Radio News

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What to Expect of Television

By HUGO GERNSBACK

NOW that television has actually arrived, it may be well to take stock of the new art, and to look into the future.

The word "Television" was first coined by myself in an article entitled "Television and the Telephot," which appeared in the December, 1909, issue of MODERN ELECTRICS, the pioneer radio publication, which I published. I believe that these were the first articles on the art of television published in the United States.

Before going much further, I must sound a precautionary note, and that is: *do not expect too much of television for some time to come.* At the present time, there is feverish activity by many firms, large and small, to put television receivers on the market.

Station WGY of Schenectady may be called the pioneer television broadcaster, as it started to broadcast television some time in May of this year. Station WRNY began broadcasting television in June.

"What will we be able to see?" is the question that is most frequently asked. Frankly, not a great deal. We shall be satisfied if it is possible to clearly see silhouettes, letters, designs, diagrams, large print and so forth; that is, with television broadcast over the usual broadcast channels. Here, for the present, we must be satisfied with rather coarse and indistinct details at the receiving side; although a number of broadcasters will probably broadcast television on short waves, where the details will have greater clearness, due to the wider frequency channels available.

Like all arts, television must first pass through a preliminary stage, and from the experience we gain during the first few months, better and better transmission may be expected.

We all remember the time when "wireless" first arrived, and when, prior to 1920, all we could get in our head receivers was dots and dashes—and these not always clear—rather than actual voices and music, now known as broadcasting. It will be so with television; so don't expect too much, and you won't be disappointed. In my opinion, it will be quite marvelous if, on your television receiver, you will be able to see good silhouettes, and can read large letters, broadcast from the studio.

And don't expect simultaneous transmission of voice and television. That, at the present stage of the art, is not possible. The procedure will run somewhat like this:

The studio announcer will say, "Now we shall televise such and such an object." It will take one or two minutes to show the object, and then the voice or sounds from the studio will again be heard in your receiver. In between announcements, you will be able to pick up television on your television receiver; but you can't get both together until an entirely new invention is made, which, to my knowledge, is not as yet in sight. It may, however, come along any time.

At the receiving end, we have a revolving disc, which is usually made of aluminum, about 14 to 24 inches in diameter, and through it a number of holes. Directly behind the holes is a neon lamp, which is attached to your ordinary radio receiver. If necessary, the impulses coming through your radio broadcast receiver may be amplified in order to make the light of the neon lamp bright enough for receiving purposes.

The aluminum disc is rotated by means of a motor, and your television receiver will have a rheostat in series with the field of the machine. By adjusting this rheostat, you will be able to keep the rotation of your disc in step with that of the transmitter at the distant station. Through the holes, a "virtual" picture is built up, and thus you see what is shown at the broadcast studio.

This, at best, is a more or less crude way of doing things, and will not prevail in the future. It may be stated that the use of the present revolving discs at both the transmitter and receiver corresponds to the coherer-and-spark-gap stage of the old days of "wireless."

The ideal television receiver of the future will have no moving parts at all. There will be no motor, or if there is one, there certainly won't be a large disc such as we have now. What we probably will have is some sort of a cathode tube, in which a weightless electron beam will rotate in an induced magnetic field. It will be much easier to keep such a device as this in synchronism, and there is no doubt that the built-up picture thus produced at the receiving end will be far superior to what we have today.

The question that is asked frequently about present-day devices is, "How big is the received picture that you see?" As a rule, it is not large. This depends upon the diameter of the disc and the size of the plates of the neon tube. Usually, the picture is about two to three inches high, and from one and one-half to two inches wide. It is possible to enlarge this picture by means of a lens, and thus get a larger image; but so far experiments along these lines have not been very fruitful, because the picture becomes coarse and loses its luminosity as well.

As for televising the artists in the studio (that is, showing the radio audience what the artists look like), it seems quite a few months in the future; or, if they are shown at the present time, it will be most difficult to distinguish a man from a woman. These remarks are meant to apply only when the impulses are broadcast over the present broadcast band of wavelengths, that is, between 200 and 550 meters, and kept within the 5,000-cycle limit under which broadcasters operate. On the short-wave channels, as I said before, details are usually much clearer.

From the above, it should be understood that such a thing as televising in detail a moving object in the studio (for instance, a pianist playing) will not be possible for quite awhile to come. Anything in motion will be extremely difficult to receive and see well, with any kind of detail.

But the important point is that a start has been made, and that the public is interested. That is what counts. If enough people work on the new art, progress will no doubt be made quickly. I predict that, within one year, such tremendous strides will have been made in television that it will be possible actually to see what is going on in a distant studio.

But the broadcasting of such events as a ball game or a boxing match would seem, at the present time, to be distant anywhere from two to five years; at least, until such time as an entirely new television device will have been invented. That is, as I said before, not as yet in sight.

Mr. Hugo Gernsback speaks every Tuesday at 9.30 P. M. from Stations WRNY (326 meters) and 2XAL (30.91 meters) on various radio and scientific subjects.