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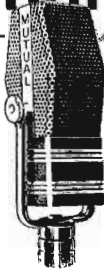
THE 1946  
YEAR BOOK  
OF  
TELEVISION

*Edited by*

*JACK ALICOATE*

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1501 Broadway, New York 18, N. Y. Wisconsin 7-6336

# LEADERSHIP REQUIRES VISION



*First in the West with*

- ★ ALL-TELEVISION STATION
- ★ TELEVISION BROADCASTING
- ★ ALL-TELEVISION BUILDING
- ★ FREQUENCY MODULATION
- ★ ALL-FM BUILDING

*First on the Pacific Coast with*

- ★ NETWORK RADIO BROADCASTING
- ★ COMPLETE RADIO COVERAGE (39 Stations)

# NOW

— Don Lee has acquired a television site of the height considered most advantageous for both Television and Frequency Modulation Broadcasting. Don Lee's purchase of a site on the top of Mount Wilson, home of the world-famous Mount Wilson Observatory, will give KHJFM and W6XAO a transmitter height of 5,900 feet for Television and Frequency Modulation Broadcasting. No finer location could be obtained in all Southern California.



**Broadcasting System**



# TELEVISION

Radio Daily presents the first edition of the Year Book of Television . . . a mellowed reflection of the past, a colorful show window of today and a happy preview of things to come.



We believe that Television will soon break through the dam of reconversion difficulties. . . . Its place in the sun, alongside of the stage, screen and radio is already assured.

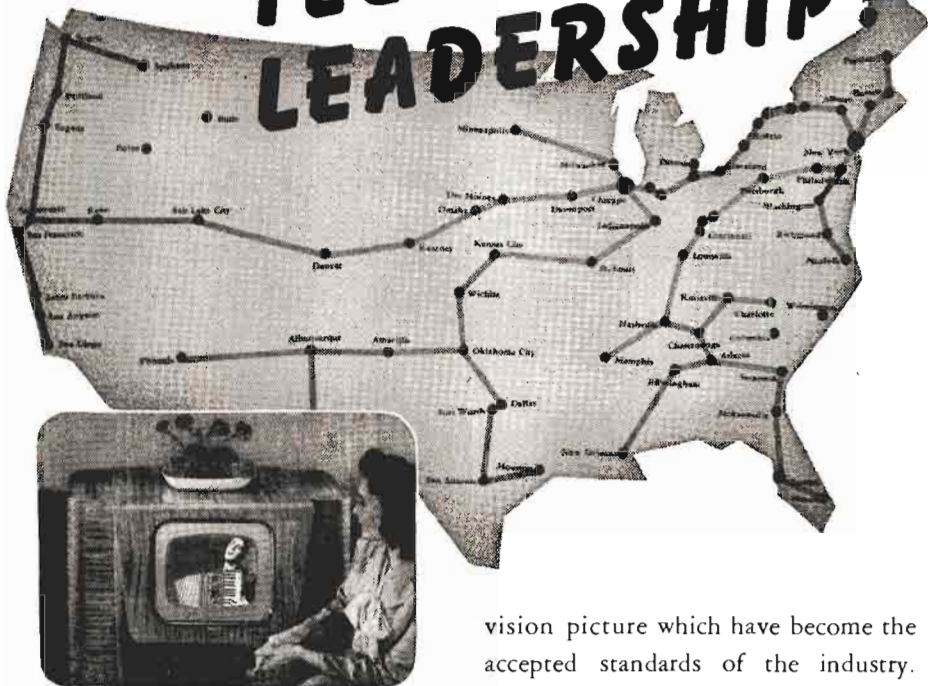


In the meantime it is hoped that the pages that follow will be of help to the explorer in the field of video . . . To those who have helped we are indeed deeply appreciative.

*JACK ALICOATE*  
*Editor*

## Setting the Stage for

# TELEVISION LEADERSHIP!



SINCE 1928, Philco's pioneer contributions have played a leading part in the progress of television.

In *television reception*, perhaps the most important factor will be the quality of the picture. And Philco scientists and engineers . . . more than any other research group . . . have been responsible for constant improvement in the clarity, sharpness and detail of the tele-

vision picture which have become the accepted standards of the industry.

In *television transmission* . . . Philco engineers designed and constructed the world's first multiple-relay television system to link two major cities . . . Washington and Philadelphia. Rapid development of nationwide networks can follow the pattern of this Philco relay system . . . thus bringing television entertainment to *national* audiences!

Look to Philco for continued pioneering . . . for leadership . . . in television.

# PHILCO

*Famous for Quality the World Over*

# Television To-Day —and Tomorrow

By FRANK BURKE, Editor, RADIO DAILY

**T**ELEVISION—lusty infant of the electronic age—which suffered growing pains during 1945 now stands on the threshold of a boom era.

Despite the production setbacks and delays incident to channel allocations, television progressed during 1945 with leaders laying the foundation for network development, standardizing equipment, and educating the public on the potentialities of the new visual art.

Among the important developments of the past year was the FCC's action in allocating television channels in 140 major markets throughout the country, the completion of a coaxial cable network linking Washington and New York and the experimental networks using microwave relays and booster stations.

Applications received by the FCC indicate approximately 150 television stations are sought by broadcasters throughout the country. Most of the applications come from key center cities, and if production of transmitters gets underway it is expected that at least 10 new television stations will take to the air during 1946.

Television set manufacturers view 1946 as a banner production year with OPA difficulties eased. One manufacturer predicts that 200,000 new television receivers will be in the hands of consumers before the end of the year and that a potential market of millions of receivers awaits production and sales schedules.

The battle of frequencies continues with two schools of thought airing their views on whether television should develop immediately in the low frequencies with an acceptable black-and-white image or wait until ultra high frequency color television is fully developed for commercial acceptance. In the black-and-white field RCA recently demonstrated an excellent image using the new image orthicon camera and improved receivers. On the other hand CBS staged press previews of color television using a new

transmitter and a vastly improved mechanical scanning system.

## Production Gets Underway

While the battle of the frequencies is being waged RCA, Philco and General Electric are going right ahead with the manufacture and merchandising of black and white receivers which are expected to range in price from \$150 to deluxe models as high as \$1,000. Proponents of color, while not geared at present to produce receivers, forecast that color television sets will be available within six months and that the cost of these receivers will not exceed 10 per cent more than the conventional black-and-white sets.

As the industry gets in the stride the ranks of the so-called "experts" continues to grow. Television institutes and schools are springing up in New York, Chicago and the west coast and layman interest in video continues to grow. In many instances "experts" have talked and written themselves out on the subject of television and left advertising agency executives, potential sponsors and others wanting more specific information on the visual art.

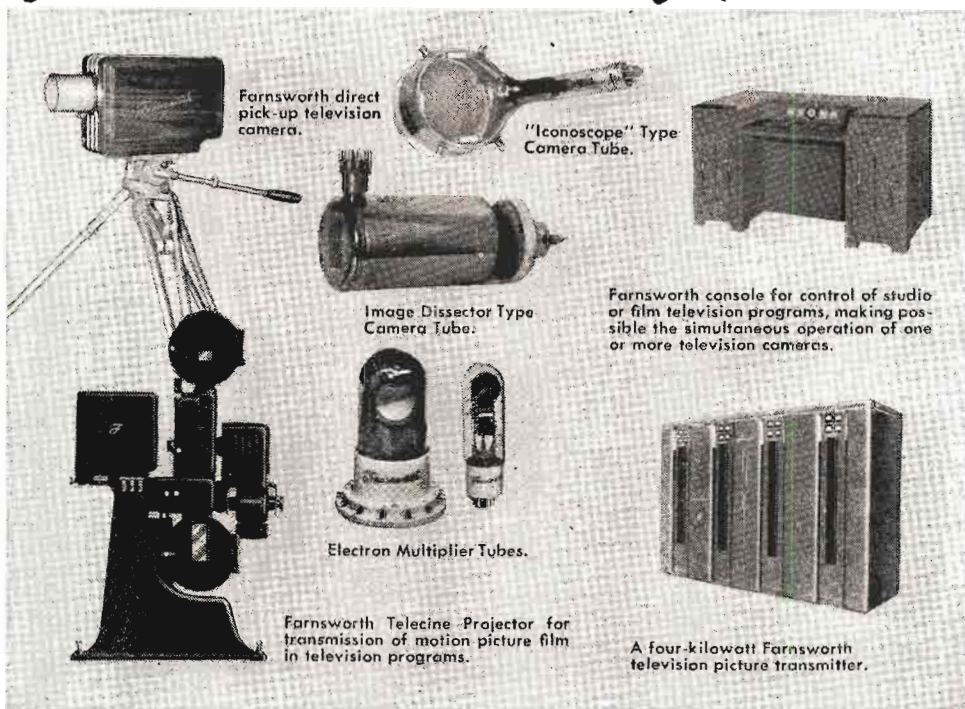
Intra-store television looms as an important phase of video merchandising with experimental installations having been tried out in Philadelphia and Jamaica, L. I. The Philadelphia demonstration, staged by Gimbel's store in collaboration with RCA, attracted large crowds and proved that visual merchandising was practical. Similar results were obtained in Jamaica with the demonstration operating on a smaller scale.

In conclusion the best appraisal of the future of television was made by Paul Porter, ex-FCC chairman, during the inauguration of the coaxial link between Washington and New York on Lincoln's Birthday. Porter said that communications, including television, would become a \$6,000,000,000 industry, would create many new jobs and carry "a great re-conversion load in the next few years."

Look to the pioneer...

# FARNSWORTH...

for Better Television Equipment!



Farnsworth! The name you think of *first* in television! With a rich heritage of eighteen years of experience in electronic television, with increased plant facilities, with war-acquired skills and techniques, Farnsworth is ready to meet the industry's need for communications, broadcasting and television transmission and reception units, including technical equipment for laboratory use.

# FARNSWORTH

*Television · Radio  
Phonograph-Radio*

FARNSWORTH TELEVISION & RADIO CORPORATION, Fort Wayne 1, Indiana

Farnsworth Radio and Television Receivers and Transmitters • Aircraft Radio Equipment • Farnsworth Television Tubes  
Halstead Mobile Communications and Traffic Control Systems for Rail and Highway • the Farnsworth Phonograph-Radio  
the Capehart • the Panamuse by Capehart

# Television Gains Via Wartime Use

*By D. F. SCHMIT, Director of Engineering, RCA Victor Division*

UNLIKE many of the newer wonders which are ushering in the Electronic Age, television is not a "war baby." Television graduated from the laboratory to the state of a limited public service some years before the war. Many public demonstrations were given, transmitters went on the air in several of the larger American cities, and television receivers were purchased and used in some 10,000 American homes.

It has been during the war and the few months since its close, however, and partly as an outgrowth of wartime research for military purposes, that television has come of age. Having now attained its majority, it promises in the next year or two to become at least one of the most important, if not the most important, of all electronic services, in point of both its economic significance and its effect on the living of America.

## Major Developments

Several major developments contributing to the technical advancement of black-and-white television have come out of the RCA Laboratories and the various engineering development laboratories of the RCA Victor Division of the Radio Corporation of America during the war years. These include a new super-sensitive camera, new picture tubes that greatly increase the brilliance and clarity of the televised image, a large-screen projection system for home receivers, and new tubes and circuits which improve image quality and, at the same time, make it possible to design cameras, studio and control equipment, and receivers that are smaller, lighter in weight, and more compact than pre-war units.

Before the war, outdoor program material was limited by weather and the time of day, and indoor material required intensely brilliant artificial lighting. A screen image of adequate brilliance could be obtained only in a darkened room, and even then, definition left something to be desired. Home receiver viewing screens, occupying the face of the picture tube, were restricted in size by physical

limitations on the size of tube it was practicable to build, with the usual screen size about 7 by 9 inches.

## Program Possibilities

Today, with the super-sensitive RCA Image Orthicon in a lightweight, compact field camera, television producers have entered upon a vast new field of program possibilities, encompassing round-the-clock coverage of news and special events in any kind of weather, by sunlight, twilight, streetlight, or the ordinary indoor lighting of theaters, auditoriums, schools, churches, courtrooms, concert halls, and sport arenas.

With the new and improved RCA Kinescopes, set-owners may see television images possessing brilliance, definition, and contrast equal to those of motion pictures in a normally lighted room.

Prospective set-owners contemplating the purchase of de luxe television receivers for large rooms or relatively large family or social groups of observers may look forward to a screen image approximately as large as a full page of a newspaper, provided by the RCA Victor large-screen projection-type receiver.

The RCA Image Orthicon is possessed of light-sensitivity 100 times greater than that of prewar camera tubes and approaching that of the human eye. This extreme light-sensitivity is achieved by interposing a series of electron multiplier stages between the photocathode on which the light image is focused and the signal output, thereby amplifying the initial response to low light levels.

The vastly improved brilliance and definition of images obtained on new RCA Kinescopes have been achieved through advances in the design of electron guns and the development of luminescent materials providing increased efficiency and picture contrast.

## Large Screens

RCA Victor's projection-type receivers employ a reflective optical system, consisting of a spherical mirror, which picks up the image from the face of the pic-

ture tube, and a molded plastic aspherical lens, which brings the reflected and enlarged image to a sharp focus on a rear-projection type viewing screen built into the receiver cabinet.

In the new RCA Projection-Kinescope to be used in these large-screen receivers, light losses are minimized by means of a very thin metallic film behind the fluorescent screen, which acts as a mirror to keep light generated by the fluorescent screen, which acts as a mirror to keep light generated by the fluorescent material from radiating back toward the inside of the tube.

Although color television cameras and receivers employing mechanically driven color filters have been demonstrated experimentally by RCA, and promising results have been obtained, the company feels that this phase of television is still in the laboratory stage. RCA does not plan to market equipment in this field until a non-mechanical, all-electronic color system can be perfected to provide images equal in clarity to those obtained with the present RCA black-and-white all-electronic system.

Present uncertainties in the manufac-

turing situation preclude the fixing of a specific date for the beginning of distribution on new RCA Victor television receivers, but it is expected that the first table models will come off the production lines about the middle of this year, with console models following next autumn.

RCA Victor's manufacturing schedule embraces a variety of television receivers, ranging from a direct-viewing type employing a 7-inch kinescope (picture size about 4½ x 6 inches) to a de luxe large-screen projection-type console providing a picture about 15 x 20 inches. Auxiliary services such as AM and FM radio reception and record reproduction will be included in some models. Prices are expected to range from about \$200 for a table model to approximately \$500 for a large-screen projection model with AM and FM reception.

RCA Victor, which has supplied more television broadcast equipment than any other company in the world, expects to have the first of its new television transmitters and other station equipment items ready for distribution by late summer or early autumn of this year.

# Be Wise...

## FILMS DON'T TELEVISION

**Unless....** produced by the methods and techniques required for Telescanning, as against the present form of "movie" production that has been unsuccessfully applied, they will not conform to technical and electronic requirements and the exacting standards that should govern quality Television presentation.

As pioneer producers of Television Film Transcriptions, exclusively, TransVideo is prepared to place at the disposal of sponsors, agencies and stations, its unique "know how" in the production of films for Television.



### TransVideo Film Productions

INCORPORATED

112 PARK AVENUE

NEW YORK 17, N. Y.

MURRAY HILL 4-6628

972



# Color Television Of Tomorrow

By DR. PETER C. GOLDMARK, Dir. Engineering Research-Development, CBS

THE science of radio has continually probed for realism. In the aural field the fidelity of the sound has been improved bit by bit over the years until we can transmit over the air the full frequency range of the sound just as it would be heard by a listener on the spot. In the development of television, we have been following the same path. Now we are able to transmit a picture of a scene faithfully and completely, in natural colors, as it would appear to an observer on the spot.

In the field of electronics, the impulses carried on the air waves have been developed from the comparatively simple vibration of the wireless telegraph instrument, until today in the ultra-high frequencies around 500,000,000 impulses per second we are able to transmit the full, natural colors of objects before the television camera.

War research and employment of electronic discoveries, plus prior experience in field and laboratory, are the ingredients that make possible the new television in full color which the Columbia Broadcasting System has demonstrated and brought to the point of public commercial practicability.

By imposing the three primary colors one on top of the other in a rapid succession of impulses, the exact hues of the original object are transmitted to the eye of the viewer at the home receiver.

The ultra-high frequencies not only have brought us high definition color television, but because they permit the use of highly directional receiving antennas, they have made possible the absolute elimination of secondary images, known as "ghosts."

On the lower frequencies, these "ghosts" are the result of reflections. The image-carrying beam from the transmitter, strikes a high building or other obstruction and "bounces" off. In many instances both the primary wave, as well

as the image that has bounced off the obstruction, are picked up by the antenna and shown on the television screen at the receiver, thus giving a blurred image.

The directional antenna consists of a ten-inch horizontal bar, and a parabolic reflector six feet wide by eighteen inches high. The antenna can be turned in an arc to obtain the best image. The rotation of the antenna is controlled automatically by the station selector switch. On the low frequencies a directional antenna of similar properties would have to be sixty feet wide—obviously too heavy and clumsy to be practical.

The same characteristic of the ultra-high frequency which makes possible compact directional receiving antennas also makes it possible for us to achieve high gain in the transmitting antenna. Again the physical dimensions of the antenna are in favor of the ultra-high frequency. On the 71st floor of the Chrysler Building we now have installed an antenna with a gain of twenty which gives an effective power of 20 kilowatts to the CBS one-kilowatt ultra-high frequency transmitter.

On the subject of color fidelity of the CBS system, a number of questions have been raised as to the relative color quality of electronic and so-called mechanical systems. At the present time the CBS system includes mechanical elements. We have been and are working on an electronic system as well, but for the near future we see little hope of successful results. Moreover, it can be proven mathematically that the color quality of any electronic system cannot be superior to that inherent in the present CBS system. The reason for this is that the colors are today produced by filters of high mathematical and optical precision.

Moreover, when and if an electronic color system arrives, there is no reason why it need make obsolete any color receiver employing the CBS color system and in use at that time.

