How to Make Your Own Radiovisor

Radiovision

By C. Francis Jenkins

This is the second of a series of articles prepared for Science Service by Mr. Jenkins in which full directions are given for making a radiovisor to attach to your radio set and pick up the radiomovie and television programs now being broadcast by a number of stations. The next article will appear in next week's issue.

How Radiovision Works

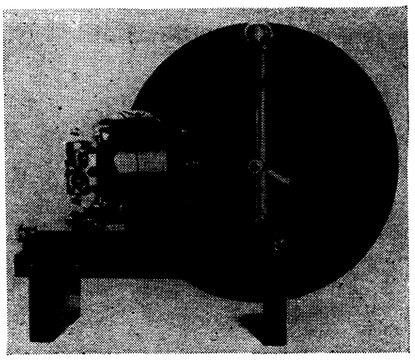
Before you attempt to build a radiovisor you should know some of the principles of radiovision. Seeing by radio is only a little more complex than hearing by radio. In order to make your own radiovisor, as will be explained in this series of articles, you will need to know how the scene or movie being broadcast is changed from a picture painted in light to a series of electrical impulses in the ether and then retranslated into a picture in the radiovisor.

There is nothing mysterious about radiovision. Pictures can be built up for the eye to see just as sounds can be brought together for the ear to hear as speech or music.

The essence of radiovision is the translation of light and darkness into variations of electrical intensity which can be broadcast through the ether and received in any home. Where the microphone of the ordinary sound radio transmitting station picks up sound and translates it into variations of electricity, the eye of the radiovision transmitting station analyses the scene or motion picture before it into strips of fluctuating light and feeds this electrical representation of the scene into a regular broadcasting radio transmitter.

The trickery of the movies is used in radiovision and radiomovies. The eye is satisfied and fooled into seeing motion if fifteen still pictures are flashed on a screen each second. Every motion picture consists of a series of still pictures, each focused on the screen for a mere fraction of a second.

Radiovision also uses the principle



JENKINS RADIOVISOR, rear view, showing mounting of motor and simple friction gearing

that allows photographs to be sent by wire and radio. The photograph or picture to be sent is chopped up into horizontal lines, the number depending upon the quality of picture desired, and the variation of light and darkness along these lines is scanned by an "electric eye" that changes the variations of light into variations of electrical impulses. This electrical eye is called a photo-electric cell. Some scanning device is used to focus the photo-electric cell upon each point of the picture or scene in succession. For the transmission of still pictures of photographs by wire or radio, it is possible to take ten or fifteen minutes to thus cover the picture; for radiovision it is necessary to scan the picture once every fifteenth of a second.

The principle of the halftone photograph, such as printed in this publication, that pictures made up of a multitude of small dots are blended by the eye into a smooth picture, is used in radio pictures and radiovision in order that the eye may blend together the horizontal slices of radio photograph, radiomovie or radiovision.

In the radiovision receiver a neon lamp which fluctuates with the changes of the incoming radio impulses allows the scanning disc to recreate the scene or movie that was seen by the eye of the transmitter.

In these articles, a distinction is made between wire-carried service and radio-carried service by the obviously logical terms telegram, telephone, and television, for wire service; and radiogram, radiophone, and radiovision, when referring to radio service. Radiovision means radio transmission and reception of images from living objects and scenes; and radiomovies the transmission of such subjects from a record of them on motion-picture film.

To the present time, the fundamentals of all systems are the same—only the mechanisms differ. And but two methods are employed, i. e., the disc scanner and the drum scanner.

Owing to the limitations of the disc scanner, it may not unfairly be compared to the first audioradio receiver, the crystal set; and because of its greater possibilities, the drum scanner may just as fairly be considered comparable to the three-element tube. The disc receiver is the simpler mechanism and is the one described in the radiovisor you will build; the drum scanner requiring in its construction parts not so easily had.

But both devices scan the picture in the same way, namely, they build up a picture line by line, from left to right, with line distribution from top to bottom, just exactly as you read the lines of type in this column.

Each radiovision picture frame is thus made up of forty-eight lines for quality of detail, and fifteen picture frames per second to get the smooth continuity due to the persistence of vision of the human eye. We are now ready to begin making parts of the radiovisor.

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Observatory Sells Branch

Astronomy

The Chile station of the Lick Observatory, maintained since 1900 in order to observe stars in the southern part of the sky, has been sold to the Catholic University of Chile. This announcement was made by Dr. Robert G. Aitken.

Prof. Ferd. J. Neubauer, who has charge of the Chile station, will remain there until May 1, 1929, as professor extraordinary in the Catholic University.

Science News-Letter, September 22, 1928

Cages Test Borer Control

Entomology

More than a million square feet of copper screening were used in the construction of two gigantic cages which experts of the United States Bureau of Entomology employed in a unique experiment to determine the effectiveness of methods recommended for controlling the destructive corn borer.

The cages were built in a heavily infested region near Toledo, Ohio. Each cage was nine feet high and covered an acre of corn, planted after the soil had been treated to destroy the larvae.

As the moths appeared they collected on the top and sides of the cage, from which they were painstakingly gathered. An actual count was made of the number which emerged, and this count, which has just been completed, reveals that control methods developed by the bureau are more than 98 per cent. effective.

Science News-Letter, September 22, 1928