer specifically to motion pictures, both in general categorical prohibitions and in bans on specified types of films. Numerous municipalities also have similar penal ordinances.

Film-censorship legislation varies somewhat in different states and cities, but the laws in general have the same prohibitive features. The main difference is in administrative procedure. Most of the laws are similar, in substance, to the Ohio statute that was held constitutional by the United States

Supreme Court in 1915—*Mutual Film Corporation* v. *Industrial Commission*, 236 U.S. 230 (commonly referred to as the "Mutual" case).

The Ohio law creates a board of censors for motion pictures and provides that "all motion picture films to be publicly exhibited in the state of Ohio" are subject to censorship. It further provides that "only such films as are in the judgment and discretion of the Board of Censors of a moral, educational or amusing and harmless character shall be passed and approved by such board." The Supreme Court held in the Mutual case that the law was not an unlawful burden on interstate commerce in that the restriction was placed on the exhibition, and not on the transportation of the films, and therefore the original-package doctrine had no application. Courts have consistently followed the decision in the Mutual case and have held that censorship of films designed for public exhibition within the state is a proper exercise of the police power.

Only once since the Mutual case has a court been required to pass squarely on the validity of censoring newsreels. On that occasion the New York courts upheld the censorship on the ground that inasmuch as newsreels are shown in "a public place of amusement" they are not part of the press. New York, Kansas, and Pennsylvania are the only states now exempting "current-event" films from operations of censorship.

The question is, how will film censorship affect the telecasting of picture films? While the law is not clear, it is believed that insofar as chain broadcasting of a film and its reception in the home is concerned, present state and municipal censorship legislation may not apply. This belief is based on the following reasons:

The transaction is interstate commerce and the censorship

laws are in conflict with a Congressional warning in a field of federal jurisdiction;

In most cases the reception is not a "public exhibition" within the meaning and purview of the various censorship laws.

The showing of televised pictures in a theater or other public place, however does constitute a "public exhibition" and as such may be subject to state and municipal regulations, notwithstanding the fact that the broadcast is interstate in character.

PRIZE FIGHTS

A prize fight is now, and perhaps always will be, one of the most popular programs television can offer. The actual fight may be televised or it may be reproduced by the broadcast of a film.

"Public exhibition" of prize-fight films is unlawful in many states and cities. In 1912 Congress enacted a law making the transportation in interstate commerce or the importation of prize-fight films a criminal offense. This legislation was the result of race riots following the Johnson-Jeffries fight. In 1940 the Federal law was repealed and Congress passed a law divesting every film or other pictorial representation of any prize fight transported into any state of its character as a subject of interstate or foreign commerce to the extent that it shall, upon crossing the border of such state, be subject to the laws of the state enacted in the exercise of its police power.

How does this interstate-and foreign-commerce limitation on a prize-fight film affect the television broadcaster? Much depends upon the interpretation of the Federal, state, and city laws involved. Is telecasting "transportation"? The words "transportation" and "commerce" convey different meanings.

Commerce covers the whole field, of which transportation is only a part. Transmission and communication, which include telecasting, are other distinct parts of commerce. Generally speaking, in transportation there must be the carrying of something physical or corporeal. These elements are not to be found in telecasting. Is the image, as seen, a "film"? Certainly not; but it might be construed to be a "pictorial representation" within the meaning of the act. Is there a "public exhibition"? Certainly not, when received in a private home. It might be held otherwise, however, when shown in a theater or other public place.

OBSCENE AND INDECENT PICTURES

Many states and cities have penal laws prohibiting the public exhibition of obscene and indecent pictures. It would seem, however, that jurisdiction to consider the telecasting of obscene and indecent pictures resides in the Federal Communications Commission, even though the present terminology of the law does not specifically provide for it. Section 326 of the law provides that:

> No person shall utter any obscene, indecent or profane language by radio communications.

It is believed that state and city laws may not be generally applicable to telecasting of obscene and indecent pictures for the following reasons: because Federal government has preempted the field of this commerce, which is interstate in character, and also because in most cases there is no "public exhibition" within the meaning and purview of the state and municipal laws. Modern stage plays, style and fashion shows, wrestling matches, and numerous other events might well fall under the category of obscene and indecent pictures.

COPYRIGHT AND RELATED SUBJECTS

One of the most important and perhaps the most complicated problems that confronts the telecaster lies in the field of copyright.

The telecaster will use works falling primarily into the following categories:

Dramatic and dramatico-musical works (plays, operettas, grand opera, etc.—"Harvey," "The Voice of the Turtle," "The Merry Widow," "Aida," etc.)

Musical compositions performed nondramatically (ordinary musical compositions from Bach to Boogie Woogie—"Yes, We Have No Bananas," "The Trolley Song," a Beethoven symphony)

Nondramatic literary works (nondramatic books, poems, etc.—"Gone with the Wind," "Anthony Adverse")

Maps, sculpture, paintings, and other works of art will undoubtedly be telecast from time to time.

