The LATEST in

The "Aerial Television Eye," Designed to Transmit Airplane Views of Cities to a Ground Receiving Station

"ADJUST that synchronizing knob, my boy, and then beat it out of here. You've earned a rest," said a fatherly voice to a young research worker in a Washington laboratory the other day.

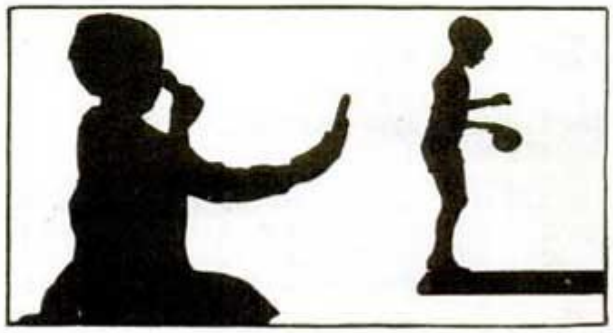
As the young fellow passed through the door, the older man, alone in one of the most famous workshops in the country, chuckled to himself: "Well, now, I guess that device will be well able to send out movies that in line and detail aren't so much inferior to the ones we see regularly at the corner theater."

The newest transmitter of C. Francis Jenkins is outstanding among the astonishing television developments of the past few months. As most every one knows, the average popular system of television today consists of a scanning disk that contains a series of holes arranged spirally and revolved by a synchronous motor in front of the image to be transmitted. As the disk rapidly revolves, the holes cut images into many sections and these affect a photoelectric cell, which is so arranged as to transmit a radio signal. At the receiving end these signals affect a neon lamp, the light of which varies directly with the current that operates it. A similar disk revolves in front of the lamp, and from it is projected the image, which is seen in the viewing frame.

Jenkins' transmitters, past and present, differ from others in that he employs a quartz-rod drum in place of the scanning disk. Thereby, he claims to get far better sharpness and detail of image. Particularly is this true in the case of the new transmitter, revolved by two powerful synchronous motors instead of one, and fully capable, tests have proved conclusively, of broadcasting halftones as well as the familiar silhouettes.

A short time ago, Jenkins started using his new transmitter, broadcasting from his recently completed laboratory near Washington, and, as many amateurs now know, he is transmitting movies every night, instead of only thrice a week. And, most important of all, he occasionally broadcasts in halftones, since the radio commission has lately granted him a suitable short wavelength for the purpose.

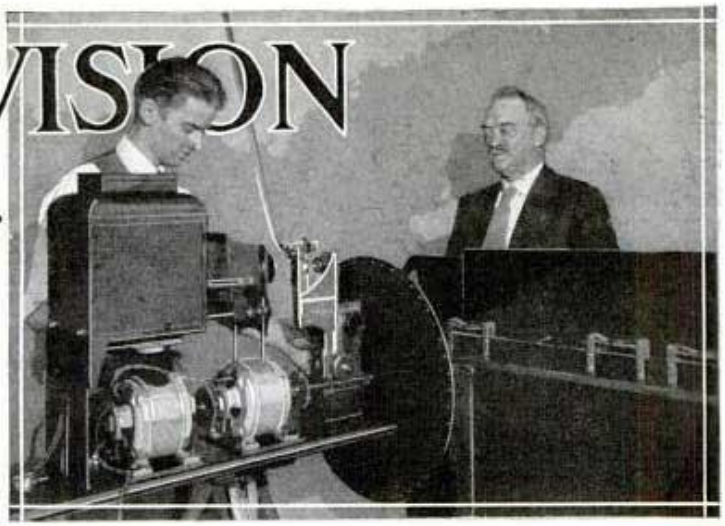
No one ever knows what Jenkins has up his sleeve for tomorrow, but today he's having a lot of fun experimenting with two other television devices recently invented: the first, a receiving apparatus for radio movies in the theater, and the other an "aerial television eye," designed to transmit airplane views of cities to a ground receiving station. The theater apparatus doesn't yet please Jenkins, so he's making no rash claims for it. It works on substantially the same principle