# TALK ABOUT IMPACT!...

**Just recently we invited the press to a preview of full color television in the ultra-high frequencies. Of course, we had planned running an ad on the event. What we hadn't planned was that the ad should be entirely (and glowingly) written for us. Here's what the press says about CBS color television.**

## **SAYS "TIDE"**

... CBS did not overlook the increased advertising potential of color. A women's style show, almost meaningless in monochrome, came to life in color. Even little things, like packages of cigarettes, do much better when seen in their familiar colors....

...The significance to the television industry of last week's demonstration would be hard to overstate....

The general reaction: "THIS IS IT!"

## **SAYS THE "DAILY NEWS"**

...the demonstrations prove that 3 great obstacles, once regarded by many as insuperable, have been overcome. First, CBS is able to generate sufficient power in frequencies above 300 megacycles to transmit satisfactory color images. Secondly, it modu-

lates a 10 megacycle video band, which most authorities said could not be done. Third, it has eliminated the bothersome reflections known as "ghosts", which have hitherto marred television pictures.

Ultra-high frequency color television, without annoying "ghost" reflections, is a reality....

## **SAYS THE "WORLD-TELEGRAM"**

CBS color video, in debut, proves beautiful beyond description.

...The image is sharp, distinct and completely realistic. Dr. Goldmark has given us a magic casement, and the vistas it will open should have a profound effect on every phase of the advertising and entertainment business, not to mention the arts, letters and sciences. It is a medium that

# here's how CBS full color television struck the press

calls for the best in all these fields.

...those who watched the CBS demonstration feel sure there will be a mad rush to buy television sets as soon as the public has a glimpse of natural color video.

## **SAYS THE "HERALD TRIBUNE"**

There were several new things about the demonstration. The signal was being transmitted in a full 360-degree arc from the Chrysler Building, rather than in a directional beam; one transmitter was sending both sight and sound, instead of a separate transmitter being used for each; there were no multiple reflections, or "ghosts" on the viewing screen; the colors appeared real. There was clear definition in the images as well...

## **SAYS "TIME"**

It was clearly—and colorfully—the most notable television demonstration of the year....The reception, as vivid as a Van Gogh painting, made black-and-white television look antiquated....

## **SAYS THE "WALL STREET JOURNAL"**

Television in color is a lot closer than most people had believed, it was conceded over the week-end by experts in the industry....

The pictures shown by CBS were clear and the color contrasts as good as those of the best color moving pictures. . . .

The CBS demonstration left little doubt that color television has reached the perfection of black and white....

## **SAYS "P.M."**

The long-awaited press showing of CBS color television demonstrated without doubt that they have achieved a dramatic refinement on image transmission....



**THE COLUMBIA BROADCASTING SYSTEM.**

# TELEVISION



# F T O M O R R O W



☆—Indicates Area Has Commercial Stations

Now Operating  
 Chicago—Two  
 Los Angeles—Two  
 New York—Three  
 Philadelphia—One  
 Schenectady—One

# Tele Sportscasting

By *BILL SLATER, President, Sportscasters Assn.*

AS I started to say in an earlier article in this Year Book, television has become so good in catching the sports picture that many sports executives are beginning to develop fears. In this field we may easily fall into what has become almost an occupational disease of the modern, scientific era—namely we can produce more than we can market without upsetting the economic apple cart.

Such an academic-flavored statement should be brought down to cases. That is easy. Consider the men who own professional baseball clubs. Their business has been built up through two generations of devising ways and means of getting John Q. Public to plunk down his money and make those turnstiles click. To these persons the question of whether or not television will keep fans away from the game is a vital matter.

Granting that it might be hard to find sponsors rich enough to pay the bill for a heavy loss in gate-receipts, and you have the makings of a first-rate impasse. On the question of what effect telecast baseball might have on the gate, there are, of course, two sides and you will find groups able to defend each side strenuously and with some logic.

There naturally follows the question of how feasible it might prove to have the games telecast from the park into movie houses, where it is easy to tax the customers as they come in.

Mike Jacobs has hopes of telecasting his fights—the best of all video sports bill-of-fare so far—into a string of theaters.

However it all works out, both radio-wise and video-wise, there are busy days ahead for sports spielers. And these days will be more than just busy ones.

CHARLES STARK

THOMAS CARR

## CARR-STARK, INC. RADIO-TELEVISION PRODUCTIONS

366 Madison Avenue

New York 17, N. Y.

MUrray Hill 2-2636

# Video Variations— Facts and Figures

*Tomorrow's television holds promise of getting in stride during 1946 with boom years ahead. The following is factual data on this new electronic industry:*

**E**STIMATED 7,500 to 8,000 pre-war television receivers now in use in the United States with about 5,000 of these located in Greater New York.

Applications for new commercial, television stations reached 143 on January 1 with the FCC adopting an allocation plan providing for 400 transmitters in the first 140 markets.

Leading manufacturers estimate new television sets will be priced from \$200 to over \$1,000 and it is anticipated that from 250,000 to 300,000 will be sold during 1946.

Seventy-five manufacturers, according to TBA, are ready to manufacture television receivers, transmitters and their components.

Network television developments include the opening of the Philadelphia-New York coaxial cable link of A.T. & T. on December 1 and the recent completion of the coaxial line between New York and Washington.

Television surveys indicate that the service will reach 64,754,900 persons within two years of full commercialization and over 72,000,000 persons with five years.

Paramount Pictures is expected to demonstrate large screen television for theaters in New York in August of 1946.

Use of television in education already being undertaken by the public school systems of New York and Chicago.

Television in Great Britain, discontinued in 1939, has been resumed on the 405-line standard.

Number of new television stations going on the air in 1946 is dependent upon availability of equipment from manufacturers and action by FCC in approving construction grants.

Controversy on merits of black-and-white television as compared to the ultra high frequency color television continues with RCA declaring monochrome ready and CBS reporting color past the experimental stage.

Programming schedule on nine operating commercial stations calls for 28 hours a week per station beginning in July, according to FCC regulations.

### Musical Audience Participation ("Breakfast Club")

Variety said, "...Don McNeill and his 'Breakfast Clubbers' proved that audience-participation shows provide sock entertainment for the video medium..."

Hollywood Reporter said, "McNeill and his Windy City gang proved the American web's theory that audience participation airers make good television fare..."

### Children's Programs ("Tele Tales for Children")

Variety said, "Those who viewed the Singing Lady of radio strutting her stuff in video for ABC last Friday were more than entertained—they were convinced that television had found itself."

### Sports

#### (Night Baseball)

Variety said, "...the tele department of ABC reached a new high last week in the tele filming of (Esquire's) sports event...came up with one of the clearest and most interesting sports events yet seen on tele."

### Special Programs

#### ("Letter to Your Serviceman")

Variety said, "Nine times out of 10 the variety format on television molds itself into a click show. The (ABC) video department has been the greatest exponent of variety stanzas for television with 'On Stage, Everybody,' 'Kiernan's Corner' and ... 'Letter to Your Serviceman' ..."

*Trade reviews tell you ...*

# Why ABC is on the

When we started in television, we knew that to make a success of it we had to establish a basic pattern in order to build television that was above all *practical*. In outline, it was something like this:

**1** America's *advertisers* had a lot to do with making radio the success it is today. By competing among themselves for larger audiences, they made programs increasingly better, with the result that they, the public and the radio industry all benefited.

**2** Advertisers and their agencies will play just as important a part in commercial *television*. For that reason,

the best approach to television is from the standpoint of making it a *practical, economical medium for advertising*.

**3** The logical place to begin the development of television is with what has already been learned about *listening audiences*. New and costly experimental work in new types of programs will play its part. *But right now the adaptation of proved, successful, economical radio shows with assured listening audiences is the industry's best bet in developing practical television.*

**4** Shows should be televised on regular weekly schedules, just as they are in radio, in order to build and hold television audiences. Just as radio listeners



**Musical Variety**  
(*"On Stage, Everybody"*)

Billboard said, "The show ran with a smoothness that is big-time... had everything—color, movement, integration, format and theme... there hasn't been anything on the air in a variety format that has been any better."

**Musical**  
(*"King's Record Shop"*)

Variety said, "Show... gives staunch support to a vast sector of the industry which believes that while video is in the toddling stage, programming keynote should be simplicity."

**Special Events**  
(*Navy Day Program*)

Billboard said, "Just about the best film record of New York's Navy Day celebration... a film which is a fitting document of our Navy and the public's reaction to it."

**Audience Participation**  
(*"Ladies, Be Seated"*)

Variety said, "... network execs know whither they are going. They have formulated a program policy of using network radio shows which have the best chance of scoring strongly when televised."

Billboard said, "It's funny, it's commercial and it's inexpensively produced... genuinely entertaining."

## Right Track in Television

look forward to hearing their favorite shows every week, so will video audiences expect continuity in their entertainment.

### The Plan Really Works!

How far that philosophy has taken us in just the past few months is best told in trade reviews of ABC video shows. Some of them are on this page. Read

them closely. What they say, in effect, is that in *all* types of video programs—audience participation, children's shows, night baseball, special events—ABC is not only on the right track, but off to a good start as well. That's why advertisers who want to get into television on a practical, economical basis are getting set on ABC today.

*Schenectady folks enjoyed special ABC Christmas television programs  
December 21, 24, 26, 27 and 28 on Station WRGB.*

# American Broadcasting Company

A NETWORK OF 195 RADIO STATIONS SERVING AMERICA

981

# Television Status In Great Britain

*By H. BISHOP, Chief Engineer of British Broadcasting Corp.*

IN 1943 the British Government appointed a Committee under the chairmanship of Lord Hankey to prepare plans for the reinstatement and development of the television service after the war. The Committee submitted their report early this year, and the Government have now announced that they have given general approval to the Committee's recommendations. The Committee conducted a comprehensive review of the pre-war television service, war-time research, and the steps which should be taken to provide and develop a post-war service.

## Committees

A similar Committee was set up in 1934 by the Government of the day to report how a television service might be started in Great Britain. It was as a result of this Committee's report that a regular daily service of high definition television was started by the British Broadcasting Corporation on the 2nd November 1936 from a television station erected at Alexandra Palace in the north of London. Two systems employing different technical standards were used, the Marconi-EMI and the Baird. They were using them during alternate weeks until February 1937 when it was decided that the technical standards used in the Marconi-EMI system should be adopted for all public transmissions from the London station. From February 1937 to the 1st September 1939, when the service was closed down due to the war, the standards remained unchanged, and were 405 lines, 50 frames interlaced, giving 25 complete pictures per second. The number of lines are a measure of the definition of the picture, and the number of frames, or complete pictures, determines the absence or otherwise of flicker.

These standards were chosen to give adequate picture definition with imperceptible flicker for ordinary domestic viewing. If a worthwhile improvement in definition is required, then the number of lines must be considerably increased, and this means that the technical complication, both at the transmitting and receiving ends, is also increased. The

standards we adopted were a compromise and represented what was economically practicable from the technical point of view at that time.

## Development

It may be of interest to say something about the development of television in Great Britain. With the aid of apparatus developed by Baird, the BBC started daily television transmissions of a somewhat primitive kind as far back as 1929. Research from that date to 1936 permitted the establishment of a television service which the Television Committee of 1934 felt would be acceptable to the public. The system employed and the design of the London Television Station at Alexandra Palace have been fully described in technical literature (principally in BBC publications and in the *Journal of the Institution of Electrical Engineers*) published before the war. The period between 1936 and 1939 was itself one of development, but of rather a different kind. The apparatus remained substantially the same but there were big improvements both on the technical and program sides in the utilization of the medium for the presentation of public entertainment.

Over 2½ hours' program a day was regularly transmitted, the time being divided between afternoon and evening sessions. In addition there were morning test transmissions for the set retailers. A wide variety of programs was produced both in the studios and outside in the grounds of Alexandra Palace. Initially these programs were of a simple character, but as time went on they became more ambitious, and producers learned how to make the best use of the technical facilities at their disposal. The studio programs ranged from tap-dancing and the lightest type of variety act to grand opera and drama. They included illustrated talks, music, ballet, revue, art exhibitions, fashion parades and frequent appearances in person of people in the news. Current newsreels were shown daily and cartoon films were frequently included.

### Topicality

Topicality is one of the essentials of a television service. With the development of the necessary technical equipment, it became possible to transmit a wide range of entertainment from places in the London area where interesting events, both in buildings and in the open-air, were taking place. There were for example successful transmissions of Royal Processions, the arrival of distinguished visitors at Victoria Station, the international tennis championship at Wimbledon, boxing, cricket and football matches, performances from London theaters, and many other notable events.

For these outside events two sets of mobile equipment mounted in trucks and completely self-contained were in constant use. The programs were conveyed to the transmitter at Alexandra Palace by land line or mobile radio link. For the former a special cable was laid round London, but where the point of broadcast did not lie on the route of this cable a method of using ordinary 40-lb. telephone pairs was developed to give the wide band-width necessary for television transmission.

This was the stage that television in Great Britain had reached at the beginning of the war. We were on the point of increasing substantially the studio facilities in London, and it was also our intention to extend the service as quickly as possible to provincial cities such as Birmingham and Manchester.

The war put a stop to it all, and it was the task of the Hankey Committee to recommend how the service should be restarted. There are two principal ways in which this might be done. It could begin again as it was in September, 1939, with minor improvements which have become possible since that time, or the resumption of a public service could be delayed until such time as a new and improved system could be brought into service.

### Guiding Delay

At first sight, it seems obvious that, provided the delay is not too great, the opportunity should be taken to restart with a new and improved system so that the public may have the benefit of a better service at the earliest moment and not be persuaded to buy sets which will be unsuitable for the improved system which will come eventually. However, the crucial point is whether in fact there is an improved system ready to be put into public service now. The answer is that there is not, although experimental systems are being tried out. The Hankey Committee considered that it

was of the utmost importance that there should be no avoidable delay in restarting a service in Great Britain and consequently they favored opening on the basis of the pre-war system rather than waiting for the development, manufacture and installation of a new system.

Critics will say that this new system has in fact already arrived and has been demonstrated. This is true, but as every engineer knows there is a vast difference between a laboratory demonstration and the operation of a regular service for reception by the public. The Committee quoted several reasons for their decision to start up again on the old system. They felt that the pre-war transmissions had achieved a high degree of reliability and afforded a consistently good entertainment value in the home. Moreover, with certain minor refinements and particularly with receivers of better design and quality, the good entertainment value of the 1939 service would soon be surpassed. It is a fact too that radio developments during the war, great as they have been, have not materially affected the television position. War developments are not immediately applicable to the production of a better picture in the home, and, consequently, if the reopening of the service were to be delayed until an improved system were available there might be a long gap without any service at all. Finally, the Alexandra Palace equipment fortunately escaped damage by bombing and can soon be made ready for service when the skilled staff (both program and engineering) again become available.

### Recommendations

The Hankey Committee recommended that plans should be made for extension of television to possibly six of the most populous provincial centers as soon as possible after the reinstatement of the service in London. These extensions would of course employ the London system. While this work was in progress they hoped that vigorous research on an improved system, having a standard of definition approaching that of the cinema and possibly incorporating color and stereoscopic effects, would be pursued with the intention that, when the new system was available, it should be introduced side by side with the existing system and eventually replace it. Finally the Committee discussed the financing of the television service, the aim being to make it self-supporting as soon as possible.

These are the recommendations which the British Government have accepted. It will not fall to the BBC, with the guid-

ance of an Advisory Committee, to carry out the work. It is inevitable, of course, that television should be compared with the cinema. Technically the definition of a cinema picture is far greater than a 405 line television picture, but on the other hand television has an actuality value which is lacking in the cinema. Moreover it is available in one's own home by the turn of a switch.

### Problems

The problem which confronted the BBC and the radio trade before the war will certainly confront them again. The number of television receivers sold in the London area before the war was about 30,000. Remembering that the Alexandra Palace station gave up a service up to a radius of about 40 miles embracing a population of some 10 millions, the number of those who bought receivers was small. Several reasons can be suggested for this slowness to buy on the part of the British public, but there were certainly two important ones. The first was that there was an unjustified air of experiment surrounding television. People were inclined to hold back until teething troubles had been overcome and until they thought that the service had been fully established. The second reason was the comparative high cost of a television receiving set. It is true that in 1939 receivers with a screen measuring about 7" by 5" and cost about \$100 were beginning to come on to the market, but a receiver with a screen of about 10" by 8", in my opinion a much more suitable size, cost about \$200 or more. This was a large sum for the British listener to spend, and he was unwilling to do so because he felt, quite wrongly that there was a doubt about the service being a permanent one and that there was a possibility that the set would become out of date in a very short time.

However, few of those who spent their money regretted their decision. Television was a nightly source of entertainment; it appealed to both grownups and children and its unique character took an increasing hold on those who participated in it. In passing I might mention that in my experience it was not easy to convert a doubtful purchaser by just one or two demonstrations. Visitors who came in to see the programs expressed great interest, but did not rush to their radio dealers the next day to play an order. Those, however, who eventually did so became confirmed television fans when they had had the set in their own homes for a week or so. This experience suggests that some kind of ex-

tended trial period in the home of the prospective purchaser will be necessary, at any rate, until television sets become more common than they are at present.

### Technical Standards

When television begins again in 1946 the British viewer will find that the service will not have changed because the technical standards will be the same as before the war. There will undoubtedly be developments in the design of television sets within the limits of the present standards. Pre-war receivers did not always make full use of the whole of the transmitted band width and the picture suffered accordingly. One looks forward to improved cathode ray tubes, more reliable components, larger screens, and perhaps the application of miniaturization to enable the overall size of television sets to be made smaller without reducing the size of the picture. There are many difficulties to be overcome in extending television to the provincial cities.