A substantial number of the important works in these categories are protected by copyright and the telecasting or reception of a performance of such works without a license may give rise to substantial damages for infringement.

The question of common-law rights in unpublished and uncopyrighted works and the extent to which they may be made effective depends upon the laws in the various states.

Many unadjudicated questions remain for future decision of the courts, and the telecaster proceeds at his peril.

The ownership of the rights needed by the telecaster is scattered among many organizations and innumerable individuals. The problem of clearing such rights poses for the

television broadcaster a great many extremely difficult practical operating problems.

Let us briefly analyze some of these problems in connection with television programs.

First we will take up live-talent studio programs.

All material, both musical and literary, now subject to copyright clearance in relation to sound programs will have to be cleared as usual, with the added feature of television rights included. This means that licensing agreements with various organizations and individuals must include television performance rights. A detailed research will have to be made in order to trace the ownership of musical and literary material that will be used in television.

Special-events programs will also have complications.

Clearance will have to be considered on all property rights involved in special-events broadcasts. For example, if a mobile unit is taken into Madison Square Garden, authorization must be received from the management not only to describe but to televise the event and to permit the reception of the program. In telecasting special events consideration will have to be given to various civil-rights statutes and the common-law rights of privacy. The same principles applicable in sound broadcasting as to whether the event is a news event, and as such can be used without violating the Civil Rights Law, should apply generally to television. Indiscriminate use of the television camera might easily, however, involve the telecaster in unfavorable litigation. Courts might make a distinction between the unauthorized use of a name and the unauthorized use of a picture of a person, especially when used in a commercial program. Written consent from the participants as well as authorization from the management should be obtained.

In the making of a motion picture, the securing of certain

material and performing rights are essential. Since 1912 a motion-picture photoplay has been subject to statutory copyright independent of, and in addition to, the copyright of the stage production (dramatic or dramatico-musical composition). "Motion pictures other than photoplays" (travelogues, newsreels, etc.) also may be copyrighted. Generally the motion picture is copyrighted by the company producing it. Televising without a license a copyrighted motion picture or a film where copyrighted material is used in the making thereof would constitute an infringement. Clearance problems involved in the telecasting of a motion-picture film will be tremendous or, in the lingo of the motion-picture industry, "supercolossal." These problems will fall into two classifications, depending upon whether the telecaster makes his own films or secures his films from motion-picture producers.

Where the motion pictures are produced by the telecaster, the telecaster will have to obtain from the owners of the material involved and from the artists who appear in the picture full rights to use the picture for television purposes. This means that the telecaster in making a picture of a play, in addition to securing motion-picture and radio rights, must:

1. Obtain from the author or his agent, or if the author has assigned his rights to the publisher, as often is the case, then from the publisher, full and comprehensive rights to use the story for television purposes. This is a difficult task because the telecaster will have to deal with an individual, as there is no organization that holds any substantial number of these rights.

2. Secure from all performers in the picture full and comprehensive rights for television purposes. This also is quite a problem, particularly if the picture is sponsored by an advertiser, because of the policy of many actors of not allowing their performances to be commercialized.

Additional television recording and performing rights will be required when synchronized music is used. Recording rights in general may be secured from the Music Publishers Protective Association. Performing rights may be obtained from various individuals or from such an organization as American Society for Composers, Authors and Publishers.

In making a film of a Broadway stage show, specific television rights will have to be secured under a Dramatist Guild contract.

The telecaster also will need to secure additional television rights from the manufacturers and licensers of sound and recording equipment. When a picture is secured from a motion-picture producer the license to telecast includes such rights as the producer can legally give and no more. This, of course, includes rights under the producer's copyright in the film. The principal difficulty, however, lies in determining the underlying rights in the material upon which the picture is based.

It has been the practice of most motion-picture producers in recent years to obtain from the authors of works that are being adapted for motion pictures the right to use the picture in connection with television. In such a case, no doubt, the producer would have the right to license the telecaster to use the film for television purposes insofar as the literary material is concerned. However, in the case of most of the older pictures, the producers have made no attempt to obtain from the authors and composers specific grants of television rights. It is conceivable that the courts may hold that the granting by an author of "motion-picture rights" will include not only the right to exhibit the pictures in theaters but to use it for television purposes. On the other hand, it may be questioned whether the courts will hold that when an artist made a picture to be used primarily for exhibition in theaters, he also consented to its use for television purposes. Then, too, con-

sideration must be given to the television rights in individual musical compositions recorded in synchronization with such pictures.

