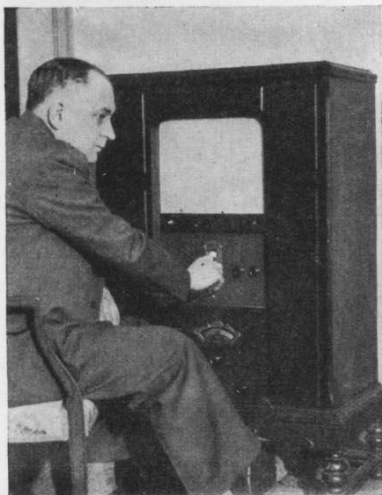


WHERE IS TELEVISION?

By A. P. PECK

"TELEVISION is here" says the technician; and the public looks around for a television "machine" with which it can see stage presentations, boxing matches, horse and automobile races, and all the other interesting events that go to make up our complicated national life. But the public looks in vain: Here is a televisor that shows a picture the size of a postage stamp; here is one which gives an image, somewhat distorted by a huge magnifying glass, apparently about six inches square. But the images in these televisors show only head, or head and shoulder views, of one or, at the most, of two persons, and to see even these limited pictures the spectator must be very nearly in a direct line with the televisor. The much-touted 10-foot square television screen of Sanabria can, in this discussion, be dismissed



Above: William Hoyt Peck with his televisor. Right: A close-up of the lens-mirror disk, with the light-condensing lens housing projecting downward into the top of the picture

with a few words. It is much too cumbersome to interest the home television enthusiast, and even with its large size it has the same limitations of image as are found in the smaller reproducers.

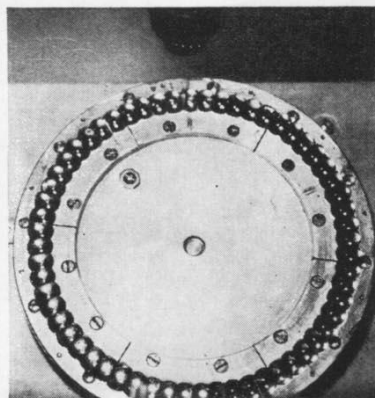
Where then is the kind of television that will give us in our own home the equivalent of a motion picture with sound accompaniment? Quite frankly it is not available. We can today go to an up-to-date radio shop and purchase a televisor that will actually operate but it will have all of the limitations

briefly expressed above. It will be erratic in operation; it will require constant attention on the part of the operator; and it will bring to us only mediocre pictures. Thus, television has or has not arrived, according to the standards which each person sets for such entertainment in the home.

Workers in the television field may be divided into two general classes—those who are doing something and telling the world about it, and those who are doing something and saying nothing. Both groups can justify their attitudes: The former is giving the public a new plaything—crude though it is; the latter is working toward a more or less definite end and prefers to withhold the details of results until television on a scale acceptable to the majority can be made available.

A brief survey of the activities of some of the workers in the first of these two groups will give a general idea of what the present offers. (For details on the technical phases of television see February 1927, March 1928, December 1928, February 1930, and November 1930 SCIENTIFIC AMERICAN.)

The engineers of the Jenkins Television Corporation have developed a line of television receivers and reproducers, a console model of which is shown. The image is viewed through a modified shadow box mounted in the console, being projected onto a trans-



lucent glass screen so that it can be watched by a small group of people. This company reports that it is experimenting with a transmitter operating in the neighborhood of five meters. In this region congestion is at a minimum and the carrier wave can be held steady enough for satisfactory transmission.



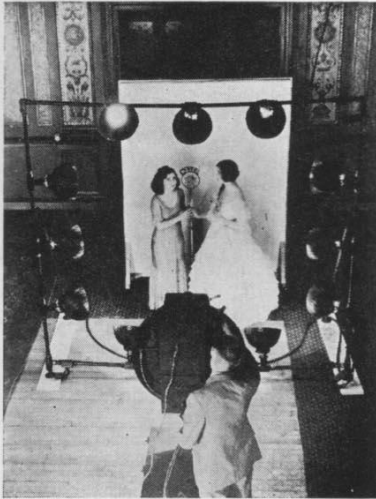
The Freed television receiver and reproducer, showing the shadow box which can be folded downward

Jenkins' engineers also talk of a new type of "camera" or television pick-up for use in theaters and out of doors and of a new method of increasing detail in a received image. So far, this development is all in the future, and the receiver with a small image, lacking in detail, is all the public can have at this time.

In one of the models put out by the Freed Radio and Television Corporation, a crater-type neon lamp supplies the light which is modulated by the incoming signal. This light is projected through a series of lenses arranged in a spiral on the usual scanning disk. This lens system serves to enlarge the image as it is projected on a screen, and so to make it visible by several persons at one time. On the front of the cabinet is a hinged arrangement which serves as a shadow box, and which may be closed to cover the screen when the set is not in use.

THE latest development at the time of writing is the lens-mirror disk of William Hoyt Peck (no relative of the writer). In this system, a scanning disk about one foot in diameter gives an image, projected on a screen, about a foot long. Arranged in a circle around the edge of the disk are 60 lens-mirrors (or the proper number according to the number of units used at the transmitter). Light from a crater-type neon lamp is focused through a lens system onto the lens-mirrors, which are individually tilted so that a scanning effect is obtained. The designer claims that far more efficiency is obtained from the neon lamp with his system than is possible with any other system in which only part of the light is used at any one instant.