Some of the Famous

TELEVISION

by
James N. Miller

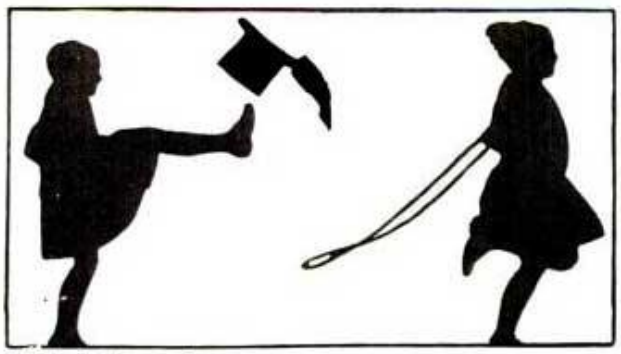


Jenkins' Latest Transmitting Device, Just Completed, Broadcasts Not Only Silhouettes, but Halftones as Well

as his other receivers with certain technical differences. The area on which the picture is shown consists of forty-eight horizontal rows of flashlight lamps, with forty-eight lamps in each row. They are arranged in a like number of holes in a two-foot-square plate, supported in a vertical position. The lamps are divided electrically into four banks, and each is individually wired to its particular contact of the switching gear. When the motor is started, the incoming amplified radio signals are distributed to the several lamps in succession, fully lighting some of them, lighting others to partial brilliancy and leaving others unlighted. The result is a picture built up in lights and halftone and shadow on the face of the plate.

The picture is made up of glowing lamp filaments which persist, in light value, for an appreciable time, say a tenth of a second. But as the exciting impulse is applied every fifteenth of a second, the lamp is aglow for the whole time the corresponding area of the scene at the transmitting station is alight. Which is to say that the whole of the received picture is on the plate all the time instead of only a fractional part of it. In front of the plate a lens is mounted for projecting it onto a theater screen. As the light source is the picture itself, the only loss is that resulting from the magnification. And, fortunately for the observer, the light is white, not the pink color characteristic of the neon lamp.

The aerial television eye is being tested in the inventor's new Curtiss plane. Army and navy officials have manifested keen interest in the invention, since it would have great military value in time of war. With its use, an army's general headquarters would be put within sight range of front-line operations. Constructed to insure refinement of visual detail, the device enables the panorama below to be recorded in the usual way by means of a large scanning disk, light-sensitive cell and other broadcasting paraphernalia. The scenes are received on regular television machines set up in the Jenkins laboratories. The scanning eye focuses on the ground through an aperture in the bottom of the ship. The inventor, an experienced flyer, directs all maneuvers and pilots the plane while two assistants operate the television machinery.



Jenkins Shadowgraphs

Mr. Jenkins says: "We are repeatedly told that it will be from five to ten years before the public will have perfect television receivers. One might just as truth-

Taking a Movie in the Jenkins Laboratory; Already Television Has Reached the Stage Where the Whole Family Can Enjoy It

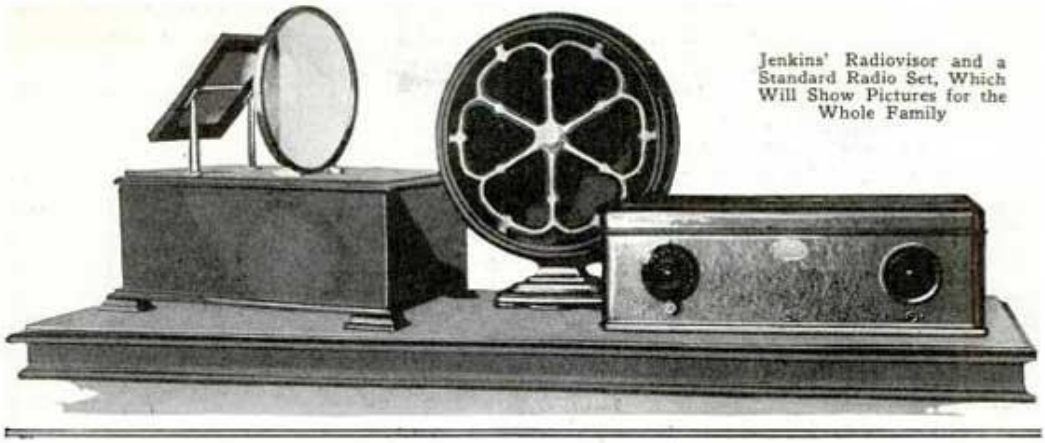
fully say a thousand years, for perfection is never attained. Fortunately for the inventor, the improver and the research man are never satisfied.