Unless the telecaster is prepared to make an exhaustive study of all the material involved and a thorough examination of all the contracts upon which the making of a picture was based, he will be compelled to rely upon warranties and indemnification agreements from the producer who sold him the film.

RECORDS AND TRANSCRIPTIONS

To the whole problem of what rights performers have in records or transcriptions will be added the question of unauthorized performances of such records and transcriptions in conjunction with a television program, *i.e.*, music used as background.

CONCLUSION

In 1920, the Harding-Cox election returns were broadcast over KDKA, the Westinghouse station at Pittsburgh, to a limited number of near-by amateur receivers. News of this triumph of radio kindled the broadcasting "craze," which spread like wildfire across the country. Almost overnight radio listening became a national pastime. We all know what has transpired in sound broadcasting since that event. The next fifteen years may even surpass in magnitude the achievements of the first fifteen years. The Age of Television is ahead. As stated before, however, the legal foundation for television has been laid by the radio industry. Predicting all of the various legal problems that may confront the telecaster when television becomes a commercial reality is impossible at this time. The science of law will again be called upon to meet the progress of society.

Television Advertising

BY REYNOLD KRAFT

An analysis of the figures covering newspapers, magazines, and radio, shows that the advertisers paid almost half the cost and the public the rest. The advertisers paid for space, time, artwork, and program expense, while the public bought the newspapers and magazines and paid for radio receivers and their upkeep. Not all this money went to the publishers and broadcasters, but enough did for America to produce the best news and editorials as well as the best and most varied radio programs of any country in the world. All this has been without government subsidy or control.

In order that television can grow to give the public the best with a variety of program service the competitive urge of free enterprise should prevail. Industry must support this newest medium of communication as it has the older ones through advertising. Only in this way will it gather the fruits of scientific and engineering genius and give the public the benefit of brilliant programming brains. The television industry will produce instruments and methods for better transmission and receivers for better home viewing, while advertisers and their agencies will supply money and program ideas for better and varied entertainment. The increase in television homes will then be automatic, a benefit to all.

Television, of course, will compete with existing mediums

for advertising dollars and entertainment and educational attention. However, it will not put any existing medium or service out of business that would not of itself be destroyed without this added competition. The path of progress through the ages is strewn with the slogans of Calamity Janes who opposed the printing press, the steam engine, the telegraph, the telephone, the automobile, the radio, and now television. All well-founded advertising mediums have profited through additional advertising revenue in spite of the dollars paid to radio. Advertising budgets of manufacturers have increased because more dollars were made available through greater sales. The same will happen when television becomes an important factor in advertising budgets. This nation must have an accelerated business program in order to produce greater income if the war debt is to be paid out of taxation that will not become prohibitive. Television must play its part in an expanded program.

Through television, products can be described by word and picture. They can be demonstrated and claims proved by proper methods before your eyes. The fact that this medium can be more effective has already been proved. With more experience and ingenuity much more should be possible. The armed services found that, through the use of movies, the men could be taught 40 per cent faster than by any other method and that they retained 38 per cent more. At the end of the war more training movies were being made than ever before. One advertiser, who was using radio daily, after an eight-week test found that a sample of the television audience retained approximately ten times more of his advertising message than an equal sample of the nontelevision audience. The difference in results of the findings of the armed services and the advertiser is probably psychological—mass as against individual and the commonplace of movies as against the novelty of television.

It would be uneconomic as well as bad business to spend thousands of dollars on artwork and plates or on an expensive cast for a radio production if the potential audience were only a modest few thousand. The total television audience today is counted only in the thousands, so the amount of money invested by an advertiser in a television program will be modest compared to his effort in radio. However, there is experience to be gained in this new medium—there are techniques to be worked out for the best demonstration of the product. Because of the great impact that this medium carries, repetition will not be so necessary and a premium will be placed on inventiveness of presentation. Much of this can be gained at the present—the pioneer period—when pennies can do the work that dollars will later do.

Several years ago "knee action" was introduced to the public by the automobile industry. This new invention of individual wheel springing needed pictures and demonstrations to sell it to the public. The use of television would have cut the time needed to sell this to the public to a fraction of that actually required. Everyone would have benefited and profited if television had been available at that time.

Many companies are spending millions of dollars to make movies. These movies, strictly speaking, are advertisements. A drug company might put out a film showing the value of having the children vaccinated against certain diseases, and schools, doctors, and public-health departments would be glad to circulate a picture of this kind. The film naturally would be entertaining, but at the same time would be educational and would carry a story for everyone. Another company could put out an industrial film showing how different machines and instruments are made. That same company or others might develop a script attempting to show what healthy and enjoyable lives its people live in the town or village where the plant

is located. All of these dollars have been channeled into this form of advertising because the companies felt that sound and moving pictures together do a better job for them than either sound or pictures alone. Each one of these films can be televised. If the companies have enough subjects that would be interesting to the public, a whole series of television programs could be devised that would be entertaining and educational, thereby promoting many products and facilities of the companies that could not be promoted otherwise.