### Question of Costs

Apart from technical problems, the over-riding question associated with television is cost. In Great Britain we consider, as a yardstick, that everything connected with television, programs, equipment, number of staff and so on, is ten to fifteen times as expensive as the equivalent requirement for sound broadcasting. Before the war, the BBC operated sound broadcasting and television with the income received from receiving licenses which all listeners have to have. During the war, special arrangements were made and the BBC was financed by grants voted by Parliament. No decision as yet been made on post-war finance, but whatever is done provision for meeting the cost of television must be included. The Hankey Committee recommended that the aim should be to make television self-supporting as early as possible, but they felt that the precise manner by which this was to be achieved was one for further consideration. There is certainly some hard thinking to be done on this subject. The pre-war television frequencies were 45Mc/s for vision and 41.5Mc/s for sound. It is our intention to restart the service on the same frequencies so that no changes will be necessary to the receivers already in the hands of the public. When an improved system is introduced, higher frequencies will be used. Vigorous steps are being taken to overcome electrical interference with reception and it is hoped that there will soon be legislative powers to enforce suppression.

# Television Ready For Biggest Year

By JOHN F. ROYAL, V.-P. in Charge of Television, NBC

TELEVISION is fast shaping up for its biggest year. Programmers are readying for the day when 28 hours of telecasting a week will be routine. Receiver manufacturers are gearing up for the largest sale of sets in the industry's history. Hundreds of new groups—advertising agencies, sponsors, cooperating groups—either now are in television or preparing to enter it soon. Networks and stations are recruiting personnel for jobs in an expanded industry—an industry that will doubtless come nearer its full flowering in 1946 than in any year prior to this.

This is the status of television today: there is in existence a complete television system, capable of being flung across the nation to form a countrywide network. Black-and-white network television is no longer a dream. Telecasts between long distances have already been made and are out of the laboratory, experimental stage. There is a known system of television transmission, of television distribution, of television reception. Vast new electronic developments in transmission—like the RCA Image Orthicon camera—in distribution, like the Bell System's coaxial cable—and in reception—like the greatly enhanced black-and-white sets recently demonstrated by RCA—assure the viewer of greatly improved pictures comparing favorably with home movies.

Through television in 1946 we will become familiar with every gesture of our Congressman as he rises for debate on Capitol Hill, we will learn to know and respect our neighbors in other lands, we will see the televising of important news events, of great Broadway plays, of developments in science, in education.

Turn for a moment to two recent new program developments that will find their way to the television screen through the facilities of NBC's television station WNBT. Look first at the first permanent series of regularly-scheduled educational programs ever attempted in television. These are being produced in cooperation with the New York City Board of Education and stress the fields of physical

sciences. Groups of students and teachers each week witness these programs in our studios and comment upon them with an eye toward giving the broadcaster and the educator an indication of how the two agencies can cooperate.

Second of these new developments is the recent agreement made between NBC and the Dramatists Guild. This series, expected to start in the fall, will be titled "Broadway Preview" and will have a two-fold aim: to expand the market for new writers who otherwise would be unable to bring their plays to the attention of Broadway stage producers, and to provide needed material for television by good writers. Material—good material—is the bread-and-butter of any entertainment medium. Nowhere is this more true than in television—which will doubtless eat up material even faster than any of its predecessors in the entertainment field.

Under the agreement, NBC will televise plays written for Broadway production by members of the Dramatists Guild. Producers will be invited to attend these previews of plays by television.

With these immediate new developments—and a host of others in preparation—NBC Television is well-prepared to pioneer further and to expand its program operations. Last year, the station more than doubled its time on the air—jumping its weekly output from ten to twenty hours. This is more than twice as much as any other operating station in the country. This year, 1946, will see a steady accretion of program time which will reflect an increase in all three types of television broadcast techniques: studio, outside pickup and films.

The Dramatists Guild arrangement, as well as numerous other dramatic plans will bring an appreciable increase in variety, dramatic, and educational shows from the studio.

This is the outlook for the year 1946—the year that is certainly providing the springboard for the greatest activity in television this country has ever seen.



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# TELEVISION TALK

## A MODERN GLOSSARY

(Courtesy Caldwell-Clements, Inc.)

### A

**AMPLITUDE**—The magnitude of any quantity, particularly voltage or current.

**AMPLITUDE MODULATION**—The periodic variation of the voltage or current in a circuit in accordance with some signal being transmitted.

**ANTENNA**—An electrical circuit for radiating or receiving electromagnetic waves (radio).

**ASPECT RATIO**—The ratio of picture width to picture height. Now 4:3.

**AUDIO**—(I hear.) A term applied to any part of a radio or electrical system handling frequencies in the audible range.

### B

**BAND-PASS FILTER**—An electric circuit which will transmit frequencies between two limits and reject others outside those limits.

**BANDWIDTH**—The number of cycles per second required to convey the information being transmitted either visual or aural.

**BLACKER-THAN-BLACK**—A portion of the television signal devoted to synchronizing. These synchronizing signals are transmitted at a higher power than the blackest part of the picture, so that they will not appear on the screen.

**BLANKING**—The process of cutting off the cathode ray during the time it is not forming a part of the picture. This occurs when the spot returns from the far right to begin the next line and from top to bottom to the top of the picture.

**BLOCKING OSCILLATOR**—A type of oscillator which generates intermittent signals used for scanning in cathode ray tube.

**BLOOM**—The condition of overall bright illumination of the picture tube obscuring any picture detail.

**BOOSTER ANODE**—A conductive coating placed inside a cathode-ray tube near the screen and because of a high positive voltage applied to it, causes a brighter picture.

**BRIGHTNESS CONTROL**—A control on the receiver for regulating the overall brightness of the picture.

### C

**CAMERA TUBE**—The electron tube used to translate a scene into electrical impulses.

**CARRIER**—The term applied to the high frequency radio wave which is modulated by the audio and video signals.

**CATHODE**—The electrode in a tube from which electrons are obtained, usually by heating or by photoelectric effects.

**CATHODE RAY TUBE**—An electron tube in which streams of electrons from a cathode are formed into a pencil-like beam and directed by means of electric or magnetic fields over a target, usually a fluorescent screen which glows wherever the beam strikes.

**CHARACTERISTIC IMPEDANCE**—The input impedance of a transmission line infinitely long or a short line terminated in its characteristic impedance. The impedance is independent of length and depends on size of conductor and spacing.

**CLIPPER**—A circuit used to separate signals of different amplitudes. In television these circuits are used to separate the synchronizing pulses to the video and signal.

**COAXIAL CABLE**—A particular type of cable capable of passing a wide range of frequencies without the usual prohibitive losses. Such a cable in its simplest form consists of a hollow metallic conductor with a single wire accurately confined along the center of the hollow conductor.

**CONTRAST**—This refers to the ratio of black to white portions of a picture. Pictures having high contrast have very deep blacks and brilliant whites, while a picture with low contrast has an overall gray appearance.

**CONTRAST CONTROL**—A control on the receiver which regulates the video signal strength. This has the effect of changing the ratio of the black and white portions of the picture. It corresponds to the volume control in an aural receiver. is performed.



**CONTROL ROOM**—Studio facilities from which television cameras, lighting, shading and mixing is performed.

**CYCLE**—One complete set of values in any series of phenomena which repeats periodically. In radio this usually refers to one complete range of values for either voltage or current.

**D**

**DAMPING CIRCUITS**—These circuits are used to prevent high voltages from being induced in the deflection coils when the current changes suddenly.

**DC RESTORER**—This circuit regulates the average brightness of the television picture tube to correspond with the average brightness of the scene being transmitted.

**DC TRANSMISSION**—This term applies to circuits which will pass zero frequency.

**DEFLECTION**—The movement of the cathode ray beam by electric or magnetic fields.

**DEFLECTION YOKE**—The combination of coils used to direct the cathode ray up-and-down and right-and-left to form the image.

**DELAY SCREEN**—A fluorescent screen used in cathode ray tubes, which has the property of phosphorescence. The light intensity of any particular spot dies out gradually after the ray moves to a new position when this material is used.

**DIFFERENTIATING CIRCUITS**—These circuits respond to the rate of change of a pulse and are used in synchronizing the receiver scanning.

**DIODE**—A vacuum tube having two elements, one of which emits electrons (the cathode) and the other the anode. It is used for rectification (detection), that is the conversion of alternating currents into direct currents.

**DIPOLE ANTENNA**—An antenna consisting of two conductors, usually of equal length extending in the same straight line, with a pair of lead or feeder wires connected at or near the inner ends, is known as a doublet. For short waves the physical dimensions are such that self-supporting metal rods or tubes can be used.

**DIRECTOR**—A section of an antenna used to increase the pick-up from the side on which the director is placed.

**DISSECTOR TUBE**—The special type of television tube used in the pick-up camera in the Farnsworth system.

**DISTORTION**—Any change in the original frequency, amplitude or phase of a radio signal.

**DIVERGENCE**—The spreading of a cathode ray stream due primarily to the mutual repulsion between the electrons that compose it. The function of the focusing arrangement in the tube is to counteract this effect.

**DOLLY**—The movable stand upon which the television camera is mounted.

**DOUBLE SIDE BAND**—When a carrier is modulated by a plurality of signal frequencies, two distinct bands of frequencies appear, due to the modulation process, one on each side of the carrier frequency.

**E**

**ELECTRODE**—A metallic conductor introduced into a vacuum tube for a specific purpose. It must be electrically connected to the external circuit. In general each electrode is referred to by its specific use, such a cathode, grid, anode, etc.

**ELECTROMAGNETIC FOCUSING**—A system in which magnetic fields parallel to the motion of the electrons are used to confine them to a narrow beam.

**ELECTRON GUN**—That part of a cathode ray tube in which the electrons are emitted, formed into a beam and deflected.

**ELECTRON LENS**—A systematic arrangement of electromagnetic or electrostatic fields, having symmetry about the axis of a cathode ray tube, as to their radial components, established for the purpose of controlling the divergence and convergence of the electron ray.

**ELECTRON MULTIPLIER**—An evacuated amplified tube in which one or more anodes have photoelectric surfaces which are exceedingly active as to secondary emission. The original electron emission is cascaded by the secondary effects.

**ELECTRON TUBE**—A device employing a cathode, an anode and possibly additional electrodes for controlling the volume and direction of flow of electrons which constitute electric current.

**ELECTROSTATIC FOCUSING**—A system in which electric fields are employed to confine the electrons into a thin stream.

**EMISSION**—The continuous liberation of electrically charged particles, either ions or electrons, into space (usually evacuated) from a surface. The most important case practically is where these particles are negatively charged, i.e., electrons.

**EQUALIZING PULSES**—These are signals transmitted after each vertical synchronizing pulse to insure correct start of horizontal sweep circuit.

## F

**FACSIMILE TRANSMISSION**—The electrical transmission over wires or radio circuits of printed records and pictures. While this term originally referred to black-and-white reproductions only, it is now considered to include processes producing half-tone and shaded effects as well.

**FADE-OUT**—A camera technique in which a scene is gradually dimmed from view.

**FIDELITY**—The faithfulness with which a system reproduces audio or video signals.

**FIELD**—This term refers to one set of scanning lines making up a part of the final picture. In present standards, pictures are transmitted in two fields of 262½ lines which are interlaced to form 30 complete frames per second.

**FLUORESCENT SCREEN**—A chemical coating on the inside of a cathode ray tube which emits light at the point where a cathode ray beam strikes.

**FLYBACK**—In scanning, the spot is moved across the screen at a definite rate in one direction for each scanning line, thereupon, it is necessary to restore it to start of the next line in a very short interval of time, say three or four millionths of a second. This return time is termed flyback.

**FOCUS**—In a cathode ray tube this refers to the size of spot of light on the screen. The tube is said to be focused when the spot is smallest. This term also refers to the optical focusing of the camera lenses.

**FRAME**—One of a series of complete pictures that are successively viewed so as to simulate moving scenes.

**FRAME FREQUENCY**—The rate at which frames are sent each second in the various moving picture and television applications.

**FRAMING CONTROL**—This control on a receiver adjusts the picture repeat rate to that of the transmitter. It is also called the vertical hold control.

**FREQUENCY**—A term applied to the rate of repetition of voltage or current or other periodic functions.

**FREQUENCY MODULATION**—A process by which the carrier frequency is modulated in accordance with the information to be transmitted.

**FUNDAMENTAL**—The basic frequency of a wave or sound. It is sometimes referred to as the "first" harmonic.

## G

**GAS-FILLED TRIODE**—A type of vacuum tube in which the elements operate in an atmosphere of gas, such as mercury, argon, helium, etc.

**GHOST**—A secondary picture formed on a television receiver because the signal from the transmitter reaches the antenna by more than one path. Ghosts are usually caused by the radio signal being reflected from objects within approximately one mile of the receiver antenna.

## H

**HALATION**—The ring of illumination which surrounds the point at which the electron beam strikes the fluorescent screen.

**HALFTONE**—A method whereby photographs having various degrees of lights and shadows can be reproduced in ordinary printing, using a system of dots which are substantially undistinguishable to the unaided eye. However, the dots are graded as to size or density so as to produce the highlights and shadows of the pictures.

**HARMONICS**—In electrical and radio circuits the fundamental current waves are usually accompanied by others whose frequencies are equal to some whole number multiple of that fundamental. These multiples are also called harmonics.

**HEAVISIDE LAYER**—The ionosphere. A region of ionized air some fifty miles above the surface of the earth. Its lower boundary acts as a reflective surface or "mirror" for radio waves. Rapid changes in the height of this lower boundary and its contour causes much of the radio interference and fading.

**HETERODYNING**—The process of changing frequency by combining the received signals with the output of an oscillator tube in the receiver.

**HORIZONTAL CENTERING**—The position of the picture with respect to the axis of the cathode ray tube. This is accomplished by a control on the receiver.

**HORIZONTAL HOLD CONTROL**—A control on the receiver for adjusting the number of lines per second to correspond with that of the transmitter.

I

**ICONOSCOPE**—A designation used by RCA for a particular type of cathode ray tube developed for the purpose of picking up the scenes to be televised. It is the essential part of a studio camera.

**IMAGE DISSECTOR**—A television camera tube developed by P. T. Farnsworth in which the photoelectrons are moved past pickup aperture by deflection circuits.

**INTEGRATING CIRCUITS**—Circuits used to add up the energy of a number of repeated pulses. These circuits are used in the receiver for synchronization.

**INTERFERENCE**—Random electrical signals which cause noise in the audio system and disrupt the picture in television. This includes automobile-ignition impulses, some diathermy apparatus, neon signs, etc.

**INTERLACING**—A system whereby the odd numbered lines and the even numbered lines of a picture are sent as two separate fields and superimposed to create one frame or complete picture.

**ION SPOT**—A discoloration on the center of the screen of a cathode ray tube caused by heavy negative ions striking it.

K

**KERR CELL**—A chemical solution which changes its light transmission characteristics when electric fields are applied to the solution. An early form of a television reproducer system no longer used.

**KEYSTONE EFFECT**—A distorted field or background noticed in some cases with television pictures, where the opposite edges are not parallel.

**KINESCOPE**—A name applied to the cathode ray tubes used in the television receivers built by RCA.

L

**LENS**—A radial field (electrostatic or magnetic) applied concentric with a cathode ray to concentrate the diverging electrons into a single slender beam, is called a lens.

**LINE**—The path covered by the moving electron spot. The intensity of the spot along this path is altered to create that portion of the picture. In present system 525 lines make up the complete picture.

**LINEARITY**—A term used to refer to the straightness of a characteristic curve, or a portion of that curve, that shows the relation between two quantities or circuit factors. The uniformity of distribution of a regular pattern on a picture tube.

**LINE FREQUENCY**—The number of lines scanned each second. In any system it is equal to the number of scanning lines per frame, multiplied by the framing frequency.

**LINE OF SIGHT**—A straight, unobstructed path between two points.

**LIVE TALENT**—"On-the-spot" televising of events and people in contrast to transmission of film material.

**LUMEN**—A lumen is a unit of light flux. A foot-candle is equal to the illumination that falls on a screen that is placed one foot away from a standard candlepower. One foot-candle is equal to the lumen per square foot of surface.

M

**MEGACYCLE**—A total of one million cycles.

**MICROPHONE BOOM**—The arm which carries the microphone above the area being televised.

**MICROWAVE**—This term generally refers to radio waves having a wavelength of less than one meter, that is, one having a frequency greater than 300 megacycles.

**MODULATION**—A process of altering the amplitude, phase or frequency of a radio carrier in accordance with the information to be transmitted.

**MODULATION GRID**—An electrode interposed between the cathode and focusing electrodes in a cathode ray tube, to control the amount of emission and thereby the brilliance of the spot. This controlling effect is produced by altering the voltage of this grid with respect to the cathode.

**MONITORING**—The technique of controlling, at the transmitter, the picture shading, and other factors involved in the transmission of both the scene and the accompanying sound.

**MONOSCOPE**—A television camera tube which contains a simple picture or pattern used for test purposes.

**MOSAIC**—The screen used in an Iconoscope so called due to its similarity to that form of art wherein a great many bits of colored tile are combined so as to form a picture.

**MULTIGRAPH TRANSMISSION**—The condition in which the radio signal from the transmitter travels by more than one route to a receiver antenna usually because of reflections from obstacles. This condition usually results in ghost pictures.

N

**NEGATIVE GHOSTS**—Ghost pictures in which the black and white areas are opposite to those of the real picture.

**NEGATIVE TRANSMISSION**—This has to do with the polarity of transmission of a television signal, or the direction of modulation to produce the light and dark parts of the picture. In negative transmission a white area corresponds to a decrease in the carrier amplitude.

O

**ORTHICONOSCOPE**—A television camera tube combining some of the features of the image dissector and Iconoscope.

P

**PANNING**—(From panorama). A camera technique in which a large arc of the scene is shown by swinging the camera around a central point.

**PEAKING**—A technique of increasing the response of amplifiers at some particular range of frequencies.

**PEDESTAL**—A portion of the television video signal used to blank out the cathode ray beam as it flies back from the right edge of the picture to the left.

**PHASE**—A term used to designate the time relation between the maximum points of two recurrent electrical quantities such as voltage, current, etc. It is expressed in degrees of a circle, one complete revolution of which represents one cycle of one of the waves.

**PHASE SHIFT**—Any change in the phase relations of current or voltage.

**PHOTOELECTRIC EMISSION**—The phenomena of electrons being emitted from certain materials when they are exposed to light.