In a demonstration of the Peck system, the writer noted fair definition, but



In the foreground is the Jenkins television "camera" used to pick up visual programs at any location

insufficient illumination on the foot-long screen. This was explained as being due to the lack of a satisfactory light source which, however, is being developed. The best feature of the television was the fact that a large group of persons could view the image from various angles, and did not have to be directly in front of the screen. This factor is one which is stressed below as being highly desirable in a satisfactory television. Peck's television is not as yet on the market, but licenses are being arranged for manufacture in the very near future.

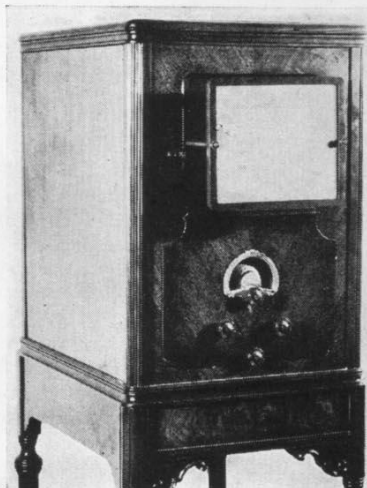
STATEMENTS from a few of the workers in the second group mentioned above—the silent hard workers—will indicate to some extent what may be expected in the future. John V. L. Hogan, of Radio Pictures, Inc., who for some years has been engaged in intensive development work on television problems, recently told the writer of some of the features that television must possess before it can be considered an important factor in our daily life. "The image," said Mr. Hogan, "should be at least six inches square with detail sufficient to show recognizable features of persons in close-ups and recognizable action in scenes which take in more area. The large magnifying glass for enlarging the image is definitely out. The image may be viewed directly as formed or projected upon a screen. In any event, the image must be such that it can be seen by a group of people seated as they would be in a home living room, and not by only one or two directly in front of the television. The reproducer or television must be simple enough in operation to require no more attention from the user than is needed by the present day broadcast receiver.

"I do not believe that the scanning

disk or drum, as such, will be a part of the really successful television receiver of the future. By this I do not mean that mechanical methods of scanning and reproducing will be discarded in favor of some such electrical method as the cathode-ray tube, but the bulky scanning disk must go. Its inherent undesirable features cannot be countenanced in a radio vision receiver that is to be used by the general public."

MENTION was made of the use of motion picture film for television transmission as opposed to direct scanning of actual figures or scenes. Mr. Hogan expressed himself as follows: "When experimenting with television as we are, and as others are doing today, it is essential that all available factors be eliminated or stabilized as far as possible. Scanning a film does just this with one part of the transmitting equipment. All other factors being equal, we know that the transmission tomorrow will be the same as it is today, using the same film, and thus we are able to check differences in operation that would be more obscure if direct scanning were employed. When television becomes an accepted fact for the general public, I believe that films will furnish the bulk of the programs. Their use will make possible a far wider range of television entertainment than could be attained by direct scanning, although the latter will be of great value for 'spot pick-up' of news events and the like."

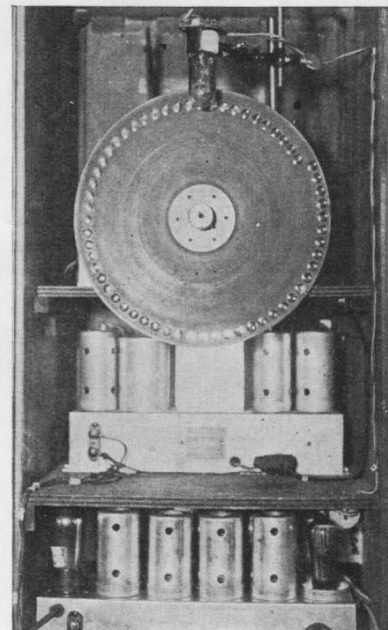
It has been well known for some time that the Radio Corporation of America has been experimenting behind closed doors on all phases of television. In an annual report to the stockholders of that corporation, James G. Harbord, Chairman of the Board of Directors, made the following statements of interest at this time:



In the Jenkins console television, the reproduced image is viewed through a modified shadow box

"While television during the past two years has been repeatedly demonstrated by wire and by wireless on a laboratory basis, it has remained the conviction of your own Corporation that further research and development must precede the manufacture and sale of television sets on a commercial basis. . . .

"It is felt that in the practical sense of the term, television must develop to the stage where broadcasting stations will be able to broadcast regularly visual objects in the studio, or scenes occurring at other places through remote control; where reception devices shall be developed that will make these objects and scenes clearly discernible in millions of homes; where such devices can be built upon a principle that will eliminate rotary scanning disks, delicate hand controls, and other mov-



A rear view of the Freed television showing the lens disk, the crater-type neon lamp, and the two radio sets for sight and sound reception

able parts; and where research has made possible the utilization of wavelengths for sight transmission that would not interfere with the use of the already overcrowded channels in space."

Television today, then, seems to boil down to just this: If you will be content to see pictures that are not even comparable with the earliest movies, or if you are experimentally inclined, you can have television in your own home and can "look in" on programs which are available at more or less regular intervals. If, however, you want something that will compare favorably with your home movie equipment in quality of image, you cannot have television today, and you probably will not have it for some time to come.