There are two kinds of television, broadcast television and closed-circuit television. The closed circuit has its biggest outlet in intrastore television for department stores. An advertiser selling his goods through department stores could advertise these products via broadcast television. The advertiser could then take the advertising or commercial portion of his program if he wished and make a film or package, which could be delivered to the department-store merchandise manager for his intrastore television system. If this advertiser had a program once a week, he could deliver to every department store in the country where his product is sold and where intrastore television is available a new package each week. The department store would benefit in two ways—the public visiting the store would see this on the television screens and the clerks would learn new ways and methods of best demonstrating the product.

Advertisers having products like automobiles, household appliances, or comparatively large unit-cost items could similarly use many movies of their commercial, or the entire program for that matter, to distribute to their dealers for showings in their stores and showrooms. Unquestionably, many methods will be worked out that have not yet been thought about. New knacks and quirks will develop in the fertile brains of advertising men, so that the advertiser or

manufacturer of the product could be more sure that ways for the proper use of the product would get to the end consumer. Every type of product used by people and every service designed to make life more comfortable can be advertised better in television, whether the product be a mouse trap or a threshing machine, nylon hose or a fancy bonnet.

Costs are apt to be relatively high when compared with other known mediums. It will be necessary, for instance, to take into account items that now do not concern advertisers. First of all, there is the transmission cost, which may be comparable to time cost on the air. Secondly, there are the production costs, which include studio facilities, scenery, props, cast, costumes, script, producer, and director. When networks develop, there is the cost of getting the program from one station to the other and the transmission or time cost at the next station. The impact of this medium will be more effective and can justify some of this extra cost, but eventually an advertiser will be concerned with circulation. Because this medium has the possibility of greater entertainment through sight and sound than either sight or sound alone, it will probably always have a multiple audience at the screen. In many ways this multiple audience will prove a boon and make it possible for an advertiser to use television profitably.

It has been a practice of broadcasters to develop an audience through their own financial efforts, and, until circulation becomes substantial, advertisers will also benefit through the broadcasters' generosity. This period may be called one of laboratory or experimental operation. For a relatively small amount of money an advertiser can use the medium and obtain experience in how best to show or demonstrate his product as well as to determine what not to do.

This medium is different from any other anyone has yet used. Television brings news events, movies of all kinds, and

Broadway plays to the viewers' living rooms. A program that may be very interesting and perhaps funny in the theater could fall flat when viewed in the home. Humor, particularly, must be in good taste to be enjoyed in the home, whereas this, as you all know, is not true in the theater. Large groups in public have a different psychological reaction from individuals in the home. People act differently when strangers are present than they do with their families. This psychology must be taken into account when developing a program for a commercial product. The best guide that we can give you is always to imagine, when developing a television advertisement, that you are at home talking to your wife or family. This medium is so different from others that professional researchers admit that they would not attempt to compare results obtained from other mediums with what might be expected from television. The best guide is good taste.

Glossary of Television Terms

abstract set. A setting or background suitable for fashion shows, musical acts, or variety, composed of arbitrary architectural or other units, steps, platforms, columns, abstract or geometrical forms, pylons, pilasters or draperies, combined in a pleasing, though not necessarily rational, composition. A setting without definite locale, purely decorative. (The term "abstraction" is also used.)

animations. Mechanical devices that in various ways impart seeming movement to inanimate subjects.

antenna. A radiator used in the transmission of radio frequencies.

aspect ratio. Proportional relationship of the width of the picture to the height of the picture; in motion pictures and television 4 to 3.

audio (adjective). Pertaining to the electronic transmission of sound.

audio (noun). Sound portion of television.

background. Any material, set, drape, drop, etc., used behind actors or other foreground subjects.

background projection. The projection of a scene on a translucent screen to be used as a background for a studio set.

background sound. Sound behind the main source of sound, such as background music.

bird's-eye perspective. A drawing or other illustration of a setting as it would be viewed from the front and above. The normal angle of view is from the front of the setting, looking downward, at approximately 45 degrees. These views are utilized to clarify stage sets, positions, and sizes not readily discernible on a staging plan.

blizzard head. Any blonde.

blowup. Photographic or photostatic enlargement of various written or printed or pictorial materials, in whole or in part, in order that portions that must be legible or clearly defined may be effectively photographed and transmitted through television.

boom. A mechanical contrivance for suspending a microphone.

booster. See *relay station.*

break. A break in rehearsal. Time out.

break a set. To remove set from studio.

break it down. To remove and disassemble equipment used on an outside broadcast.

brightness. The average over-all brilliance of the television image.

brightness control. A manual regulator for adjusting over-all brilliance of the television image.

