

A PREVIEW OF

# Television

Radio's Newest Contribution  
to Home Entertainment





## HOW RCA-NBC TELEVISION WORKS

**THE TELEVISION STUDIO.** The studio from which a Television program is broadcast is in many ways similar to a theatre or a motion-picture studio. However, it has one major difference: the scene is "shot" by an RCA Iconoscope camera, sometimes referred to as the "Ike." The vital unit which makes this camera possible is the RCA Iconoscope Tube, shown at "A."

The operation of the Iconoscope camera is entirely unlike that of a motion-picture camera. It uses lenses to focus the picture; but, instead of recording the image by means of film or plates, it focuses the scene onto the mosaic which forms part of

the Iconoscope tube. This mosaic is made up of small light-sensitive globules which are, in effect, minute photo-electric cells. These reduce the scene to a mass of small spots having varying degrees of light intensity. An electron beam, scanning this mosaic, converts the light registered by each globule into an electrical impulse. These impulses are then amplified and sent, each one separately, to the transmitter which in turn transmits the impulses individually to the receiver.

The finely detailed Television pictures which are broadcast today in NBC's Radio City studios in New York, require simul-

taneous transmission over a band six times as wide as the entire standard radio-broadcast band. This wide frequency band presents many problems both in the transmitting station and at the receiver; and the fact that they have been successfully solved is an eloquent tribute to the work of RCA Television engineers and scientists.

**THE RCA TELEVISION TRANSMITTER.** After the picture is converted into electrical impulses by the Iconoscope, it is sent to the transmitter by means of a coaxial cable or a radio relay link. At the Radio City

studios of NBC a radio relay link and a coaxial cable are available, to relay the program to the main transmitter atop the Empire State Building.

The Television antenna ("B") must be located as high as possible to obtain the maximum range of transmission. This is because Television programs are transmitted over the ultra-high-frequency waves, which act in much the same manner as light waves; and therefore they do not bend beyond the horizon. Thus, the higher the transmitting antenna (also, the higher the receiving antenna), the greater the range over which it is possible to transmit and receive Television programs.

**THE RCA TELEVISION RECEIVER.** In the home, a Television receiver re-creates the program so that it appears exactly as presented at the studio. The tube that makes this re-creation possible is the RCA Kinescope ("C"), an advanced development of the cathode-ray tube. The RCA Kinescope has a white translucent screen at its end; and it is upon this screen that the picture appears. An electron beam which is controlled by pulses from the transmitter traverses the screen, exactly reversing the action of the electron beam of the Iconoscope at the studio, and thus re-creates the picture which was converted into electrical impulses in the studio.

An important part of the Television receiver is the sound channel, which reproduces the sound accompaniment of a Television program. The receiving circuits for reproducing Television sound are quite similar to those used for ordinary broadcasts, except that operation is in the ultra-high-frequency waves. RCA Victor Television Consoles also include a standard three-band all-wave radio for receiving regular domestic and foreign radio broadcasting programs.



# ANSWERS TO YOUR QUESTIONS ABOUT



RCA Victor Television Console, Model TRK-5

**Q. Will Television receivers reproduce standard radio broadcast programs?**

A. Some will and some will not. However, all complete RCA Victor Television Receivers include a 3-Band all-wave radio chassis. For example, the RCA Victor Television Console Model TRK-5, shown above, embodies an 8-Tube RCA Victor Radio giving standard domestic broadcast and foreign short-wave reception.

**Q. Will Television receivers become obsolete quickly?**

A. It is not expected that the first Television receivers put on the market by RCA Victor will become obsolete quickly. Naturally, as normal progress in the industry is made, improvements will be made in new receivers. There is, however, no reason to believe that these improvements will come

about any more rapidly than improvements made in any similar industry.

**Q. Will a Television receiver purchased in one city receive programs perfectly in another city?**

A. The only requirements for perfect reception of any Television program by any Television receiver are that the receiver cover the particular channel on which the program is broadcast, and that it be located within the service area of the transmitter. If a receiver has only a limited number of channels, it will receive programs transmitted over those channels only.

**Q. Are Television receivers easy to tune?**

A. Generally speaking, an RCA Victor Television Receiver is as easy to tune as an ordinary broadcast receiver; but there are, in effect, two receivers to operate. A single selector will choose the channel, and individual volume and tone controls will be connected to the sound. For the picture there will be a brightness control, contrast control, focus control, and vertical and horizontal hold control. Tuning an RCA Victor Television Receiver is much easier than was the tuning of early radio receivers.

