

# NBC TELEVISION



When it started to rain in Washington, D. C., during a recent public telecast, the delicate equipment was shielded from the water with cellophane.

During telecasts, live and film subjects are interchanged. These men are preparing headings and titles which are an important part of the show.



C. W. Farrier, NBC  
Tele-Coordinator

**T**ELEVISION is one of the scientific wonders of the age. The intricate process of converting a light image into electrical impulses and transmitting these through the air for reconversion at the home receiver into a replica of the original picture is as fascinating as it is frequently baffling. Eventually, however, television will be judged, not on its technical perfection, but on the program it delivers. Men will cease to marvel at the marvelous and begin to accept pictures through the air as a commonplace of everyday life. New generations of children will take this amazing art for granted just as we now take the automobile for granted. The big question, now that television is technically on its way, is, therefore —What are we going to do with it?

We hope, of course, to make television economically self-sustaining through the sale of a portion of our time on the air. Sponsorship of commercial programs has made American sound broadcasting the most flexible system in the world. In the same way we hope to make television a vital instrument of public service. We anticipate nationwide networks and trans-oceanic program relays of such events as the coronation of a King of England, momentous diplomatic gatherings and international sports events. NBC has already announced that it will televise the next Presidential Inauguration at Washington in January, 1941. These are things of the future. Meanwhile, during a period of rather severe technical and economic limitations, our plans must be more modest. Just what television will offer in its immediate program service is not yet determined. Audience reaction will, in the last instance, dictate.

We have, however, in a period of nearly three years of constant research and experiment in television programming at NBC, discovered what we believe to be some of the fundamentals of the new art. The program must proceed at a pace slightly more rapid than that of motion pictures; it should have the smoothness of the finished stage production and yet possess the informality of an excellent radio program.

It appears that there is little program material that will lie outside the province of television. The NBC staff,

# SETS THE FACE

by **C. W. FARRIER**  
NBC Television Co-ordinator  
New York City

under the direction of Thomas H. Hutchinson, has presented dramatic material ranging from ten-minute skits to longer pieces approaching the forty-minute length. It has given us variety shows, educational programs, outdoor broadcasts and films of all descriptions. On occasion it has blended live talent, film, stills and special effects into a single television program.

A troupe of trained dogs, "Fats" Waller, acrobatic dancers, Shiela Barrett, jazz bands, magicians and almost every other type of entertainer have done their stuff for the Iconoscope camera at Radio City. Men of learning have actually shown the microscopic life in a drop of water and demonstrated the intricacies of photo-electricity over the television system. Piano, dancing and fencing lessons have gone out on the air from the NBC studios. The NBC mobile units have picked up the graceful gyrations of Hazel Franklin, Vivi-anne Hulten and other renowned figure skaters on an outdoor rink. They have made successful visits to the zoo and broadcast the first interviews, both day and night, from the sidewalks of good old New York City.

At the end of nearly three years of experimentation at Radio City, during which time we have expanded not only the program possibilities but also the technical facilities that open up still more opportunities, we are still not certain what will make a good television show. But we have done what all others must do—we have learned by experience that some material does not make good television and that many other things will make interesting programs. And we have accumulated the experience essential to putting some of these programs on the air. Most important, we have a staff of technicians who know television apparatus, its possibilities and its limitations, and a group of program directors familiar with the basic principles of television production.

Although television will inevitably be compared to the movies, it has certain well defined characteristics that set it apart from all other media of entertainment and education. Television is complete, instantaneous and actual. The performer on the screen of a receiver is there—close, real, alive—even though he be in a studio fifty miles distant. No other form that I know has this quality to so marked a degree.

Nor can any other informative medium compete with television in the  
(*Televise further on page 62*)

***The author reveals for the very first time what the feverish secret activity at NBC has all been about.***



Television setups resemble those used in making motion pictures to a marked degree except that about four times the lighting is necessary.

In mobile work, signals are sent from the trailer and are re-broadcast by the main station. This saves the extreme cost of long co-axial cables.



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**NBC Television**  
(Continued from page 29)

matter of instantaneous transmission. The fire on Ward's Island, broadcast by the NBC mobile television station last September, was seen by viewers at Radio City while the blazes still leaped into the air. So too, will the sports events and other remote broadcasts we expect to televise have this same quality of suspense, a quality now most closely realized by sound radio. Television alone can tell a complete story whose end cannot be foretold when the story begins to unfold. Television tells a story that cannot be told by sight alone or by sound alone. The audience cannot get a more complete account except by being on the scene itself when an event is occurring.

In discussing the mechanics of picking up a television program, I shall confine myself to live talent studio productions. From a technical standpoint, they are the most difficult of the three general types of program. We may depend on outdoor program material lending itself to television. In any case, we shall probably have no more control over the greater part of the outdoor material we televise than we now have over the subjects of remote broadcasts over our radio networks. Film programs present no problems not taken care of by special projection apparatus and the proper selection of film material.