broads. Unit or batteries of incandescent or fluorescent lamps.

business. Incidental action or devices used to add atmosphere and interest to the main theme of a program.

busy. Term used to describe a setting or background that is too elaborate or contains excessively detailed ornamentation that obscures the movement of actors or detracts from the logical center of interest on a scene.

cable reels. Reels on mobile units used to hold camera cable, etc.

camera. A unit containing the optical system and light-sensitive pickup tube, which transforms the visual image into electrical impulses.

camera-field angle. An angle of divergence from a parallel line inscribed by the borders of the camera picture at various distances from the lens.

camera field angle scale. A triangular, transparent plastic scale, whose converging sides indicate the width of the picture picked up by a specific lens at prescribed distances from the photographed object. Inscribed lines on the scale also indicate the height of the picture at corresponding distances. This scale is used in conjunction with a "stage plan" in laying out and designing settings and in planning camera shots.

camera light. A light on a camera, which is on when the camera is on the air, otherwise off.

camera right-left. An indication of direction in a setting as viewed

from the point of view of the camera or as seen on the kinescope; as opposed to "stage right" and "stage left," used in the theater to indicate a direction as to the actor's left or right as he faces the audience.

cans. Telephone receivers or headphones worn by personnel in the studio.

carrier wave. The radio wave over which television impulses are sent. In television two waves are utilized, one for sight and one for sound.

cartoon set. A drop or other background treated as a large line drawing suitable as a setting for some types of variety or educational programs or to create mood, as in a fantasy.

cathode-ray screen. The fluorescent material covering the inner surface of the picture end of the kinescope.

cathode-ray tube. A vacuum tube employing a controlled beam of electrons. The iconoscope, kinescope, and cathode-ray oscilloscope tube come under this classification.

cell. See *Transparency.*

centering control. A knob or knobs on the television receiver for framing the picture properly on the television screen.

channel. A specific wave length; a band of frequencies for transmission.

circulation. Potential audience in terms of families owning receivers; one family, regardless of the number of sets it owns, equals one unit of circulation.

close-up shot. Very narrow-angle picture, *i.e.*, head shot of person.

coaxial cable. A specially constructed cable used extensively for the transmission of the television signal because of its relatively low loss of power at the higher video frequencies.

construction units. Stock structural units (serving the same purpose as "flats" or "wings" in the theater) and architectural or plastic pieces, which may be combined in various juxtapositions to provide a basis for a television set. Such elements may be repainted or redecorated.

contrast. The brightness relationships between the various elements of a picture.

contrast control. A knob on the television receiver for adjusting the range between the high lights and shadows in the picture.

contrast range. The range of light values between the lightest and darkest elements of a transmitted picture.

costume definition. A quality in a costume that through contrast in tone quality, texture, or design makes it stand out distinctly from the background or from surrounding objects without the agency of special lighting.

crowfoot. Three-legged device placed under tripod to prevent television cameras from slipping.

cue light. See *camera light.*

demonstration. A special television program produced for client and agency viewing but not for public distribution.

diorama. A miniature setting usually employing free perspective in its execution and used as a means of establishing large locations, impossible of construction in the studio. In actual practice, small, local areas of such a diorama may be produced in actual size to accommodate actors.

direct-viewing receiver. A type of television receiver in which the picture is viewed directly on the end of the kinescope.

disc. A recording.

dissolve. The momentary overlapping of an image produced by one camera with that of another and the gradual elimination of the first image.

distempera. Dry (powdered) scene paint mixed with animal glue, standard in the theater.

dolly (noun). A perambulator or four-wheeled carriage for a camera.

dolly in. To move in from far for close-up by means of a camera mounted on a perambulator.

dolly out. Reverse of dolly in.

dramatic or scenic lightning. Special lighting effects utilized to establish a mood or to indicate time of day.

dresser. A person responsible for the delivery, checking, and handling of costumes for individual program units. Also handles minor alterations and repairs in the course of rehearsals and broadcasts and checks in all costumes included in the broadcasts.

dressing. Properties, set decorations, *objets d'art*, and other definitive material added to a setting to provide character or interest.

electron beam. A stream of electrons constrained and focused into the shape of a beam by external electrostatic or magnetic fields. Also called Cathode-ray beam.

electron gun. A system of metallic cylinders arranged in the narrow ends of both the camera and receiver tubes, in which the electron beam used for scanning the image before the television camera, and for reproducing it in the television receiver, is formed.

elevation. An orthographic representation of an object expressed as a front view without perspective.

facilities director. The supervisor of all matters of scenic equipment in the production of a program, coordinating production ideas with stage set, costume, make-up, properties, etc.

fade in. To bring up the television image electronically so that it appears gradually.

fade out. Reverse process to black out television image electronically so that it disappears gradually.