**Q. How many people can comfortably see a Television broadcast?**

A. Any RCA Victor Television Receiver will enable the average family to see a program simultaneously.

**Q. Is it necessary to darken a room in order to see a Television program?**

A. Television programs may be likened



RCA Victor Television Console, Model TRK-9

to home movies in that best results are obtained in rooms having subdued light.

**Q. Is the reproduction of a Television image as good as a home movie?**

A. RCA Victor Television picture reproduction compares favorably with home moving-picture reproduction. An idea of the quality obtainable may be gained from the picture of the RCA Victor Television Console Model TRK-9, shown above, in operation.

**Q. Can a Television receiver be installed when there is no Television program on the air?**

A. No. All installations must be made while a program is on the air. This is necessary to check the Television receiver performance and to make the proper type of antenna installation,

**Q. Will competent service be available on Television receivers?**

A. RCA Victor is now making arrangements which will insure thoroughly trained men to service Television receivers in all areas where Television is in use. For this purpose, the facilities of RCA Institutes, the oldest radio school in the United States, are being used.

**Q. Will Television receivers work on direct current? On batteries?**

A. At present, Television receivers have been designed for alternating current operation only; in areas served by direct current, a special speed-regulated motor-generator will function satisfactorily. It will not be possible to receive Television programs satisfactorily in areas using battery receivers.

**Q. Is it difficult to install a Television receiver?**

A. No. RCA Victor Television Receivers may be installed in practically any location within range of a Television transmitter. However, they do have a much more critical antenna system than do ordinary radio receivers, and in some cases a certain amount of experimenting may be necessary to determine the best antenna location.

**Q. Is a special antenna necessary on Television receivers, or may a regular radio antenna be used?**

A. There are several types of special Television antennas available for dif-

# TELEVISION!



RCA Victor Television Console, Model TRK-12

ferent types of installation. A regular radio antenna will not be suitable for Television.

**Q. What size pictures will be available?**

A. At present, RCA Victor Television Receivers provide three sizes of picture. The RCA Victor Television Console Model TRK-12, shown above, uses a 12-inch Kinescope, and gives a picture 7 $\frac{3}{4}$ " x 9 $\frac{3}{4}$ ". Other models use the 5-inch Kinescope, which gives a picture 3 $\frac{3}{4}$ " by 4 $\frac{3}{4}$ "; and the 9-inch Kinescope, which provides a picture 5 $\frac{3}{4}$ " x 7 $\frac{1}{4}$ ".

**Q. How much will Television receivers cost?**

A. Actual prices of RCA Victor Television Receivers will depend largely upon the size of the Kinescope em-

ployed, since this is the principal component of every Television receiver. Other factors will enter into the price, also. Generally speaking, however, the prices of RCA Victor Television Receivers are surprisingly moderate.

**Q. What is the cost of operating a Television receiver?**

A. At the average price for electricity, the cost of operating an RCA Victor Television Receiver will be approximately one cent per hour, a surprisingly small cost for both seeing and hearing world events in one's own home.

**Q. What types of programs may now be broadcast?**

A. Television programs will consist of studio presentations and some moving pictures. Also, outdoor events picked up by mobile units may be telecast. It is technically possible to present practically any type of program that can be picked up by a camera.

**Q. Will Television programs be sponsored?**

A. At present, there have not been any commercial licenses issued for Television programs, and until such time as there are, programs cannot be sponsored commercially. However, in the event that such licenses are issued, and if there are sufficient receivers in an area, it is quite likely that sponsors will be found.

**Q. Who will pay for programs?**

A. Until commercial licenses are granted and sponsors are found, the station itself must pay for all programs.



RCA Victor Television Attachment, Model TT-5

**Q. Will my present radio receiver be able to reproduce Television sound?**

A. Yes, in conjunction with the RCA Victor Television Attachment, shown in operation above, most RCA Victor Radios having Victrola Plug-in connections may be used for reproducing the sound of Television programs in areas served by Television broadcasting stations. Some of the outstanding RCA Victor models designed for use with the RCA Victor Television Attachment are shown on the following page.

**Q. Are such attachments available?**

A. At present RCA Victor Television Attachments are available in New York City where Television broadcasting has been established. They will be made available in other areas

as fast as broadcasting stations are set up to conduct Television programs.

**Q. Will I be able to have Television in my home?**

A. Only those persons located within the service area of a Television broadcasting station will be able to receive Television programs.

**Q. If I am considering the purchase of a new radio, ought I to wait until Television receivers are available in my area?**

A. No one can say just how long it will be before Television comes to a given area. It is needless to defer the enjoyment of good radio reception for so indefinite a period of time, particularly when RCA Victor Radios can easily be adapted to Television when it becomes available, by means of the RCA Victor Television Attachment.



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