Let us take a glimpse into the main studio at Radio City. Here, under batteries of overhead lamps which furnish key lighting of several sets adjoining one another on the studio floor, are three Iconoscope cameras. Two of these are on "pedestals" and may be raised or lowered by a silent, motor-driven mechanism. The third is mounted on a standard motion picture "dolly." All move noiselessly before one or more of the stage sets, each taking the successive "shots" indicated on an operations chart drawn up for each camera operator. Lighting technicians apparently find whatever space they can to maneuver standards and an ingenious, flexible lighting "dolly" to give the modeling illumination that lends depth to the televised subject. A boom microphone always hovers above the action, following the cameras from set to set. Separate cables carry the electrical outputs of cameras and microphones to the studio control room, located at one end of the room at a level considerably higher than the studio floor.

The control room is the nerve center of the unfolding television program. There are made the final decisions on image characteristics, sound quality and the televised "shots" that go into the broadcast. Flanked on either side by control engineers, the program director selects the image to go out on the air from one of the three monitoring Kinescopes. "Cuts" from one camera to another, or "fades" where these give more artistry to the

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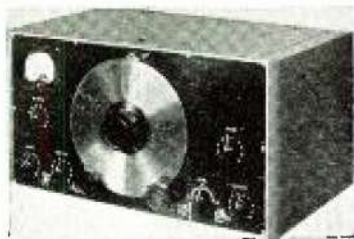
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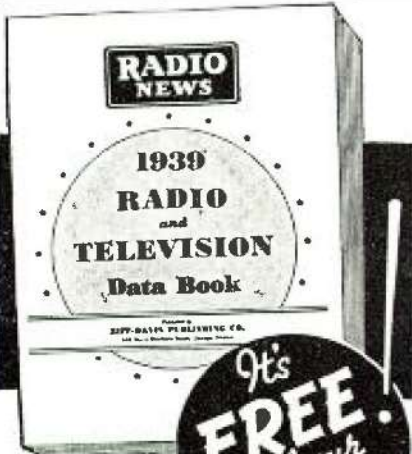
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production, are made at the touch of pushbuttons. A second control engineer busies himself with each image's overall lighting, and the shading of its various sections. Sound is monitored and controlled in the manner prevalent in sound broadcasting. The studio staff communicates over private line telephone circuits.

The limitations of the television camera have placed an undue importance on textures. Colors apparently identical sometimes appear very different to the Iconoscope. In one instance, about a year ago, a gentleman in a dinner jacket—with woollen body and silk lapels—came out of the Kinescope with a gray jacket trimmed in black.

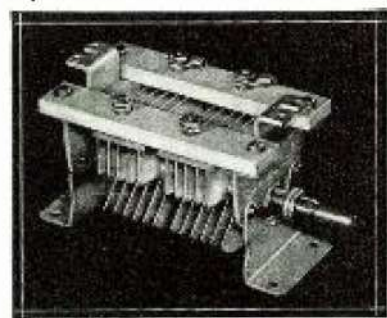
We have also found it necessary to use comparatively intense lighting to produce programs in our studios. Curiously, our outdoor work has resulted in excellent pictures even under what seemed poor light conditions. Our studio lighting, however, is of about the same intensity as that employed in the production of color films and about twice that used in the production of black-and-white films. Despite this comparatively intense lighting it has been found possible to introduce considerable modeling light from standards and mobile lighting devices on the floor. An entirely new art of studio lighting may arise as the result of experiments in the tele-studios.

Fortunately, none of these obstacles to better television are insuperable. The Iconoscope becomes better month by month. I feel certain that we shall soon find it possible to reduce the amount of studio lighting and make impressive gains in the matter of focal depth. I am sure that with the experience our staff has accumulated during our years of experiment and research we shall surprise even ourselves in the progress we make in all directions once we are on the air regularly.

It is important to emphasize that the problems I have enumerated are essentially transmitter problems; they do not apply to the design of receiving sets. The transmission standards chosen for the launching of an American television service, we feel, are the most advanced in the world. More than that, however, they offer room within their limits for vast improvement in picture quality. In other words, we at the broadcasting end of television can brighten our pictures, improve their detail and eliminate many of the faults that we, who are close to the technical situation, are aware of without necessitating a single change in any of the receivers to be marketed about the time of the opening of the New York World's Fair of 1939. Which is exactly as it should be. The enjoyment of continually improving television pictures and programs will be the lot of the receiver buyer; the headaches will remain with the broadcaster, where they belong.

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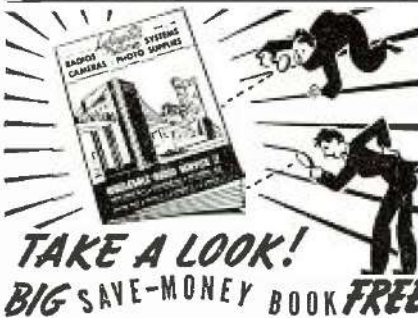
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