false ceiling. Term used to describe various devices such as partial ceilings, beams, etc., utilized to create the effect of a room enclosed from above without effecting an actual covering, which would prevent effective overhead lighting.

field pickup. The transmission of out-of-studio events by mobile-unit cameras.

film pickup. The electronic transmission of motion pictures from film by means of television.

film strip. A sequence of several 35 mm. frames shown individually.

film studio. A studio equipped for televising motion-picture film.

filters. Lens filters used to eliminate or reduce a portion of light spectrum.

fixed installation. Permanent installation.

flag. A large sheet used to screen off light from cameras.

floor light. Light at studio floor level used for modeling.

floor plan. See *staging plan.*

focusing control. A knob on the receiver used for bringing the picture into sharper definition.

forced perspective. Distorted perspective with an arbitrary eye level, placed above or below normal, to provide more depth. Widely used on stage, in films, and in photography.

frame. A single complete picture.

frame frequency. The number of times per second the complete frame is scanned.

free perspective. The deliberate falsification of normal perspective in the painting and/or construction of television (or stage) settings in order to achieve a (seemingly) greater depth or distance.

freeze it. Term used to indicate that set designs and arrangements, or positions of furnishings, dressing, etc., or other production facilities are approved and should be executed as planned.

getaway. An offstage means of descent from raised flooring areas within a set. Also a passageway behind settings provided as a means of unobserved access to other settings or locations within the television studio.

ghost. An unwanted secondary image of the transmitted picture appearing on the receiver kinescope, caused by a reflection or several reflections of the transmitted signal.

give. Direction to actors to get into their parts and act.

gizmo. Generic term. In television, anything for which a technical designation is lacking or has been forgotten by the speaker.

gobo. A dark mat used to shield camera from lights.

ground glass. Glass in camera viewing system on which image is projected for viewing by cameraman.

ground row. Built, cut-out, or actual natural materials imposed before a mural background or painted drop to conceal the point of departure between the actual depth in the front of the picture and the flat execution in the background, *e.g.*, walls, stones, bushes, trees, grass, etc.

hand props. Movable materials of all kinds utilized by actors in portraying their roles. Also any of numerous small items used to dress a set.

head room. The leeway between the actor's head and the actual top

of any setting. Refers to the amount of upward camera movement possible without overshooting a set.

high hat. A camera mount for use on table top or other such waist-high object.

hot light. A concentrated light used in the studio for emphasizing features and bringing out contours.

iconoscope. A camera pickup tube used in the RCA television system, consisting essentially of an electron gun and photosensitive mosaic plate enclosed in an evacuated envelope.

image-orth (abbreviation of image-orthicon). A supersensitive camera tube developed by RCA capable of picking up scenes in semidarkness.

inky. An incandescent lamp.

interlacing. The technique used in scanning each 525-line definition picture in two sets of alternate lines to eliminate flicker.

j.i.c. Just in case.

key light. Over-all general illumination.

kill. To order the elimination of any thing in the studio, *e.g.*, "kill the chair" or "kill that light."

kinescope. A cathode-ray tube having a fluorescent screen used to reproduce the television picture in the RCA receiver or monitor.

lens turret. An arrangement on a camera that permits several lenses to be mounted on the television camera at one time to facilitate rapid interchanging.

line. A single scanning line across the picture containing high lights, shadows, and half tones; 525-line definition is the standard for television.

line amplifier. Amplifier that supplies signal to a transmission line.

line pickup. Transmission of signals by means of metallic conductors —coaxial cable or equalized telephone cables.

link transmitter. A radio relay transmitter used as one means to achieve a video network. A booster for a remote pickup or from studio to main transmitter.

live talent. Television broadcast of animated or live subjects.

live-talent studio. The place in which live action is televised directly.

live titles. Titling material that is photographed directly by television cameras in the studio rather than supplied from slides or film.

local (adjective). Restricted to local station as opposed to network.

local (noun). Announcement of station identification.

lose the light. Term used in directing cameras, *e.g.*, "Move to your next position when you lose the light."

magniscale. An object produced in larger than actual size in order to make clear and effective detail that would otherwise be incapable of effective television reproduction.

make-up. Facial make-up, etc., on actors.

masking piece or *wall.* A wall section arbitrarily included in a setting to provide a backing for acute changes in camera angles.

35 *mm.* Standard motion-picture-size film.