**PHOTOELECTRIC TUBE**—A tube in which electrons can flow to a charged anode when light falls on the tube causing emission.

**PICTURE ELEMENT**—A small section of a given scene as reproduced by the cathode ray spot at any instant.

**PICTURE NOISE**—Interference signals causing spots of light and other irregular patterns on the received picture.

**POLARIZATION**—A term usually applied to the position of the transmitting antenna, that is horizontal or vertical. The receiver antenna should correspond in most instances to that of the transmitter. At the present time horizontal polarization is standard.

**POSITIVE TRANSMISSION**—A television system in which maximum radiated power from the transmitter corresponds to maximum white area in the picture. Not used in this country.

R

**RADIO CHANNEL**—The "space" in the frequency spectrum allotted to each station. In present television standards the channel is 6 megacycles.

**RASTER**—A term applied to the group of lines appearing on the cathode ray tube in the absence of an incoming video signal.

**REFLECTOR**—A part of an antenna system used to prevent pick-up of signals in one direction and increase it in the opposite direction.

**RELAXATION OSCILLATOR**—A type of circuit which oscillates periodically. Used to generate scanning voltages.

**RETURN TRACE**—The lines on the cathode ray screen formed as the cathode ray beam moves back to its starting position.

S

*SAW-TOOTH*—A voltage or current whose variation with time follows a saw-tooth outline.

*SCANNING*—The process of forming a picture by a spot of light of changing intensity moving at high speed from left to right and in a sequence of rows or lines from top to bottom.

*SCANNING LINE*—One line from left to right of a picture being transmitted.

*SENSITIVITY*—A measure of the ability of a receiver or other device to produce a given output for a given input.

*SHADING*—The process of correcting the light distribution of the image produced by the television camera. This is a part of the station monitoring job.

*SIDE BANDS*—The groups of frequencies higher and lower than the carrier which contain the information being transmitted and produced by the process of modulation.

*SIGNAL*—The electrical impulses which represent the sound or picture elements being transmitted.

*SPECTRUM*—A band or range of frequencies.

*SPOT*—The light produced by the slender beam of electrons on the fluorescent screen.

*SWEEP*—The uniform motion of the electron beam across the face of the cathode ray tube.

*SYNCHRONIZATION*—The process of keeping the moving beam of electrons at the picture tube in the exact relative position with the scanning process at the transmitter.

T

*TELEVISION*—Literally, seeing at a distance. A system of transmitting a scene by dividing it, by a scanning process, into a great number of elemental areas and representing each area by an electrical signal. The electrical signals are received and used to control the intensity of a spot of light to correspond to the light and shade of each original picture area as the spot is moved over a screen, in synchronism with the scanning at the transmitter.

*TELEVISION CAMERA TUBE*—A cathode ray tube used to convert light and shade portions of a scene into electrical signals.

*TELEVISION PICTURE TUBE*—A cathode ray tube in which a picture being transmitted is recreated by a moving beam of electrons.

*TEST PATTERN*—A drawing containing a group of lines and circles, etc. transmitted for receiver and transmitter test purposes.

*TRAP*—A circuit used to reject unwanted signals.

*TRIMMER*—A device which permits a resonant circuit to be tuned over a limited frequency range.

V

*VESTIGIAL SIDE BAND TRANSMISSION*—A method of suppressing part of one side band to limit bandwidth requirements.

*VERTICAL CENTERING*—The control which regulates the position of the picture vertically on the screen.

*VERTICAL HOLD*—A control on the receiver to adjust the field rate of the scanning to that of the transmitter.

*VIDEO*—(I see.) The portion of the television signal which contains the picture information.

*VIEWING MIRROR*—A mirror used to reflect the image formed on the picture tube at a convenient viewing angle.

Y

*YOKE*—A set of coils used around the neck of a cathode ray tube to produce horizontal and vertical deflection of the electron beam.

# ***American Tele. Society Awards For 1943-4-5***

## **1943 PLAQUES**

- To WRGB, General Electric, Schenectady
- For the station contributing most to programming in 1942
- To WNBT, National Broadcasting Co., New York
- For the station contributing most to television as a public service

## **1944 PLAQUES**

- To WABD, DuMont, New York
- For the station contributing most to the art of commercial television
- To WRGB, General Electric, Schenectady
- For the station contributing most to the art of television programming
- To W6XYZ, Television Productions, Inc., Los Angeles
- Honorable mention for adaptation of motion picture techniques to television
- To Norman D. Waters, ATS President, 1941-1944
- Special Service Award

## **1945 PLAQUES**

- To Ruthrauff & Ryan, Inc., New York, for Lever Bros. show
- For the most consistent effort in developing effective television commercials
- To WNBT, National Broadcasting Co., New York
- For the most consistent sports programming
- For the outstanding television program, "Men in White,"  
directed by Ed Sobol
- To WCBW, Columbia Broadcasting Co., New York
- For the best educational program, "Opinions On Trial"
- For the outstanding news program, "CBS Newscast," with Everett Holles

## **1945 SPECIAL AWARDS**

- To WABD, DuMont, New York
- For the development of television commercially
- To W6XAO, Don Lee, Hollywood
- For making television facilities available for commercial development  
on the West Coast
- To WBKB, Balaban & Katz, Chicago
- For preparing the midwest for commercial television
- To Klaus Landsberg, W6XYZ, Television Productions, Inc., Los Angeles
- For constant technical excellence in television production
- To WRBG, General Electric, Schenectady
- For the best institutional commercial, "Conquest Over Darkness"
- For the outstanding contribution to children's programming
- To Paul Alley, WNBT, National Broadcasting Co., New York
- For the outstanding editing of news films, "The War As It Happens"
- To WPTZ, Philco, Philadelphia
- For developing football television technique
- To Paul Mowrey, American Broadcasting Co., New York
- For preparing the American Broadcasting Co. for television
- To Dan Halpin, ATS President, 1944-1945
- Special Service Award

# Television Acting Viewed by Expert

By DR. JOHN REICH, *Dir. of Video, Studio Dramatic Arts, N. Y.*

**T**HERE are two principal groups of radio actors today: a larger and younger group which grew up in radio and has little stage experience or none at all; and a smaller and older group which received its training on the legitimate stage, but has grown rusty in many years of radio work. The number of radio actors who are also active on stage and in pictures is small, indeed.

Television today is like a theater an hour before the performance: Money in hand, the audience is waiting to obtain seats. The technicians are ready. The stage is set. As yet the curtain is down, but already the cashier is lighting the box office. Sooner than the public expects, the play will begin—only to reveal the inadequacy of the actors.

## Situation Analyzed

The present situation of the radio actors is not as bad as was the plight of the silent picture actors when sound was introduced; for unlike the silent film, the old, blind, simple medium will continue alongside the new, visual complex one. Yet there are similarities between screen players then and radio players now. Just as some silent picture stars were not really actors but merely photographic models, so many radio performers today are not actors but merely "voices." Then as now, the advent of the new medium favored those who had learned their profession the hard way: on the legitimate stage. Television's coming of age will force radio "voices" to study acting, or else restrict them forever to the narrowing confines of sound broadcasting alone.

## New Skills Needed

Whereas radio's dramatic performers can use in television little more than a certain intimacy of speech and a sense of timing, they have to acquire new skills which cannot be mastered overnight. The radio "voice" must develop into an actor who "acts all over," i.e. with his emotion, his intellect, his body, and his voice. The television actor's principal skills to be acquired through careful instruction and constant practice are: Memorization, physical behavior, concentration, imagination, observation, co-ordination, and communion.

The first time the radio player sur-

renders his script and starts acting, he feels like a student of swimming when the teacher slackens the rope: Reproducing every speech from memory seems as difficult as remaining afloat. Not only are there one's own lines to memorize, but also many of the partners as well as gestures, movements, the handling of props and costumes. Like every serious student of acting, the radio player soon finds out that it is not a part the way he learned a poem or geography lesson at school. Those actors who claim they knew their lines at home but cannot remember them on the stage are not lying. The strain which results from being watched by colleagues and directors, together with the manifold distractions in the studio, account for a considerable loss in the memory's efficiency. Only with a 150 per cent sure-fire memorization can proper performance of the memory be assured.

## Physical Attitude Important

For his characterizations the radio player need not develop a physical attitude beyond watching his distance from the microphone. In television he is faced with the task of making his body both receptive and suggestive of thought and emotion. The sheer physical task is considerable. He must learn how to sit, to stand, to walk gracefully, to be well poised and balanced in every movement as seen from every angle. Unlike the human spectator, the television camera checks up on the placing of the feet, the gesture of the hand, the carriage of head and shoulders. The "voice" turned actor needs to acquire a sense of space, the ability of maneuvering between pieces of furniture and of expertly handling objects which seem like as many gremlins to the beginner. And all these requirements are only preliminary to the creation of behavior patterns not one's own, but suggestive of a character in a play. More specifically, television's standards of physical behavior are set not only by the actor's expressive body and by the requirements of his part, but also by certain studio conditions which vary not only with the studio but also with each program at the same studio. Thus, the actor's performance may be influenced

by the number and position of cameras and floor lights, the nature of the preceding and following programs, the size and number of locations, and the size and number of studios available for the production.

### Concentration Essential

Reading a well-typed script to a microphone in a comfortable sound studio is one thing; living a part before the cameras under the pressure of time and technical difficulties, is another. Only the exercise of full concentration can insure good video acting. Any scattering of concentration may produce a derailment of the actor's train of memory which cannot be rightened because there is no prompter. The player in television has to maintain his concentration despite many distractions of both an acoustical and a visual nature. The sound and music on the floor, whispered conversation in the corner, and the signal language of the floor manager; the ever-shifting cameras and individual lights; the cramped space and the (now improving) heat from the lamps: all that makes it hard, especially for radio actors, to maintain the artistic discipline so necessary for the delivery of their parts. While following prearranged directions, signals on the floor and, to a certain extent, the movements of all cameras, the performer must at all times stay completely in character, either in his own or in the one suggested by the author.

### Imagination, Observation Needed

In a blind medium which tends to characterize by voice and diction only, the radio actor's imagination is often content to suggest barely the speech habits of a dramatic character. In training for television, the broadcaster needs to develop his powers of imagination and observation in order to create all the physical aspects of a dramatic character: facial expression, posture, movement, gesture, attire, and the mode of handling properties. These physical aspects must be closely integrated with the character's speech and inner life. The radio actor has to learn how to create an image derived from the playwright's material and his own sum of instinctive and experienced emotions. Then he must transform himself into that image, so that the character's situations, objectives, and adaptations become his own. Seasoned with selected bits of observed reality, the imaginative approach by which the actor puts himself into the character's place, will make for honest and natural television acting. Radio's speech cliches will not work in television because the new medium exposes any insincerity of emoting, any crude pretension to being somebody else. If the actor lives the part, he

will forget his own stage fright and all the distractions around him. Only then will the camera be his friend.

### "Motor Responses" A Factor

The radio actor is not obliged to heed certain laws of psychophysics to which we are subject in our daily lives and which must be recreated in truthful acting. Because of his nearness to the reality of the viewer's home, the video actor—more than the stage actor—must learn how certain motor responses precede speech and how a sudden shock may freeze it. He must be able to reproduce that perfect co-ordination of emotion, thought, speech, and physical reaction which we easily possess in our daily lives but which is so difficult to obtain in acting. Because of the viewer's nearness to the set, and because of the frequent camera closeups, every flaw in the actor's co-ordination is easily detected on the home screen.

### Must Forget Mike

The average radio actor's real partner is the microphone. Most of the time he addresses that static little machine and gives but scant attention to the members of the cast. A radio performer of this type cannot become a good television actor unless he learns the art of communion; for by a constant stream of give and take the video actor, even more than the stage performer, keeps in ever-changing rapport with an animate or inanimate partner. The statement that the theater calls for action, the screen for reaction applies also to the television screen. The better the video player's nervous system is attuned to that of his partner or else pitched against it, the more convincingly will his reaction register on the magic tube. To be most effective, this communion of actor and partners must be physical, mental, emotional.

### Actors Must "Think"

Some radio actors will soon find out how dangerous television is to those who speak without thinking and think without feeling. The finest speech, the most graceful gesture, the keenest mind will fail to please unless the actor also exhibits an essential human quality of his own. Not only must he play the instrument of his personality with expert co-ordination; his personality must be a fine instrument. On the screen a face which fails to reflect an ever-changing kaleidoscope of thought and emotion like a still picture can hold attention only for three seconds. If radio actors can be made to act not from the depth of their voices but from the depth of their hearts, television may give us what the movies so rarely offer: a face mirroring a great emotion, a body transparent with the soul shining through.



# Chicago And Its Television Future

By *BILL IRVIN, Staff Correspondent, RADIO DAILY*

"CHICAGO has a television future if it realizes it. It has every possibility New York has for becoming a tele center. It just got started a little later, that's all. With the advent of a few hundred more tele receivers in Chicago we'll be in the big time in television here."

In those words no less an authority than William C. Eddy, director of television and FM for Balaban and Katz, sums up the Chicago television outlook. In his capacity as B&K tele director, Bill Eddy supervises tele station WBKB with a daily schedule which adds up to approximately 11 operational hours weekly. A television pioneer and long noted for his wizardry in radio and electronics, Bill Eddy knows whereof he speaks when he predicts a bright outlook for television in Chicago. His words also command attention when he says:

"It's more logical for Chicago to be the television center of the country because of its geographical location."

Aside from the geographical factor, Eddy points out that Chicago has the vitality, the wherewithal and the talent to make it a television center.

"We have set our goal to be the biggest and most important television station in the country," says Eddy, speaking of his plans for WBKB. "We at B&K are showmen. Our angle is not selling receivers. We are going to be salesmen of shows. We're taking advantage of every possible thing to increase quality and standards of programs. We have found a marked increase in sponsor interest, and also a marked increase in the use of professional talent. In the near future 90 per cent of the shows over WBKB will be commercial."

In line with his announced objective of making WBKB the biggest and most important tele station in the country, and indicative of his faith in Chicago's future place in television, Bill Eddy took the first step in his wide-scale expansion program for WBKB immediately after his retirement from the Navy a couple of months ago with the rank of captain. Until he put away his Navy

blues for the second time, the job of helping to make Chicago a television center second to none had had to wait while Bill Eddy finished his wartime job of training three-quarters of a million American boys in the intricacies of radar. His efforts after Pearl Harbor to get back into the Navy a second time met with repeated failure because of several physical defects, including deafness. It was the deafness, incurred during experimental depth diving tests after his graduation from the U. S. Naval Academy at Annapolis, that caused a naval board to put him on the retired list in 1932. It was his suggestion, however, that the navy needed a radar training center which finally paved the way for his return to navy blues for the second time.

Eddy's first move after returning to his civilian job at WBKB was to add a new hour-long program to its daily schedule, Mondays through Fridays. The time period is devoted mainly to experimental commercial and sustaining shows, with emphasis on spot plugs. The new period was added primarily to aid manufacturers in the Chicago area in the development of new type receivers. Increased demands for time as a result of greater agency interest in the development of new video programming techniques also was a factor, according to Eddy.

Another step taken by Eddy was the signing of a five-year pact between B&K and the management of the Chicago Coliseum for the exclusive televising by WBKB of all events taking place there during the next five years, particularly sports events such as ice shows, prize fights, basketball tourneys, roller derbies and wrestling matches.

Further assurance of Chicago's future dominant role in television is found in the FCC's allotment to the city of seven tele channels. As one television executive pointed out, that action by the FCC is a "challenge to Chicago to be a major television center."

Chicago also is a major link in a proposed television network in the middle west, the first step in the establishment of which the American Telephone and Telegraph Company recently took with the filing of applications with the FCC for authorization to build and operate micro-wave relay stations which would link the Windy City with Milwaukee. Such a system would cost approximately \$500,000 and, in the event of favorable FCC action on the applications, would probably be ready for tests early in 1947. Terminals of the system would be the Illinois Bell Telephone Company's long distance center in Chicago and the Wisconsin Telephone Company's toll building in Milwaukee. Three radio repeater stations would be built along the way, one near Barrington, Ill., another in Illinois but near Wilmot, Wis., and the third near Prospect, Wis. During the experimental period the system would be used for tele transmission in cooperation with tele station WMJT in Milwaukee and any other broadcaster who might be able to use the facilities.

Paul Mowery, director of television for the American Broadcasting Company, said that the network's plans for television activity in Chicago, while hinging on FCC action, are ready to be put into operation with the greatest possible speed.

"We are prepared to give television service in Chicago just as fast as possible," said Mr. Mowery.

How fast that will be is more a question of mechanics than training, he emphasized. The training of skilled television crews already is under way, so there will be no delay from the standpoint of competent personnel.

Station WGN long has had experimental television equipment on order. The date for starting such experimental operation, station officials said, depends wholly on when the equipment becomes available.

Marshall Field and Company, Chicago department store, has a post-war top priority for the purchase and installation of a General Electric tele system to be used as an intra-store selling and promotion medium. The Chicago store was the first to order a tele system of the non-commercial type. However, plans for the installation of the intra-store system have not yet been made. But store officials have indicated a strong interest in the possibilities of television as a sales medium. They believe it holds tremendous potentialities, both inside the store as a service to customers and outside as an advertising medium to consumers.