"However, the new industry is progressing by leaps and bounds. True, it is still wrapped in swaddling clothes. Nevertheless it should be borne in mind that animated pictures differ from still pictures only in the speed of presentation, and the process of sending the latter by radio is highly perfected.

"We are beginning to take television out of the peephole or one-man state. The problems of increased detail, better illumination and a more precise synchronization of the transmitting and receiving disks are in capable hands, and I regard their solution as a matter of a short time only."

Judging from the queries that come regularly to his laboratory, Mr. Jenkins says, there must be over 20,000 amateurs regularly receiving his movies. Official figures now available tell an even more surprising story. While they do not divide television into its still and movie chapters, they show that twenty-two visual broadcast stations, probably, by the time this is read, will be transmitting pictures and television images on channels assigned by the radio commission. Moreover, the broadcasting now is on a nation-wide basis, for twelve of the stations are in the east, four in the middle west, two in the far west and one in the south. Jenkins himself, from station W3XK, at Washington, (and his new station has the same number) has been using two channels simultaneously —the short-wave band for long distance "lookers-in" and a regular broadcast channel for the enthusiasts at Washington and vicinity.

"We now are in a position to provide any number of scattered, independent broadcasters with facilities for inaugurating a television service," he says. "It is the first practical step which has been taken in the direction of a national distribution of television programs. Often I have been asked why I haven't always been broadcasting halftone movies, showing details of scenery and persons, instead of silhouettes or movies in black and white only. My answer is that the halftones, in regular movie film and in broadcasts from living subjects, require a broader band. However, bands 100 kilocycles wide have just been assigned by the radio commission for such work, so I shall gradually increase my output of halftone films, and soon expect to be broadcasting, for fire-



Jenkins' Radiovisor and a Standard Radio Set, Which Will Show Pictures for the Whole Family

side entertainment, pictures selected from those now shown in the theaters.

"The present halftone broadcasts are received in the nation's televisors just as easily as are the silhouettes. My present system of transmitting was undertaken principally to enlist the co-operation of the amateurs in order to learn the possibilities and the limitations of this new entertainment; and to build up a perfect radio-movie technique.

"When I've picked up more valuable information in this connection and have perfected my new motion-picture theater receiver, I'll be able to play ball with some degree of efficiency with vast audiences of lookers-in; and then I can likewise help the producer to distribute motion pictures to the theaters by means of radio instead of by film."

May we expect home talking movies shortly, and, if so, about how soon, the inventor was asked. "Probably within a couple of years," he replied. "Dr. De Forest's perfected high-vacuum tube is going to be the foundation of transmitted sound motion pictures, just as it is now the foundation of sound broadcasting. It is the Aladdin's lamp which will enable vast audiences to see as well as hear through space."

Answering another question, Mr. Jenkins declared: "The chances are that the sight channels of radio communication will never seriously interfere with the proper reception

The Small Silhouette Above and the Two-Foot-Square Image of the Latest Receiver, Below, Illustrate the Strides Television Is Making

of sound. Nor will the reverse situation obtain. One day the radio fan, because of the new short wavelengths designated for television, will be able to watch the radio folks dance and sing while he likewise tunes in on the longer wavelengths for his sounds. The result should be a well-synchronized entertainment product.

"Television's greatest immediate problem is to produce a simple, practical and fool-proof televisor for the entertainment of the whole family circle. While I have built one that comes fairly close to meeting these requirements, there is still plenty of research work ahead. As for size, I lately have succeeded in magnifying the television image to a point where it can be viewed by as many as a dozen persons at one time.

"When radio service to the eye shall have a comparable development with radio service to the ear, the new era will bring to the fireside a fascinating teacher and entertainer without limitation of language, literacy or age."

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