16 *mm.* Small-size (generally home-movie) film.

miniature. A small-scaled setting or display usually used to establish a locale; a maquette. (See also *special effects.*)

mobile unit. Field equipment mounted in trucks and, generally, used only in such vehicle.

model or *model set* (noun). A small-scaled execution of a television set employed in planning stage business or camera movements.

model (verb). To order to move expressively before the camera, *e.g.*, as in fashion shows.

modeled detail. Moldings, pilasters, and superficial decoration actually executed in relief to maintain the impression of realism despite changes in camera approach.

monitor (noun). A control kinescope.

monitor (verb). To check action or review productions on a kinescope.

mosaic. A large number of photosensitive elements covering the mica plate in the television camera tube, which is backed by continuous conducting surface (signal plate). Its counterpart in a film camera is the photosensitive emulsion of the film.

multiple relay. More than one relay station.

mural background. A photographic enlargement of an exterior or other scene as a background or as a backing for practicable

openings in a set to give the impression that the photographic scene actually exists in the studio.

narrow-angle lens. Lens with narrow angle of projection, *i.e.*, picks up small portion of set at a given distance.

nemo. Broadcast originating in some location other than the television studios.

noise, background. The effect on the television picture of random disturbances such as those arising from thermal agitation in vacuum tubes in the video amplifying system, causing a grainy texture in the television image.

noise, interference. An unwanted signal picked up by the receiver, such as short-wave diathermy or radio frequencies from adjacent channels.

noodle. To play a few bars of background music or improvisation, usually behind titles, known as "noodling."

office set. A conventional arrangement of furnishings and wall units suitable as a stage setting for an interviewer or a news commentator.

on-the-air. Program in process.

optical lens. The lens focusing the image of the scene to be televised on the light-sensitive plate of the camera tube.

optical view finder. The device on a television camera that allows the cameraman to frame and focus accurately the desired portion of the scene to be televised.

orthicon. An extra-light-sensitive RCA camera tube used in field equipment for outdoor pickups.

p.l. Private line (telephone).

pan. To follow action to the right and left or up and down with the camera; to swing camera across a scene—*e.g.*, "pan left" or "pan right."

parabola. A special-direction-microphone mounting used to pick up crowd noise, band music, etc.

picture. The image telecast, but usually used with reference to the image as subject matter with form and content.

pipe. Telephone.

platter. A recording.

plug. A unit that fits inside another stock unit.

pointillage. A painting technique used in television (and in stage painting) to build up a simulated plasticity on a plain surface.

portable unit. Field equipment that can be installed where needed. Generally consisting of numerous "suitcase-size" pieces of equipment.

practicable. Real, actual, or intended for actual practical use, as opposed to simulated, painted, or "faked" detail or detail that is installed in a setting for purely decorative purposes—*e.g.*, a window may be added to an interior setting for architectural balance only, and may, therefore, be constructed or installed without consideration of actual use; but if the window is to be opened for a definite scene, it is so built and becomes a "practicable" unit.

production facilities. All the physical and material requirements of a television program, including scenic design, construction, and execution, painting, artwork, wardrobe, make-up, properties, titling, and special effects, both visual and sound.

production facilities department. A group set up to create all of the facilities requirements of a given production idea and to assemble all required materials such as sets, furnishings, properties, titles, effects, costumes, etc., and to supervise and coordinate all physical staging activities during rehearsals and broadcasts.

projection receiver. Television receiver incorporating a principle of optical projection, as distinguished from direct-viewing television receiver.

projector. A motion-picture or slide projector.

properties. All physical materials used in a scene, such as furnishings and decorations, or utilized by actors in portraying their roles.

rf pickup. Radio-frequency transmission of a video or audio signal.

relay point. Location of relay transmitter.

relay station. Generally a radio-frequency transmitter located at a remote point from the main transmitter to relay its signal to a more distant point.

release studio. Expression directed by producer to studio personnel, indicating end of broadcast and "off the air."

resolution. Degree of reproduction of the detail of a scene after transmission through an optical system, electron system, or complete television system.

ring mike. Microphone installed over the ring at boxing and wrestling matches to pick up referee instructions and ring sounds.

roll it. A cue to start the film projector.

save the lights. Order to switch off the lights. (The term "douse it" is also used.)

sawtooth. A wave of electric current or voltage employed to control scanning.

scanning. The process of electronic analysis of the optical image, focused upon the mosaic of an iconoscope, by means of a moving electron beam, into a series of parallel horizontal lines traced from left to right in sequence from top to bottom in the manner of reading a page of print.

scenic elements. See *Construction units.*

schmidt-optics. A principle of optical projection used in some projection-type television receivers.

scoop. Multiple-lighting units in the studio.

script girl. Director's assistant in matters of script preparation, clearance, editing, etc., and prompter in rehearsals.

set up. To install a set in studio. To install equipment for a broadcast using portable equipment.

shadowing. Simulating by paint treatment or exaggerating a natural shadow that cannot be effectively created through the use of lighting alone.

shooting off-over. Taking in areas in a given camera shot beyond the horizontal or vertical limits of an established setting. Masking walls (pieces) may be provided to rectify this difficulty.

signal. Any transmission of electronic waves.