FOR PHONE LISTINGS—OF IMPORTANT  
TELEVISION NUMBERS IN N. Y.-  
LOS ANGELES-CHICAGO-WASHINGTON  
PLEASE TURN TO PAGES 100-107

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# TELEVISION HIGHLIGHTS—1945

(From the Files of RADIO DAILY)

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*A review of the past year's television events indicates the tremendous possibilities of the sight-and-sound medium. Increasing momentum is evident from the upward surge of activity reported in the columns of RADIO DAILY.*

## JANUARY

- 10—Keen interest in television as an important factor in displaying and merchandising goods as leaders in the industry discussed its various phases at the National Retail Dry Goods Association convention in New York.
- 12—A last minute request for permission to televise the inauguration of President Roosevelt was turned down by the White House because arrangements for press, radio and pix coverage had already been worked out.
- 16—Slicing by one-third the number of six-megacycle channels for television, the FCC announced that it believed the current monochrome service should not be scrapped on the promise that a new color tele system would someday be ready. Instead of the present 18 channels below 294 megacycles, there would be 12 according to the allocation system announced by the commission. These channels would be shared with non-interfering services.
- 17—Approval of the action by the FCC in its "decision favoring the continuance of commercial television in that portion of the spectrum currently used by television broadcasters" was voiced by J. R. Poppele, president of Television Broadcasters Association.
- 22—Tele and FM applications will not be served on a "first come, first served" basis, FCC Chairman Paul A. Porter told the FCC Bar Association.
- 26—Robert L. Gibson, vice-president and member of the board of directors of TBA resigned because his firm, GE, had shifted him to another department in the company. F. J. Bingley, chief television engineer for Philco, and a TBA board member was elected to the post of vice-president. The board vacancy was not filled.
- 30—At a meeting of Canadian Broadcasting Corp. governors, Dr. Augustin Frigon, general manager, in discussing television prospects in Canada, said that CBC had obtained a site in Toronto for the purpose of building a television station and, he added,

that other stations would be established across Canada in due time.

## FEBRUARY

- 2—Juan Trippe, Pan-American World Airways president announced the sponsorship of a new 15-minute world-travelogue television show titled, "Wings of Democracy."
- 7—Forecasting the possibilities of subscription television as a method of creating "box-office" for video, Arthur Levey, president of Scopphony Corp. of America, announced that SCA was contemplating production of home tele receivers for that purpose.
- 9—Technical employers of CBS were accorded the privilege of attending a special 60-week course in the operation of television studio and transmitter equipment beginning Feb. 12. Arranged in three 20-week segments, the tripartite course was given by the Division of General Education and College of Engineering of NYU under the direction of Dr. Peter Goldmark, CBS director of engineering research and development department, and Robert Serrell, member of CBS' television engineering operations, assisted by Mason Escher, technical staffer representing the IBEW.
- 14—Development of a new television technique known as "Tele-Minatures" affording greater speed in production and increased economy, was announced by Patrick Michael Cunning, head of P. M. Cunning Tele. Products.
- 19—Newsreels and television were on an equal footing insofar as release dates of footage from the War Department was concerned. Only reason the tele pool received War Department footage later than the newsreel pool was that the department, in order to speed handling, did not copy the film itself.
- 20—Television, discontinued in Great Britain shortly after the start of the war, was resumed on a private-showing basis.
- 23—Maintaining their position that only the use of wide bands in the higher frequencies could provide television pictures with twice

the detail of television sets operating on pre-war standards, CBS filed a brief with the FCC.

- 27—Blue Network inaugurated television from New York in addition to launching its regular schedule of tele broadcasts with programs from Schenectady. This advent marked the first time a broadcasting company originated and presented regularly broadcast network programs over more than one station.

### MARCH

- 2—Col. William A. Roberts, appearing for TBA, presented the FCC with a suggested plan for allocation of television facilities in the major market areas of the country to provide at least 398 stations. This plan was designed to utilize the 12 six-megacycle channels proposed for commercial sale.
- 6—First web V-E Day planning was announced by the Blue Network when it revealed that arrangements had been made with the Du Mont Television Laboratories for the use of the entire facilities of WABD for tele broadcasts on victory day in Europe.
- 13—Formation of a company to produce films exclusively for television was announced by the Bond-Charteris Enterprises. The films, to be commercially sponsored, deal primarily with visualization of products for inclusion in televised advertisements. Other tele products will include 15 to 30-minute packaged television entertainments.
- 15—RCA showed a postwar model television receiver which projects an image of 16 x 21-1/3 inches and with FM and standard broadcast receiving facilities which will cost approximately \$395. The new receiver was a decided improvement over the pre-war sets, and displayed an image of brilliance and clarity indicative of the progress made in electronic research.
- 19—Applications for licenses to construct and operate a national network of television and broadcasting stations to be linked via microwave, were filed on March 15 with the FCC by the Raytheon Mfg. Co., a subsidiary of the Raytheon Products Corp. of Boston, manufacturers of radio and tele equipment.
- 23—DuMont Laboratories highlighted their entertainment of the Television Broadcasters Association with a private showing of a new 20-inch cathode ray tube which had a flat surface and produced a direct view tele image 18 x 13½ inches.
- 26—Addressing a joint meeting of the American Institute of Electrical Engineers and the Institute of Electrical Engineers, Dr. C. B. Jelfffe, head of RCA Laboratories envisaged television as a five to ten billion dollar enterprise which would revolutionize the present way of life.
- 27—CBS stockholders were advised that the corporation had contracted with Federal Telephone and Radio Corp., for the first experimental transmitter for use in color transmission.

- 28—Television Producers Association adopted a standard form of television script along with a standard cue sheet, the latter using a three-column method.

### APRIL

- 1—Twentieth Century-Fox leased from General Television Corp., the inactive tele station, WIXBG, Boston. The film company asked for an experimental license to operate the station. Plans include programming and the use of sound films for entertainment purposes.
- 2—Commercial sponsorship of the time breaks on the special V-E Day television programs of the Blue Network on WABD, was announced by Paul B. Mowry, manager of the web's tele department. Sponsor will be Waltham Watch Co.
- 11—Considered the first French-American program in television history, CBS tele station WCBW televised "Soldiers Without Uniforms," a drama based on the Paris resistance movement obtained from material brought to this country by Pierre Schaeffer and Pierre Garrigues, representatives of the French Broadcasting Service.
- 17—First multiple-relay television network in the world linking two major cities was proven technically practical in a demonstration between Washington and Philadelphia. This scientific demonstration revealed that it is entirely practical and possible to connect distant cities for television by a series of micro-wave tele relay transmitters.
- 26—John Ballantine, president of Philco Corp., announced that all Philco telecasting activities would be brought under one head. Ernest B. Loveman was appointed vice-president in charge and with the formation of the television broadcasting division of Philco Radio and Television Corp., every phase of the activity would be centralized under Loveman.

### MAY

- 1—Paul L. Chamberlain, GE sales exec. told the Ad Club of Boston at a luncheon that television will supplement other forms of advertising to maintain the national income needed to keep American workmen on the job, and that a new dimension will be added to home entertainment which will provide one of the most powerful advertising media ever developed.
- 7—Bell System of the AT & T expects that some 2,000 miles of coaxial cable suitable for television and other long distance transmission will have been manufactured by the end of 1945 and that at least three-fourths of this cable mileage will be under ground by the same time.
- 15—Speaking before the Society of Motion Picture Engineers, Ralph B. Austrian, executive vice-president of RKO Television Corp.,

said he believed that it would be perfectly possible and feasible to release a tele show on film over a "first-run" group of stations and then re-release it in the same locality at a later time to a "second-run" group and finally a "subsequent run" group. He pointed out that any given locality can be fairly and completely covered.

- 18—Seven channels between 174 and 216 megacycles were definitely assigned television by the FCC, with the 480-920 mc. band also reserved for the new wide-band color tele. Six additional tele bands would be provided in the 44-108 mc. region—apportioning of which would be delayed pending further testing.
- 23—IT & T received a telegram from Guy Rabuteau, French scientist in charge of the laboratories of Le Materiel Telephonique, Paris, IT & T associate, which stated that despite German occupation, French research organizations had continued developing television and manufacturers were in a position to deliver pick-up equipment, transmitters, receivers suitable for black and white high definition tele and later on full color television.
- 27—First of a series of television programs covering the world of science and using both "live" talent and film, was inaugurated by the American Museum of Natural History in conjunction with NBC's station WNBT.
- 28—Senators Emil A. Bartunek and Lawrence A. Kane, formally introduced into the Ohio state legislature their bill which amended the Ohio censorship statutes to include television, along with motion pictures and other eligible productions. Proposed amendments included a fee of \$3 for each 10 minutes of televised screen time or fraction thereof. This was the first tele censorship measure and levied fee as well.
- 30—As a contribution to the advancement of television production, George A. Hirliman, prexy of the International Theatrical and Television Corporation, announced that they would sponsor a national contest on July 1st offering 11 prizes which would include a \$10,000 cash award to the best amateur film production submitted.

**JUNE**

- 5—A new type of experimentation looking toward development of a broad-band microwave relay system was approved when the FCC granted the Raytheon Mfg. Co., construction permits for five experimental relay stations to be installed between Boston and New York.
- 7—IATSE issued a charter to a new union in the field designated as Television Broadcast-

ing Studio Employees, Local 794 of the Alliance. The new union, having been granted its charter, was expected to launch an intensive drive to unionize tele employees in New York.

- 11—In a move to further its activities in the field of commercial television, CBS revealed the appointment of George Moskovics as commercial manager of television operations, a newly created post made in anticipation of experimental commercial activities in the video field.
- 14—New television plastic lens and receiver, developed by RCA Victor from materials manufactured by Dun Pont, is expected to provide an image five times as large as those obtained with pre-war models, also, brighter images and reduced cost of the receiving sets are indicated, all based on discs of "Lucite" composition as basic material.
- 14—American Television Society held its final official meeting of the season in the auditorium of the Museum of Modern Art, with George T. Shupert, of Paramount Pictures taking over the reins as newly elected president. Awards for television activity during the season were made to various network and inde tele outlets as well as individual effort.
- 18—CBS tele facilities and personnel were made available to network clients on a "working basis" for testing, development and broadcasting of commercial video programs. While there would be no charge for time on the air, there would be a charge of \$150 an hour for use of major studios, personnel and equipment.
- 20—Philco Radio applied to the FCC for three experimental relay broadcast stations to operate in New York, Philadelphia and Washington. Assignment of frequencies between 42 and 10,000 megacycles by the FCC chief engineer was asked.
- 25—John F. Royal, NBC vice-prexy in charge of television, speaking at the opening of the fourth annual NBC-Northwestern U summer radio institute, forecast that television would be a great force for peace during the coming years.
- 26—First large scale relay experiments for tele and FM to be undertaken between Los Angeles and San Francisco were forecast by the application to the FCC of the International Business Machines for relay terminal stations with 15 watts power in those two cities.
- 27—FCC announced the assignment of the first six tele channels. Channel No. 1, 44-50 mc.; channels No. 2 3 and 4, 54-60, 60-66 and 66-72 mc.; channels No. 5 and No. 6, 76-82 and 82-88 mc.

- 27—A large screen tele receiver, which produced a picture 16 x 22 inches and included a radio-phonograph unit was unveiled by GE at a press showing held in New York.
- 29—A RADIO DAILY survey revealed that tele industry leaders were pleased by the FCC's channel allocations.

## JULY

- 9—CBS was reported to have obtained the American rights for 1,000 line television as developed in France and also new foreign patents covering colored television.
- 10—Experimental tele transmission in England will get under way in January, and the commercial aspects of the media, dormant since the outbreak of the war will be stressed in accordance with an ambitious developmental program already mapped out.
- 13—Little criticism was expressed at the informal engineer hearing on FCC's proposed standards and regulations for tele stations.
- 17—Zoning Adjustment Board of the District of Columbia following a seven-hour hearing, denied the Bamberger Broadcasting Service, Inc., permission to locate a transmitting station and 300-foot tele tower in a residential area selected in the northwest section of Washington.
- 18—The FCC released to the industry its proposed technical specifications for tele operation on the 13 six-megacycle bands presently allocated for commercial operation. The industry in general was well pleased with the Commission proposals.
- 19—George E. Markham, manager of WRGB, Schenectady, speaking before a two-day symposium on tele and the future at the University of Michigan, declared that television would supplement the newspapers, radio, theater and the movies, but would not replace them.
- 20—Plans for the first full-fledged television field tests in the New York metropolitan area using higher frequencies as proposed by the FCC reallocations to be conducted by NBC in collaboration with RCA Laboratories, were announced by Dr. C. B. Joliffe, vice-president in charge of the RCA Labs.
- 25—Music Corporation of America announced that it had added a new television department, to be under the head of Roger Carlin, former legit theater producer and Paramount man.
- 3—Bob Feiner, Jr., program assistant for WCBW, CBS tele station, was named assistant director of television programs for CBS.
- 7—Purchase for post-war delivery of a 40 kilowatt television transmitter was announced by Harry R. Lubcke, tele director of Don Lee Tele and Don Lee Broadcasting Systems. The west coast web has filed with the FCC for permission to install the transmitter 5,800 feet above sea level on Mt. Wilson.
- 9—A plan for utilizing stratosphere airplanes cruising six miles in the air for the transmission of television and FM was revealed by execs. of the Westinghouse Electric Corp. in collaboration with the Glenn L. Martin Company.
- 20—CBS announced that it would install a new ultra-high frequency television transmitter in the Chrysler Bldg. in December. The transmitter would broadcast tele in high definition color, on a frequency of 485 megacycles. A coaxial cable carrying the 10-megacycle signal would connect the transmitter to the labs at Madison Ave., via the studios in Grand Central Terminal.
- 24—Television stations will have a total national payroll of over 16 million dollars, Paul E. Carlson, merchandising manager of Allen B. Dumont Laboratories, Inc., predicted in an address before the opening session of the Board of Education sponsored War Industries Training Program in New York.
- 27—The Chicago public school system will use television as an integral part of its educational program for the first time, starting the week of September 17, it was announced by George Jennings, director of the Radio Council of the Board of Education. In cooperation with Balaban and Katz tele station, WBKB, Jennings has arranged a weekly series of 13 experimental telecasts to originate in the station's studios. The shows will be picked up on special receivers to be installed in two schools.
- 30—John Wanamaker Company announced that a deal has been consummated with the Allen B. DuMont Laboratories, Inc., for the installation of three complete television studios in the main New York store.

## SEPTEMBER

- 11—Announcement was made of the resignation of Gilbert Seldes, director of CBS television programs, effective as of September 28, in order to be free to do independent work in the video field. No successor was appointed.
- 11—Ted Collins, Kate Smith manager and partner, confirmed rumors that he would undertake a \$1,000,000 tele laboratory enterprise in Jacksonville, Fla.
- 18—WABD, DuMont television station in New York, left the air until December 15 in order

to make the switchover from Channel 4 to Channel 5. The suspension of tele transmission of activities during the period of technical readjustment was approved by the FCC.

- 19—The American Broadcasting Company announced that following the conclusion of telecasting activities at DuMont's station WABD, television operations would be carried on from station WRGB, Schenectady.
- 20—Recalling its statement of May 25th that insufficient frequencies are available below 300 mc. to provide "a truly nation-wide and competitive television system," the FCC issued its proposed allocation of frequencies among the rural, metropolitan and community telecasters.
- 24—Technical operations of CBS television are being integrated with the web's other New York broadcasting operations. Progress of various phases of CBS television research under Dr. Peter Goldmark's department of engineering research and development has made integration possible.
- 25—The FCC threw out 16 applications for experimental tele and developmental FM facilities on the grounds that clear need for these stations to carry on meritorious research plans was not shown.
- 27—Edward Sobol, NBC tele producer told a panel and members of the American Television Society that the script is the most important part of the television program, and script writers would become a very important cog in the machine of television production.

### OCTOBER

- 1—The Motion Picture Producers and Distributors Association does not plan to inject itself into the television scene, new proxy Eric Johnston declared during his first press conference after succeeding Will Hays.
- 4—Revision of the tentative assignments of channels for commercial television, including changes in the number of metropolitan stations permitted in many communities, as well as changes in the channel numbers assigned in some cases, were reported by the FCC.
- 5—DuMont Television signed a five-year contract with the Television Studio Broadcasting Employees Union, Local 794 of the IATSE.
- 11—Paul Kesten, CBS vice-president, announced at the FCC Television hearing in Washing-

ton that his company would be ready in a few weeks for public demonstrations of its wide-band polychrome tele service, thereby raising the question as to the extent to which sponsors of the narrow-band service would be willing to invest in the monochrome tele. The second challenge came from TBS, which announced a new allocation setup which would provide seven tele stations for New York City, which was allocated only four under the FCC plan announced earlier, and, in all, 401 stations for 135 cities—59 more stations than provided in the FCC plan.

- 17—Return to native shores of the U. S. Fleet was covered by television both in New York and San Francisco and televised in the East over WNBT by NBC and WCBW by CBS.
- 19—Motion picture film promises to furnish much valuable source material for video programs, what with the constant new developments occurring in the field of research and manufacturing, according to an address by John Flory, of Grant, Flory and Williams, film manufacturers.
- 23—Dr. C. B. Joliffe, v.p. in charge of RCA Labs, revealed that utilization of the recently announced super-high-frequency radio relay system for network television, was not engineered to permit television transmission.
- 25—A revolutionary new development in the camera technique of television was demonstrated to the press and electronics engineers by RCA using a super-sensitive pick-up tube known as the "image orthicon." The demonstration proved conclusively that a good image could be obtained through the use of the new electronic eye under ordinary lighting conditions.

- 30—Application for construction of a tele transmitter and studios in San Francisco was filed with the FCC by Television Productions, Inc. Plans of the company also included a West Coast relay network embracing the Hollywood and San Francisco coast-to-coast television web projected by Paramount.

### NOVEMBER

- 1—Extensive television coverage of New York's first peacetime municipal election in six years was scheduled by network video stations, with audiences being provided with newsy, on-the-spot scenes of events taking place during Election Day on November 6.
- 6—The first major intra-store television demonstration undertaken by RCA-Victor in Gim-

bel's Department Store in Philadelphia was proven "eminently successful" and definitely established tele as a powerful selling medium, representatives of both RCA and Gimbels indicated. An RCA representative said that plans were being completed to take the intra-store video unit on a nationwide tour of the largest department stores of America.

- 7—The Studio of Dramatic Arts offered a 16-week course in television acting, designed to "retrain radio actors for the visual medium." Director of the course was John Reich, professor at New York U, and former dramatic director of CBS television.
- 13—The first Television contract in Chicago was signed by International Photographers of the Motion Picture Industries and Television Film Shorts, Inc.
- 15—Keith S. McHugh, vice-president of A T & T, announced that a coaxial cable between Washington and New York would be made available, without charge, to television broadcasters early in January. The first program over the new cable will be a co-operative venture with WNBT, DuMont and WCBW participating in the historic telecast.
- 16—CBS has applied for a license for its new experimental Tele Station to operate on the higher frequencies between 480 and 496 megacycles. CBS disclosed it was "ready to go" on its wider band, full-color broadcasting. Dr. C. B. Jolliffe, vice-president in charge of RCA laboratories, speaking before a meeting of the Radio Executives club in New York, said "Television is ready to go." Dr. Jolliffe stated that the time is here when management must take television out of the engineering laboratory and give it a chance to grow.
- 20—Victory Loan films will be broadcast over nine tele stations for the first concerted drive of its kind, the Treasury Department has announced.
- 23—FCC's Television rules issued. As a whole, FCC followed many industry recommendations in issuing the new rules. Granted seven channels in New York and relaxed its original minimum operating order but did not change its order making chain broadcasting regulations applicable to tele stations.
- 26—Roundup of applications for construction of new commercial television stations now on

file with the FCC shows a wide-open scramble is in the making for new tele channel designations. The demand for frequencies far exceeds the supply in major cities.

- 26—A telegraphic survey of the industries reaction to the FCC tele allocations, conducted by Radio Daily, shows, in most instances, the allocations were interpreted as the signal to go ahead with manufacturing and station developments.

## DECEMBER

- 3—Washington was selected as "testing ground" for wide-open scramble for television stations in large cities Friday, when the FCC announced a consolidated hearing on nine applications for the capital's four channels. No date for the hearing has been set.
- 5—Intra-store tele shown by RCA. First New York demonstration draws big merchandising interest. Manufacturers and retailers of consumer goods believe television will play a highly important role in the merchandising of such commodities in the near future.
- 6—Consolidated hearing on nine applications for Washington's four television channels will begin on Jan. 21. The ten-day hearing will end on Feb. 1, the Commission announced in setting the date.
- 7—RCA's tele patents and others in the radio field are to be made generally available to manufacturers, Henry A. Wallace, Secretary of Commerce, announced yesterday.
- 13—A. T. & T. announces construction plans for video relay outlets linking Milwaukee and Chicago.
- 14—RCA demonstrates color television. About five years will elapse before practical home color tele will be available to the public, they said.
- 26—The FCC has announced assignment of channels for six commercial tele licenses and for ten experimental stations.
- 27—President Truman's appearance before Congress next month to deliver his annual message will be televised for the first time in the nation's history. NBC, CBS and DuMont will telecast the event.



# Washington Natural Television Center

By ANDREW H. OLDER, Staff Correspondent, RADIO DAILY

AS PEACE broke out the future of television was more confused than ever. Only one thing was certain—that pre-war estimates of the eventual importance of tele will be not only borne out but actually surpassed. It will be many years before motion pictures and sound broadcasting are displaced by television—if ever—but it will not be so very long before tele takes equal rank in importance alongside these two great media of news and entertainment.

Here in Washington, through the war years, two agencies—War and Navy—have been primarily concerned with television.

With the war over, the new technical developments will again be announced from Camden, Chicago, New York, Philadelphia and the other homes of leading private tele manufacturers. How much of value the industry will gain as German techniques are released by the Department of Commerce is questionable—thus far it seems that American technicians were far ahead of the Nazi researchers in tele. Some aid in color projection may be realized from the enemy processes.

The biggest headache, insofar as overall regulation is concerned, lies with the FCC. For the past two years the FCC has been squarely in the middle as the proponents of “downstairs” and “upstairs” video carry on their battle. Although there are signs that a commission majority believes tele will approach its full utility only on the wider bands above 480 megacycles, a policy of strict impartiality has been maintained as proponents of the two systems battle it out with press releases and feverish experimental work.

The commission has simply insisted that television—without specifying which system—is coming out of its swaddling clothes.

The “downstairs” television interests were not overly pleased with the apportionment of the spectrum below 300 megacycles, justly pointing out that 13 video channels is insufficient for full-magnitude development of the service.

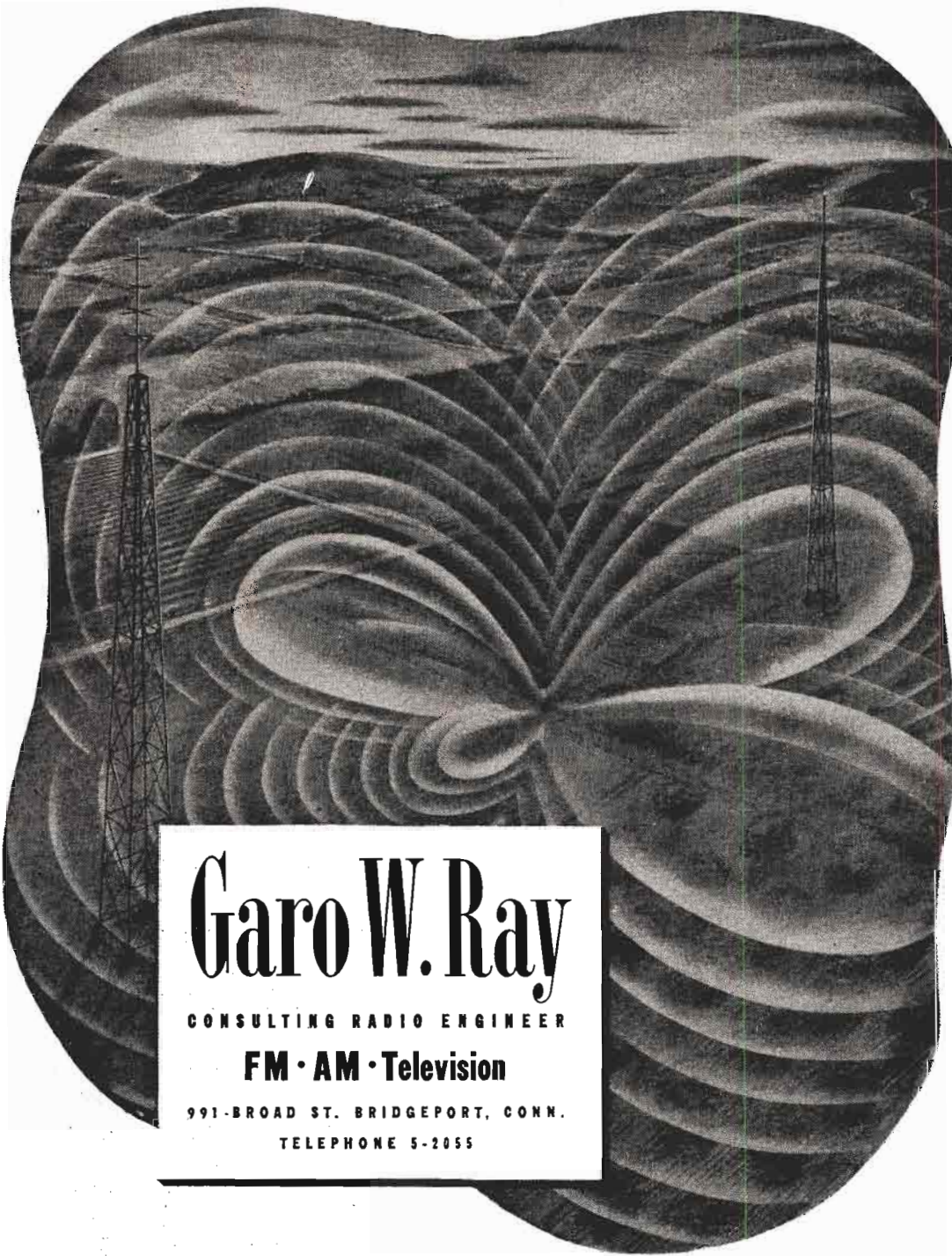
Although the FCC revised its allocation of these channels to make more stations possible in New York and other major centers than it had originally provided, the fact is that so long as licenses are confined to the 13 “downstairs channels” video will not achieve the competitive development scheduled for it.

A year-end development of uncertain importance was the anti-trust suit filed by the Department of Justice against the Scophony Corporation and affiliates of Twentieth Century-Fox and Paramount Pictures. Of far-reaching importance in the development of theater television on a broad nation-wide basis, the importance of the suit as it affects home video could not be clearly established. There are those who believe that the larger projections embodied in Scophony’s “supersonic” system might provide an important improvement for home video sets if inclusion of the necessary design in the sets were freely permitted.

It is claimed also that the “skiatron” system developed by Scophony makes possible use of the subtractive principles of color employed in Technicolor and Kodachrome photography. No commercial sets embodying these principles have been developed, although Paramount—one of the controllers of the patents for the Western Hemisphere—is half owner of the Allen B. DuMont Laboratories.

The big question is what the next year will bring in the line of regulatory policies on television. Most important question, of course, is the extent to which the FCC will indicate its superior faith in the “upstairs” system. And that is a decision which must be reached not on the basis of investments in the two systems but rather on the basis of public interest.

On March 7, 1946, the FCC awarded three of the four Washington television channels to NBC, Bamberger Broadcasting Co., and the Evening Star Broadcasting Co. The fourth channel, sought by both Du Mont and Philco, will be settled at another commission hearing. Both applicants have been invited to present additional arguments.



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# Classification of Television Stations and Allocations Of Frequencies

**R**ULES Governing Television Broadcast Stations. Subpart D. Sections 4,201 through 4,281, are repealed, and the following is substituted (by the FCC) therefor:

§3.601 *Numerical Designation of Television Channels.* — The channels or frequency bands set forth below are available for television broadcast stations.

Channel No.	Megacycles
1	44—50
2	54—60
3	60—66
4	66—72
5	76—82
6	82—88
7	174—180
8	180—186
9	186—192
10	192—198
11	198—204
12	204—210
13	210—216

§3.602 *Sharing of Television Channels.* — Channels 1 through 5 and 7 through 13 are available for assignment to radio services other than television upon a showing that no mutual interference will result.

§3.603 *Community stations.* — (a) A Community station is designed primarily for rendering service to the smaller metropolitan districts or principal cities. Television channel No. 1 is assigned exclusively for Community stations. Channels 2 to 13, inclusive, can also be used for Community stations provided such use complies with Section 3.606.

(b) The power of a Community station may not exceed an effective radiated peak power of 1 kilowatt. The maximum antenna height for such stations shall be 500 feet above the average terrain as determined by methods prescribed in the Standards of Good Engineering Practice concerning Television Broadcast Stations.

(c) The main studio of a Community station shall be located in the city or town served and the transmitter shall be located as near the center of the city as practicable.

§3.604 *Metropolitan stations.* — Metropolitan stations may be assigned to television channels 2 through 13, both inclusive. They are designed primarily to render service to a single metropolitan district or a principal city and to the rural area surrounding such metropolitan district or principal city.

(b) Metropolitan stations are limited to a maximum of 50 kilowatts effective radiated peak power with antenna having a height of 500 feet above the average terrain, as determined by the methods prescribed in Standards of Good Engineering Practice concerning television broadcast stations. Where higher antenna heights are available, they should be used but in such cases the Commission may authorize less than 50 kilowatts effective radiated peak power so that the coverage (within the 5000 uv/m contour) shall be substantially similar to that which would be provided by 50 kilowatts effective radiated peak power and a 500 foot antenna. Where it is shown that an antenna height of 500 feet is not available, the Commission may authorize the use of a lower height antenna but will not permit an increase in radiated power in excess of 50 kilowatts. The service area of Metropolitan stations will not be protected beyond the 5000 uv/m contour and such stations will be located in such a manner as to insure, insofar as possible, a maximum of television service to all listeners, whether urban or rural.

(c) The main studio for Metropolitan stations shall be located in the city or metropolitan district with which the station is associated.  
(Continued on Page 1021)

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- - -

**NEW YORK CITY**

# Commercial Television Broadcast Channels

As allocated to Metropolitan Districts by the FCC

Metropolitan District (U. S. Census 1940)	Sales Rank	Population	Channel Nos.	Community	Total Stations Metro-Community
Akron	35	349,705	11		1 1
Albany	23	431,575	2, 4, 7, 9, 11		5
Schenectady					
Troy					
Allentown	43	325,142		8	
Bethlehem					
Easton					
Altoona	111	114,094	9		1
Amarillo	136	53,463	2, 4, 5, 7		4
Asheville	132	76,324	5, 7, 12		3
Atlanta	25	442,294	2, 5, 8, 11		4
Atlantic City	83	100,096		8	1
Augusta, Ga.	135	87,809	6, 12		2
Austin	106	106,193	8, 10, 12		3
□					
Baltimore	13	• 1,046,692	2, 11, 13		3
Port Arthur	90	138,608	3, 6, 8, 10		4
Beaumont					
Binghamton	75	145,156	12		1
Birmingham	42	407,851	4, 9, 13		3
Boston	5	2,350,514	2, 4, 7, 9, 13		5
Bridgeport, Conn.	53	216,621		1	1
Buffalo	14	857,719	4, 7, 9, 13		4
Niagara					
□					
Canton, Ohio	63	200,352		1	1
Cedar Rapids	115	73,219	7, 11		2
Charleston, S. C.	127	98,711	7, 10, 13		3
Charleston, W. Va.	88	136,332	7, 11, 13		3
Charlotte	99	112,986	3, 9, 11		3
Chattanooga	76	193,215	3, 6, 10, 12		4
Chicago	2	4,499,126	2, 4, 5, 7, 9, 11, 13		7
Cincinnati	16	789,309	2, 4, 7, 11		4
Cleveland	9	1,214,943	2, 4, 5, 7, 9		5
Columbia	117	89,555	2, 4, 8		3
Columbus, Ga.	133	92,478	3, 12		2
Columbus, Ohio	29	365,796	3, 6, 8, 10		4
Corpus Christi	121	70,677	3, 6, 8, 10		4
□					
Dallas	27	376,548	4, 8, 12		3
Davenport	67	174,995	2, 4, 5, 9		4
Rock Island					
Moline					
Dayton	44	271,513	5, 13		2

**Commercial Television Channels—Market Areas**

<i>Metropolitan District (U. S. Census 1940)</i>	<i>Sales Rank</i>	<i>Population</i>	<i>Metropolitan Channel Nos.</i>	<i>Community</i>	<i>Total Stations Metro-Community</i>
Decatur	122	65,764	2		1
Denver	26	384,372	2, 4, 5, 7, 9		5
Des Moines	59	183,973	2, 4, 5, 9		4
Detroit	6	2,295,867	2, 4, 5, 7, 9		5
Duluth } Superior }	72	157,098	3, 6, 8, 10		4
Durham	139	69,683	4, 7		2
□					
El Paso	105	115,801	2, 4, 5, 7		4
Erie	95	134,039	12		1
Evansville, Ind.	93	141,614	2, 11		2
□					
Fall River } New Bedford }	55	272,648		1	1
Flint	64	188,554	11		1
Fort Wayne	81	134,385	2, 4, 7, 9		4
Fort Worth	51	207,677	2, 5, 10		3
Fresno	79	97,504	2, 4, 5, 7		4
□					
Galveston	131	71,677	9, 11, 13		3
Grand Rapids	57	209,873	7, 9		2
Greensboro	130	73,055	2, 10		2
□					
Hamilton } Middletown }	110	112,686	9		1
Harrisburg	70	173,367	8		1
Hartford } New Britain }	20	502,193	8, 10		2
Houston	21	510,397	2, 4, 5, 7		4
Huntington, W. Va. } Ashland, Ky. }	92	170,979	5		1
Indianapolis	24	455,357	3, 6, 8, 10, 12		5
□					
Jackson	128	88,003	2, 4, 5, 7		4
Jacksonville	66	195,619	2, 4, 6, 8		4
Johnstown, Pa.	100	151,781	13		1
□					
Kalamazoo	112	77,213	3		1
Kansas City, Mo. } Kansas City, Kans. }	17	634,093	2, 4, 8, 11		4
Knoxville	87	151,829	2, 4, 5, 9		4
□					
Lancaster	91	132,027		4	1
Lansing	94	110,356	6		1
Lincoln	109	88,191	10, 12		2
Little Rock	98	126,724	3, 6, 8, 10		4
Los Angeles	3	2,904,596	2, 4, 5, 7, 9, 11, 13		7

**Commercial Television Channels—Market Areas**

<i>Metropolitan District (U. S. Census 1940)</i>	<i>Sales Rank</i>	<i>Population</i>	<i>Metropolitan Channel Nos.</i>	<i>Community</i>	<i>Total Stations Metropolitan Community</i>
Louisville	33	434,408	5, 9		2
Lowell	45	334,969	6		1
Lawrence					
Haverhill					
□					
Macon	137	74,830	4, 7, 10		3
Madison	101	78,349	9		1
Manchester	118	81,932		1	1
Memphis	37	332,477	2, 4, 5, 7, 9		5
Miami	38	250,537	2, 4, 5, 7		4
Milwaukee	15	790,336	3, 6, 8, 10		4
Minneapolis	11	911,077	2, 4, 5, 7, 9		5
St. Paul					
Mobile	119	144,906	3, 5, 9, 11		4
Montgomery	126	93,697	6, 10		2
□					
Nashville	56	241,769	4, 5, 7, 9		4
New Haven	39	308,228		6	1
New Orleans	31	540,030	2, 4, 6, 7, 10		5
New York	1	11,690,520	2, 4, 5, 7, 9, 11, 13		7
Northeastern					
New Jersey					
Norfolk					
Portsmouth	47	330,396	4, 7, 11, 13		4
Newport News					
□					
Oklahoma City	52	221,229	2, 4, 5, 9		4
Omaha	40	287,269	3, 6, 7		3
Council Bluffs					
□					
Peoria	69	162,566	3, 6, 12		3
Philadelphia	4	2,898,644	3, 6, 10, 12		4
Phoenix	84	121,828	2, 4, 5, 7		4
Pittsburgh	8	1,994,060	3, 6, 8, 10		4
Portland, Maine	89	106,566	3, 8		2
Portland, Oreg.	22	406,406	3, 6, 8, 10, 12		5
Providence, R. I.	18	711,500	11		1
Pueblo	140	62,039	3, 6, 8, 10		4
□					
Racine	97	135,075		1	1
Kenosha					
Reading	73	175,355		5	1
Richmond	48	245,674	3, 6, 8, 10		4
Roanoke	104	110,593	5, 9, 12		3
Rochester	28	411,970	2, 6, 11		3
Rockford	102	105,259	12		1
□					
Sacramento	54	158,999	3, 6, 10		3
Saginaw	77	153,388	3, 8, 13		3
Bay City					
St. Joseph	129	86,991	13		1