slide. Usually a title or picture on a single 35-mm. film frame projected into camera.

snap. Relates to contrast and sharpness of a picture.

special events. Programs of news interest (generally not regularly scheduled material), *e.g.*, sporting events, parades, etc.

special effects. Miniatures, dioramas, and various electrical and mechanical devices used to simulate meteorological or other

natural phenomena, which are used to achieve scenic or dramatic effects impossible of actual or full-scale production in the television studio.

spot. The spot of light formed by the impact of the electronic scanning beam in the receiver that reproduces the televised picture on the fluorescent screen of the kinescope.

spots. Spotlights.

staging coordinator. A supervisor of production facilities on an individual program in charge of construction, transfer, and assembly of settings and all mechanical and physical materials; is directly responsible for the operation of the carpentry and property personnel. The coordinator has responsibilities comparable to those of the stage manager in the theater with regard to all aspects of the program with the exception of talent.

staging plan. A scaled print or plan of the studio or stage floor upon which are imposed indications showing the location of walls, settings, doorways, furniture, sound effects, orchestra, the disposition of various properties, and working areas. The staging plan is a prerequisite to all developments, scenic execution, set dressings, and camera-movement planning and is used by the producer-director to plot physical action and business prior to rehearsals in an actual setting.

stand-by (noun). Anything, such as an announcer or a film, held in reserve to be used only if necessary.

stand by (verb). Instruction given to cast or crew that program is about to go on the air.

station break. A cue given by a station originating a program to network stations signaling that it is time for individual stations to identify themselves to local audiences.

still. Photographic or other illustrative material that may be used in a television broadcast.

stretch. Stall for time.

strike. To take down (scenery), to remove from stage.

superimposition. The overlapping of an image produced by one camera with the image from another camera; a blending or merging of images to any desired amount.

super-sync. A radio signal transmitter at the end of each scanning line, which synchronizes the operation of the television receiver with that of the television transmitter.

switch. To switch from one camera to another; a change of camera angles.

synchronization. The process of maintaining synchronism between the scanning motions of the electron beams in the camera tube and in the cathode-ray tube in the receiver.

synthetic distortion. Painting technique utilized to impart seeming irregularity to lines and surfaces that are actually smooth and rectilinear.

take it away. "You're on the air."

talk back. Phone circuit from director to announcer on nemo broadcasts.

technical director. The director of all technical facilities and operations—lighting, cameras, sound—in a studio production.

telecast. A television broadcast.

telechrome (paint). An arbitrary scale of neutral values augmented by warm or cool secondary or tertiary colors; a pigment prepared especially for decorating television settings. Telechrome has two purposes: (1) to imitate or simulate all colors and (2) to eliminate the excessive use of black (in grays) by substituting a neutral, composed of two complementaries, to achieve a gray tonal value equivalent to the color as it occurs in nature.

telephoto lens. Lens of very narrow angle used to provide large-size images at extreme distances.

televiewer. A member of the television audience.

televise. To transmit pictures electronically by means of television equipment.

television. The transmission and reproduction of a view or scene, especially a view of persons or objects, by any device or apparatus that converts light rays into electrical impulses in such a way that they may be transmitted and then reconverted by a receiver into visible light rays forming a picture.

test pattern. Television transmission of a schematic design, especially made for correct focusing and tuning of the image.

texture. A feeling of depth and irregularity imparted to a plain surface through the use of paint or other decorative techniques. (See also *pointillage.*)

tilting. A vertical movement of the camera.

title artist. Artist or draftsman who prepares titles, cards, signs, title backgrounds, maps, special displays, slides, etc.

titles. Any titles used on a program; can be motion-picture film, cards, slides, etc.

top light. Light from the region of the ceiling.

transparency. Illustrative or written material executed on a transparent surface through which background material of various types may be seen as the transparency is photographed by the television camera.

trim. See *Dressing.*

tripod. Camera mount.

truck (verb). To dolly in parallel motion with a moving figure, *e.g.*, to follow a person walking down the street.

variety program. Productions devoted to specialty acts.

video. Pertaining to the television broadcast of images; sometimes used as a noun to designate sight broadcasting as opposed to sound broadcasting.

video signal. That portion of the output of the television camera that is the electrical counterpart of the scene televised. (Also called "picture signal.")

viewing lens. Lens on camera used solely for viewing field of action by cameraman.

vox pop. Any spontaneous interview.

wall treatment. Technique used to simulate various surfaces on the walls of a setting, *e.g.*, stucco, brick, stonework, wallpaper, etc.

wide-angle lens. Lens having wide angle of view, *i.e.*, picks up broad area of set at a short distance.

womp. A sudden flare-up of brightness in the picture.

woof. Telephone slang used by television engineers to signify "O.K. and good-by."

Index

T