**Commercial Television Channels—Market Areas**

<i>Metropolitan District (U. S. Census 1940)</i>	<i>Sales Rank</i>	<i>Population</i>	<i>Metropolitan Channel Nos.</i>	<i>Community</i>	<i>Total Stations Metro-Community</i>	
St. Louis	10	1,367,977	4, 5, 7, 9, 13		5	
Salt Lake City	58	204,488	2, 4, 5, 7, 9		5	
San Antonio	50	319,010	2, 4, 5, 7, 9		5	
San Diego	49	256,268	3, 6, 8, 10		4	
San Francisco } Oakland	7	1,428,525	2, 4, 5, 7, 9, 11		6	
San Jose	78	129,367	13		1	
Savannah	114	117,970	3, 5, 9, 11		4	
Scranton } Wilkes-Barre	30	629,581	11	1	1	1
Seattle	19	452,639	2, 5, 7, 11		4	
Shreveport	96	112,225	2, 4, 6, 8		4	
Sioux City	107	87,791	4, 9, 11, 13		4	
South Bend	80	147,022		1		1
Spokane	71	141,370	2, 4, 5, 7, 9		5	
Springfield, Ill.	103	89,484	8, 10		2	
Springfield, Mass. } Holyoke	32	394,623	3	1	1	1
Springfield, Mo.	134	70,514	2, 4, 5, 9		4	
Springfield, Ohio	125	77,406		1		1
Stockton	108	79,337	8		1	
Syracuse	46	258,352	5, 8, 10		3	
Tacoma	74	156,018	4, 9, 13		3	
St. Petersburg } Tampa	61	209,693	2, 4, 5, 7		4	
□						
Terre Haute	116	83,370	4		1	
Toledo	34	341,663	13		1	
Topeka	123	77,749	7, 11		2	
Trenton	60	200,128		1		1
Tulsa	65	188,562	3, 6, 8, 10		4	
□						
Utica } Rome	68	197,128	3, 13		2	
□						
Waco	138	71,114	3, 6, 9, 11		4	
Washington	12	907,816	4, 5, 7, 9		4	
Waterbury	85	144,822	12		1	
Waterloo	120	67,050	3, 6, 13		3	
Wheeling	82	196,340	12		1	
Wichita	86	127,308	2, 4, 5, 9		4	
Wilmington	62	188,974		7		1
Winston-Salem	124	109,833	6, 8		2	
Worcester	41	306,194	5		1	
York	113	92,627		1		1
Youngstown	36	372,428	13		1	

**FOR COMPLETE EQUIPMENT SECTION CLOSELY ALLIED  
TO TELEVISION — PLEASE REFER TO PAGE 1035**



# Television Broadcasting Stations

As of March 1, 1946

*The term "television broadcast station" means a station licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public.*

## Commercial Television Broadcast Stations Licensed By The Federal Communications Commission

Location	Licensee	Call Letters	Old* Channel No.	New**	Vis. Aural Power
<b>ILLINOIS</b>					
Chicago	Balaban & Katz Corp.	WBKB	2	3 or 4	4KW 2KW
<b>NEW YORK</b>					
New York	Columbia Broadcasting System, Inc.	WCBW	2		3KW 2.5KW
New York	Allen B DuMont Labs. Inc.	WABD	4		4KW 1KW
New York	National Broadcasting Co. Inc.	WNBT	1	4	5.2KW 2.2KW
Schenectady	General Electric Co.	WRGB	3		40KW 20KW
<b>PENNSYLVANIA</b>					
Philadelphia	Philco Radio and Television Corp.	WPTZ	3		3KW 3KW

## List of Construction Permits Outstanding for Commercial Television Stations

<b>CALIFORNIA</b>					
Hollywood	Don Lee Broadcasting System	KTSL	1	1	4KW 2KW
<b>ILLINOIS</b>					
Chicago	Zenith Radio Corp.	WTZR	1		2KW 2KW
<b>WISCONSIN</b>					
Milwaukee	The Journal Company	WMJT	3	3 or 4	4KW 2KW

\* Old Channel means one of the 18 channels assigned to commercial television stations prior to the Commission's allocation report of June 27, 1945.

\*\*New Channel means one of the 13 channels finally assigned to commercial television stations by the Commission's allocation report of June 27, 1945.

# COMMERCIAL TELEVISION STATIONS

PERSONNEL • FACILITIES • ACTIVITIES

## W B K B CHICAGO CHANNEL 2

Frequency.....61.25 mc.; 65.75 mc.  
Power .....4 Kw.; 2 Kw.  
Effective Signal Radiated.....796  
Owned-Operated By....Balaban & Katz Corp.  
Business Address.....190 N. State St.  
Phone Number.....Franklin 6446  
Transmitter & Antenna Location.190 N. State St.  
Time on the Air...1-2 p.m.; 4-5 p.m.; 7:15-9 p.m.  
News Service.....Transradio  
Transcription Service....World Broadcasting

### Personnel

Director of Television.....William C. Eddy  
General Manager....Reinold Werrenrath, Jr.  
Station Manager.....George W. Thomas  
Program Manager.....A. Warren Jones  
Publicity Director.....Herbert T. Lyons  
Chief Engineer.....A. H. Brolly

### FACILITIES

One studio, three camera chains (two for live talent and one for film), one mobile unit for outdoor pickups (not being used for the duration).

### ACTIVITIES

News, fashion shows, sports (indoor) such as judo, fencing, boxing; dramatic shows; musical comedies; operettas; music and variety acts such as ventriloquists, puppets, marionettes, magicians, etc.; quiz shows; educational; lessons in dancing, Spanish, exercises for health and beauty.

## W9XZV—(WTZR) W9XZC CHICAGO CHANNEL 1 (Experimental)

Frequency: W9XZV, 50-56 mc.; W9XZC, 512-528 mc. Power: Sight and Sound, 1000 Watts  
Effective Radiated Signal.....1270  
Owned-Operated By.....Zenith Radio Corp.  
Business-Studio Address....6001 Dickens Ave.  
Phone Number.....Berkshire 7500  
Transmitter & Antenna Location..6001 Dickens Ave.  
Time on the Air.....Unlimited license

### Personnel

President-General Mgr.....E. F. McDonald, Jr.  
Station Manager.....J. E. Brown  
Program Director.....E. F. Classen, Jr.

## W C B W NEW YORK CITY CHANNEL 2

Frequency.....54-60 mc.; Sight, 61250;  
Sound, 65700  
Owned-Operated By...Columbia Broadcasting System  
Business Address.....15 Vanderbilt Ave.  
Phone Number.....Murray Hill 6-6340  
Studio Address.....15 Vanderbilt Ave.  
Transmitter & Antenna Location.....Chrysler Building  
Time on the Air...Tues. 8-9:30 p.m.; Wed. 8-9:45 p.m.; Fri. 8-9 p.m.; plus remote pickups  
News Service .....UP

### Personnel

V.-P. in Charge.....Lawrence W. Lowman  
Station Manager.....Worthington Miner  
Commercial Manager....George Moskovics  
Sales Promotion.....Harry H. Barnhart, Jr.  
Asst. Program Director.....Ben Feiner, Jr.  
Production Manager.....Charles Holden  
Publicity Director.....James J. Kane  
Musical Director.....Paul Belanger  
Director Research-Development.....Dr. Peter C. Goldmark  
In Charge of Operations.....Merritt Coleman  
Director CBS Tele Audience Research Institute.....Dr. Donald Horton  
In Charge Technical Operations.....Henry Grossman  
Director Television Plans Div....Leonard Hole

## W 6 X Y Z HOLLYWOOD (Paramount Studio Lot) CHANNEL 5 (Experimental)

Frequency.....76-82 mc.; Power: Visual 4 Kw; Oral 1 Kw.  
Owned-Operated By...Television Productions, Inc..  
Business Address.....5451 Marathon St., Hollywood 38

## COMMERCIAL TELEVISION STATIONS

Phone Number ..... Hollywood 2411  
 Transmitter and Antenna Location, .....

Mount Wilson  
 Time on the Air ..... Six Hours Per Week

### Personnel

President ..... Paul Raibourn  
 Vice-President ..... Bernard Goodwin  
 Vice-President ..... Y. Frank Freeman, Jr.  
 Station Director ..... Klaus Landsberg

### FACILITIES

Equipment includes complete apparatus for studio as well as field operation. Cameras and transmitters were built by Allen B. DuMont Laboratories, Inc. and many additional units, including electronic special-effect equipment, were designed and built by Television Productions, Inc. A relay transmitter, W6XLA, to operate in conjunction with W6XYZ, was also developed and constructed by the company. A special antenna system combining a double-cone type of antenna for video and a special four di-pole antenna for audio of its own design and construction are used. Studio facilities also include a flexible lighting arrangement, slide and background projection apparatus and screens.

### ACTIVITIES

W6XYZ has operated regularly since February 1, 1943, each Wednesday and Friday night and has been producing a weekly total of four to six hours of live-talent programs. These programs were entirely dedicated to the training of Civilian Defense volunteers until the summer of 1943, since which time entertainment as well as educational programs have been aired.

# K T S L

LOS ANGELES (HOLLYWOOD)—

EST. 1931

CHANNEL 1

MUTUAL—DON LEE BDCT. SYSTEM

Frequency .....  
 Power: Sight, 4000 Watts; Sound, 2000 Watts  
 Effective Signal Radiated ..... 5600  
 Owned-Operated By ..... Don Lee Broadcasting  
 System

Business Address ..... 3800 Mount Lee Drive  
 Phone Number ..... Hollywood 8255  
 Transmitter & Antenna Location ..... 3800 Mount  
 Lee Drive

Time on the Air ..... Alternate Mondays, 7 to  
 10 p.m.

News Service ..... AP, INS  
 Transcription Service ..... World  
 Representative ..... John Blair

### Personnel

President ..... Thomas S. Lee  
 Vice-President and General  
 Manager ..... Lewis Allen Weiss

Station Manager ..... Harry R. Lubcke  
 Chief Television Engineer ..... Harry W. Jury  
 Commercial Manager ..... Sydney Gaynor  
 Sales Promotion ..... Herb Sonnenberg  
 Production Manager ..... Jack Stewart  
 Stage Manager ..... Ted Driscoll  
 Publicity Manager ..... Harriet Crouse  
 Film Editor ..... Marjorie Campbell  
 Asst. Program Director ..... Grace Neville  
 Record M. C. .... Johnny Courcier

### FACILITIES

SYSTEM IN USE: 525 line 30-60 frame F.C.C., Standard, all electronic cathode-ray. Horizontal Polarization. Three Studio Cameras and film equipment. Two cameras of Orthicon type. Complete 100 ft. square two story television building housing one 100 ft. x 60 ft. x 30 ft. television stage, one 46 ft. x 26 ft. x 16 ft. stage, monitor, film, transmitter, makeup, and lounge rooms, offices, shop, transformer vaults, etc. Three hundred foot tower, antenna elevation 2000 ft.

The Pasadena Community Playhouse and other organizations have presented plays such as Ibsen's "Master Builder," "Alice in Wonderland" and others.

RECEIVERS: There are some 400 television receivers in the service area of W6XAO, some as far as Pomona at 35 miles away, a number in Long Beach at 25 miles away and many in cities at lesser distance. The predominant commercially manufactured television receiver is the TRK12 or 120 of RCA. There are some RCA TRK9, and approximately 50 TT5 RCA television receivers. A number of the latter are operating satisfactorily in Long Beach at 25 miles from W6XAO.

# W M J T

MILWAUKEE

CHANNEL 3

(C. P. Only)

Owned-Operated By ..... The Journal Co.  
 Business Address ..... 333 W. State St.  
 Studio Address ..... 720 East Capitol Drive  
 Phone Number ..... Marquette 6000  
 Transmitter & Antenna Location ..... 720 East  
 Capitol Drive  
 Newspaper Affiliation ..... The Journal Co.

# W A B D

NEW YORK CITY

CHANNEL 5

Frequency ..... 76-82 mc.  
 Power... Sight, 4000 Watts; Sound, 1000 Watts  
 Owned-Operated By ..... Allen B. Du Mont  
 Laboratories, Inc.

Business-Studio Address ..... 515 Madison Ave.  
 Studios ..... Wanamakers, Broadway at 9th St.  
 Phone Number ..... Plaza 3-9800

## COMMERCIAL TELEVISION STATIONS

Transmitter and Antenna Location..... Same  
Time on the Air..... Unlimited

### Personnel

President..... Allen B. Du Mont  
General Manager..... Samuel H. Cuff  
Asst. Gen. Mgr..... Robert F. Jamieson  
Chief Engineer..... Sal Patreimo  
Chief Operating Engineer..... Otis Freman

### FACILITIES

The 160-foot tower of WABD atop a 42-story building raises the antenna to 650 feet above sea level. Covering a service range of 35 to 50 miles, the station has regular viewers as distant as 100 miles. It is completely equipped by Du Mont Laboratories. WABD has two studios for live talent shows as well as film-projection facilities. It operates on a commercial license.

### ACTIVITIES

This outlet serves not only as a commercial telecast service but also as a laboratory for practical experience. Engineering, programming and advertising sponsorship aspects of television broadcasting are being worked out in actual practice. Broadcasters, engineers, producers, performers, advertisers, advertising men and others interested in television have been granted use of station facilities.

## W N B T

NEW YORK CITY  
CHANNEL 4

Frequency..... 66-70 mc.  
Power Sight, 5000 Watts; Sound, 3000 Watts  
Effective Signal Radiated..... 1800  
Owned-Operated By..... National Broadcast-  
ing Co.  
Business Address..... 30 Rockefeller Plaza  
Phone Number..... Circle 7-8300  
Studio Address..... 30 Rockefeller Plaza  
Transmitter & Antenna Location..... Empire  
State Bldg. Tower  
Time on the Air... Approx. 18 hours per week

### Personnel

NBC Vice-President, in  
Charge of Television..... John F. Royal  
NBC V.-P. & Chief Engineer... O. B. Hanson  
Manager of Television Dept... Noran E. Kersta  
Executive Producer..... Warren Wade  
NBC Press Dept..... Sydney H. Eiges  
Television Editor..... Allan H. Kalmus  
Eastern Sales Manager..... Reynold R. Kraft  
Business Manager..... John T. Williams

## W P T Z

PHILADELPHIA  
CHANNEL 3

Frequency..... 60-66 mc.;  
Sight, 4 Kw.; Sound, 4 Kw.

Effective Signal Radiated... Approximately 335  
Owned-Operated By..... Philco Radio &  
Television Corp.

Business Address..... Tioga and C Sts.  
Phone Number..... Nebraska 5100  
Transmitter & Antenna Location... Wyndmoor,  
Pa.

Time on the Air: Monday, Wednesday & Friday  
evenings, 7:45-9:45; Experimental W3XE,  
Monday through Friday afternoons, 1:30-2:30.

### Personnel

Vice-President-Television  
Broadcasting Div..... Ernest B. Loveman  
Chief Television Engineer..... F. J. Bingley  
Station Manager..... Walter Merkle  
Program Manager..... Paul Knight

## W R G B

SCHENECTADY, N. Y.  
CHANNEL 3

Frequency..... 66-72 mc.; Power: Visual,  
40,000 Watts, Oral, 20,000 Watts  
Owned-Operated By..... General Electric Co.  
Effective Signal Radiated..... 3100  
Business Address..... 60 Washington Ave.  
Phone Number..... 4-2211  
Transmitter & Antenna Location... New Scot-  
land, N. Y.  
Time on the Air..... Nine Hours Weekly

### Personnel

Vice-President and Manager of  
Broadcasting..... Robert S. Peare  
Assistant Manager..... B. W. Rowan  
Manager..... G. E. Markham  
Acting Supervisor of  
Production..... H. T. Rhodes  
Chief Engineer..... B. H. Cruger

### FACILITIES

Technical facilities of Station WRGB include a direct pickup studio for live talent productions, located at 60 Washington Ave., Schenectady. It is fitted with five camera channels. A film scanning room has two cameras and three motion picture projectors—two for 35 mm. and one for 16 mm. films. Film slide, lantern slide and projectors of small opaque pictures and objects are also available.

Signals from the WRGB transmitter, located in the Helderberg mountains, New Scotland, N. Y., near Schenectady, are received over a service area with a radius of approximately 50 miles, which includes the Troy-Albany-Schenectady area.

WRGB claims the first television relay station, picking up programs from NBC in New York City, 129 miles away, and relaying them to the Capitol district.

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# ***Pending Applications for Commercial Television Broadcast Stations***

<i>City</i>	<i>Applicant</i>	<i>City</i>	<i>Applicant</i>
Akron, Ohio	United Broadcasting Co.	Cleveland	National Broadcasting Co., Inc.
Albany, N. Y.	General Electric Co.	Cleveland	Scripps-Howard Radio, Inc.
Albuquerque, New Mex.	Albuquerque Broadcasting Co.	Cleveland	United Broadcasting Co.
Ames, Iowa	Iowa State College of Agri. & Mech. Arts	Cleveland	The WGAR Broadcasting Co.
Baltimore	Hearst Radio, Inc.	Cleveland	WJW, Inc.
Baltimore	Maryland Broadcasting Co.	Columbus	Centrol Ohio Broadcasting Co.
Baltimore	The Tower Realty Co.	Columbus	The Crosley Corp.
Baltimore	Jos. M. Zamoiski Co.	Columbus	United Broadcasting Co.
Baltimore	E. Anthony & Sons, Inc.	Dallas	Interstate Circuit, Inc.
Boston	Allen B. DuMont Lab. Inc.	Dallas	KRLD Radio Corp.
Boston	Filene's Television, Inc.	Dayton	The Crosley Corp.
Boston	New England Theaters, Inc.	Denver	KLZ Broadcasting Co.
Boston	Westinghouse Radio Stations, Inc.	Detroit	The Evening News Assn.
Boston	The Yankee Network, Inc.	Detroit	International Detrola Corp.
Boston	The Connecticut Television Co.	Detroit	The Jam Handy Organization, Inc.
Bridgeport (6½ miles out)	WEER, Inc.	Detroit	King Trendle Broadcasting Corp.
Buffalo	American Broadcasting Co., Inc.	Detroit	United Detroit Theatres Corp.
Chicago	Balaban & Katz Corp.	Detroit	WJR, The Goodwill Station
Chicago	Johnson Kennedy Radio Corp.	Fresno, Calif.	J. E. Rodman
Chicago	National Broadcasting Co., Inc.	Harrisburg, Pa.	Keystone Broadcasting Corp.
Chicago	Raytheon Mfg. Co.	Hartford	The Travelers Broadcasting Service Corp.
Chicago	Zenith Radio Corp.	Hartford	The Yankee Network, Inc.
Chicago	WGN, Inc.	Indianapolis	The Wm. H. Block Co.
Cincinnati	Cincinnati Broadcasting Co.	Indianapolis	Capital Broadcasting Corp.
Cincinnati	The Crosley Corp.		

• • • **COMMERCIAL TELE APPLICANTS** • • •

<i>City</i>	<i>Applicant</i>	<i>City</i>	<i>Applicant</i>
Indianapolis	Indianapolis Broad- casting Inc.	New York	Metropolitan Tele- vision, Inc.
Indianapolis	WFBM, Inc.	New York	National Broadcast- ing Co., Inc.
Jacksonville,	Jacksonville Broad- casting Corp.	New York	News Syndicate Co., Inc.
Florida	WJAC, Inc.	New York	Philco Radio & Tele- vision Corp.
Johnstown, Pa.	The Kansas City Star Co.	New York	Raytheon Mfg. Co.
Kansas City, Mo.	Lancaster Television Corp.	New York	Twentieth Century- Fox Film Corp.
Lancaster	WGAL, Inc.	New York	WLIB, Inc.
(3½ miles out)	American Broadcast- ing Co., Inc.	New York	WKY Radiophone Co.
Lancaster	Earle C. Anthony, Inc.	Oklahoma City	Radio Station WOW, Inc.
Los Angeles	Consolidated Broad- casting Corp., Ltd.	Omaha	World Publishing Co.
Los Angeles	Fox-West Coast Theatres	Omaha	World Publishing Co.
Los Angeles	Don Lee Broadcast- ing System	Philadelphia	Barberger Broad- casting Service, Inc.
Los Angeles	Hughes Productions, Division of Hughes Tool Co.	Philadelphia	Pennsylvania Broad- casting Co.
Los Angeles	Metro-Goldwyn- Mayer Studios, Inc.	Philadelphia	Philadelphia Daily News, Inc.
Los Angeles	National Broadcast- ing Co., Inc.	Philadelphia	The Philadelphia In- quirer, a Division of Triangle Pub- lications, Inc.
Los Angeles	Television Produc- tions, Inc.	Philadelphia	Philco Radio & Tele- vision Corp.
Los Angeles	The Times-Mirror Co.	Philadelphia	Seaboard Radio Broadcasting Corp.
Los Angeles	Warner Bros. Broad- casting Corp.	Philadelphia	WCAU Broadcasting Co.
Louisville	WAVE, Inc.	Philadelphia	WDAS Broadcasting Station, Inc.
Miami Beach	A. Frank Katzentine	Philadelphia	Westinghouse Radio Stations, Inc.
Milwaukee	Hearst Radio, Inc.	Philadelphia	WFIL Broadcasting Co.
Milwaukee	The Journal Co.	Philadelphia	Allen B. DuMont Lab. Inc.
Nashville	J. W. Birdwell Bremer Broadcast- ing Corp.	Pittsburgh	Scripps-Howard Ra- dio, Inc.
Newark	Loyola University	Pittsburgh	WCAE, Inc.
New Orleans	Maison Blanche Co.	Pittsburgh	Westinghouse Radio Stations, Inc.
New Orleans	American Broadcast- ing Co., Inc.	Pittsburgh	Oregonian Publish- ing Co.
New York	Bamberger Broad- casting Service, Inc.	Pittsburgh	E. Anthony & Sons, Inc.
New York	Columbia Broadcast- ing System, Inc.	Portland	The Outlet Co.
New York	Debs Memorial Ra- dio Fund, Inc.	Providence	The Yankee Net- work, Inc.
New York	Allen B. DuMont Lab. Inc.	Providence	Havens & Martin, Inc.
New York	Palmer K. & Lois C. Leberman	Richmond, Va.	The Broadcasting Corp. of America
New York	Marcus Loew Book- ing Agency	Riverside, Calif.	



City	Applicant	City	Applicant
Rochester	Stromberg-Carlson Co.	Spokane	Division of Hughes Tool Co.
St. Louis	Michael Alfend, Truman L. Brown, Samuel I. Berger and Sidney J. Heiman d/b as ALF-CO Co.	Stockton	Radio Sales Corp. Louis Wasmer, Inc.
St. Louis	Globe-Democrat Publishing Co.	Waltham, Mass	E. F. Pepper Raytheon Mfg. Co.
St. Louis	Thomas Patrick, Inc.	Washington, D. C.	Bamberger Broadcasting Service, Inc.
St. Louis	The Publitzer Publishing Co.	Washington, D. C.	Capital Broadcasting Co.
St. Paul	Star - Times Publishing Co.	Washington, D. C.	Allen B. DuMont Lab. Inc.
St. Louis	KSTP, Inc.	Washington, D. C.	The Evening Star Broadcasting Co.
Salt Lake City	Frank C. Carman, David G. Smith, Jack L. Powers and Grant R. Wrathall d/b as Utah Broadcasting Co.	Washington, D. C.	Marcus Loew Book- ing Agency
Salt Lake City	Intermountain Broadcasting Corp.	Washington, D. C.	National Broadcast- ing Co., Inc.
San Francisco	The Associated Broadcasters, Inc.	Washington, D. C.	Eleanor Patterson tr/as The Times- Herald
San Francisco	Don Lee Broadcast- ing System	Washington, D. C.	Philco Radio & Tele- vision Corp.
San Francisco	Hughes Productions,	Washington, D. C.	Scripps-Howard Radio, Inc.
Seattle		White Plains, N. Y.	Westchester Broad- casting Corp.
		Wilkes Barre, Pa.	Louis G. Baltimore
		Wilmington, Del.	WDEL, Inc.

## ALLOCATION *(Continued from Page 1009)*

tion is associated and the transmitter should be located so as to provide the maximum service to the city or metropolitan district served.

§3.605 *Rural stations.*—(a) Licensees of Metropolitan stations or applicants who desire to qualify as licensees of Rural stations must make a special showing to the Commission that they propose to serve an area more extensive than that served by a Metropolitan station and that the additional area proposed to be served is predominantly rural in character. In addition, a showing must be made that such use of the channel will not cause objectionable interference to other television stations or prevent the assignment of other television stations where there is reasonable evidence of the probability of such station being located in the future.

(b) Channels 2 through 13 are available for assignment to Rural stations. The service area of Rural stations will be determined by the Commission.

(c) The main studio of Rural stations shall be located within the 500 uv/m contour:

§3.606 *Table Showing Allocation of Television Channels to Metropolitan Dis-*

*tricts in the United States.*—(a) The Table below sets forth the channels which are available for the areas indicated. The table below will be revised from time to time depending upon the demand for television stations which may exist in the various cities. Where it is desired to use a different channel in any such area, or to use one of the channels in another area conflicting therewith, it must be shown that public interest, convenience, or necessity will be better served thereby than by the allocation set forth in the table.

(b) Only the first 140 metropolitan districts are listed in the table below. Stations in other metropolitan or city areas not listed in the table will not be assigned closer than 150 miles on the same channel or 75 miles on adjacent channels, except upon an adequate showing that public interest, convenience, or necessity would be better served thereby or that by using lower power or by other means equivalent protection is provided.

(c) Persons desiring to enter into a voluntary sharing arrangement of a television channel may file application therefor with the Commission pursuant to the provisions of Section 3.661(c).

# ***Rules Governing Video Broadcast Stations***

**R**ULES Governing Television Broadcast Stations as promulgated by the FCC, include Administrative Procedure and those relating to Licensing Policies. Both these are given below in full.

Subpart D. of the Commission's Rules, also include Designation of Television Channels, Community and Metropolitan Stations and Table Showing Allocation of Television Channels to Metropolitan Districts in the United States. These will be found in the preceding pages of Television Year Book.

## ***Administrative Procedure***

§ 3.611 Application for television stations.—Each applicant for a construction permit for a new television broadcast station, change in facilities of any existing television broadcast station, or television station license or modification of license shall file with the Commission in Washington, D. C., three copies of applications on the appropriate form designated by the Commission and a like number of exhibits and other papers incorporated therein and made a part thereof. Only the original copy need be sworn to. If the application is for a construction permit for a new television station, Form FCC No. 330 should be filed; for a television station license, Form FCC No. 331 should be filed; and for modification of a television station license or for change in facilities of an existing television station, Form FCC No. 333 should be filed.

§ 3.612 Full disclosures.—Each application shall contain full and complete disclosures with regard to the real party or parties in interest, and their legal, technical, financial, and other qualifications, and as to all matters and things required to be disclosed by the application forms.

§ 3.613 Installation or removal of apparatus.—Applications for construction permit or modification thereof, involving removal of existing transmitting apparatus and/or installation of new transmitting apparatus, shall be filed at least 60 days prior to the contemplated removal and/or installation.

§ 3.614 Period of construction.—Each construction permit will specify a maxi-

imum of 60 days from the date of granting thereof as the time within which construction of the station shall begin, and a maximum of six months thereafter as the time within which construction shall be completed and the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case.

§ 3.615 Forfeiture of construction permits: extension of time.—(a) A construction permit shall be automatically forfeited if the station is not ready for operation within the time specified therein or within such further time as the Commission may have allowed for completion, and a notation of the forfeiture of any construction permit under this provision will be placed in the records of the Commission as of the expiration date.

(b) An application (Form FCC No. 701) for extension of time within which to construct a station shall be filed at least thirty days prior to the expiration date of such permit if the facts supporting such application for extension are known to the applicant in time to permit such filing. In other cases such applications will be accepted upon a showing satisfactory to the Commission of sufficient reasons for filing within less than thirty days prior to the expiration date. Such applications will be granted upon a specific and detailed showing that the failure to complete was due to causes not under the control of the grantee, or upon a specific and detailed showing of other matters sufficient to justify the extension.

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## TELEVISION STATION RULES

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§ 3.616 **Equipment tests and proof of performance.**—(a) Upon completion of construction of a television station in exact accordance with the terms of the construction permit, the technical provisions of the application therefor and the rules and regulations and standards of good engineering practice governing television stations and prior to filing of application for license, the permittee is authorized to test the equipment for a period not to exceed 90 days: **Provided**, that the inspector in charge of the district in which the station is located and the Commission are notified 2 days in advance of the beginning of tests.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date of beginning for the period of such tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Within the 90-day period prescribed by this section for equipment tests, field intensity measurements in accordance with the methods prescribed in the Standards of Good Engineering Practice Concerning Television Broadcast Stations shall be submitted to the Commission. The Commission may grant extensions of time upon showing of reasonable need therefor.

§ 3.617 **Program tests.**—(a) When construction and equipment tests are completed in exact accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and standards of good engineering practice governing television stations, and after an application for station license has been filed with the Commission showing the equipment to be in satisfactory operating condition, the permittee is authorized to conduct program tests in exact accordance with the terms of the construction permit for a period not to exceed 30 days: **Provided**, That the inspector in charge of the district in which the station is located and the Commission are notified 2 days in advance of the beginning of such tests.

(b) The Commission reserves the right to cancel such tests or suspend, or change the date of beginning for the period of such tests as and when such action may appear to be in the public interest, convenience, and necessity by notifying the permittee.

(c) The authorization for tests embodied in this section or Section 3.616 shall not be construed as constituting a license to operate but as a necessary part of the construction.

§ 3.618 **Normal license period.**—All television broadcast station licenses will be issued so as to expire at the hour of 3 a.m. E.S.T. and will be issued for a normal license period of 1 year.

§ 3.619 **License, simultaneous modification and renewal.**—When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license) the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

§ 3.620 **Renewal of license.**—(a) Unless otherwise directed by the Commission, each application for renewal of a television station license shall be filed at least 60 days prior to the expiration date of the license sought to be renewed (Form FCC No. 311). No application for renewal of license of a television broadcast station will be considered unless there is on file with the Commission, the information currently required by Sections 1.301-1.304, reference to which by date and file number shall be included in the application.

(b) Whenever the Commission regards an application for a renewal of a television station license as essential to the proper conduct of a hearing or investigation, and specifically directs that it be filed by a date certain, such application shall be filed within the time thus specified. If the licensee fails to file such application within the prescribed time, the hearing or investigation shall proceed as if such renewal application had been received.

§ 3.621 **Temporary extension of station licenses.**—Where there is pending before the Commission any application, investigation, or proceeding which, after hearing, might lead to or make necessary the modification of, revocation of, or the refusal to renew an existing television license, the Commission may, in its discretion, grant a temporary extension of such license: **Provided, however**, That no such temporary extension shall be con-

strued as a finding by the Commission that the operation of any radio station thereunder will serve public interest, convenience, and necessity beyond the express terms of such temporary extension of license: **And provided further,** That such temporary extension of license will in no wise affect or limit the action of the Commission with respect to any pending application or proceeding.

§ 3.622 **Repetitious applications.**—(a) Where an applicant has been afforded an opportunity to be heard with respect to a particular application for a new television broadcast station, or for change of existing service or facilities, and the Commission has, after hearing or default, denied the application or dismissed it with prejudice, the Commission will not consider another application for a station of the same class to serve in whole or in part the same area, by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's order.

(b) Where an appeal has been taken from the action of the Commission in denying a particular application, another application for the same class of broadcast station and for the same area, in whole or in part, filed by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original

parties in interest, will not be considered until the final disposition of such appeal.

§ 3.623 **Assignment or transfer of control.**—(a) **Voluntary:** Application for consent to voluntary assignment of a television station construction permit or license or for consent to voluntary transfer of control of a corporation holding a television station construction permit or license shall be filed with the Commission on Form FCC No. 314 (assignment of license) or Form FCC No. 315 (transfer of control) at least 60 days prior to the contemplated effective date of assignment or transfer of control.

(b) **Involuntary:** In the event of the death or legal disability of a permittee or licensee, or a member of a partnership, or a person directly or indirectly in control of a corporation, which is a permittee or licensee:

(1) the Commission shall be notified in writing promptly of the occurrence of such death or legal disability, and

(2) within thirty days after the occurrence of such death or legal disability, application on Form FCC No. 314 or 315 shall be filed for consent to involuntary assignment of such television station permit or license or for involuntary transfer of control of such corporation to a person or entity legally qualified to succeed to the foregoing interests under the laws of the place having jurisdiction over the estate involved.

## *Licensing Policies*

§ 3.631 **Exclusive affiliation of station.**—No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied with a network organization<sup>1</sup> under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization.

§ 3.632 **Territorial exclusivity.**—No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another broadcast station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another broadcast station serving a substantially different area from broadcasting any program of the network organization. . . .

§ 3.633 **Term of affiliation.**—No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original terms, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than two years: **Provided,** that a contract, arrangement, or understanding for a period up to two years, may be entered into within six months prior to the commencement of such period.

§ 3.634 **Option time.**—No license shall be granted to a television broadcast station which options<sup>1</sup> for network programs any time subject to call on less than 56 days<sup>2</sup> notice, or more time than a total of three hours<sup>2</sup> within each of four segments of the broadcast day. . . .

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§ 3.635 **Right to reject programs.**—No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (a), with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (b), with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

<sup>1</sup> As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

<sup>2</sup> All time options permitted under this section must be specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

<sup>3</sup> These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.

§ 3.636 **Network ownership of stations.**—No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control<sup>1</sup> of a network organization, for a television broadcast station in any locality where the existing television broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing.

§ 3.637 **Dual network operation.**—No license shall be issued to a television broadcast station affiliated with a network organization which maintains more than one network of television broadcast stations: **Provided**, that this regulation shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

§ 3.638 **Control by networks of station rates.**—No license shall be granted

to a television broadcast station having any contract, arrangement, or understanding, express or implied with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than the network's programs.

§ 3.639 **Use of common antenna site.**—No television license or renewal of a television license will be granted to any person who owns, leases, or controls a particular site which is peculiarly suitable for television broadcasting in a particular area and (1) which is not available for use by other television licensees; and (2) no other comparable site is available in the area; and (3) where the exclusive use of such site by the applicant or licensee would unduly limit the number of television stations that can be authorized in a particular area or would unduly restrict competition among television stations.

§ 3.640 **Multiple ownership.**—(a) No person (including all persons under common control)<sup>2</sup> shall, directly or indirectly, own, operate, or control more than one television broadcast station that would serve substantially the same service area as another television broadcast station owned, operated, or controlled by such person.

(b) No person (including all persons under common control shall, directly or indirectly, own, operate, or control more than one television broadcast station, except upon a showing (1 that such ownership, operation, or control would foster competition among television broadcast stations or provide a television broadcasting service distinct and separate from existing services, and (2 that such ownership, operation, or control would not result in the concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity; provided, however, that the Commission will consider the ownership, operation, or control of more than five television broadcast stations to constitute the concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity.

<sup>1</sup> The word "control" as used herein, is not limited to full control but includes such a measure of control as would substantially affect the availability of the station to other networks.

<sup>2</sup> The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.