

The "Stereoscopic" transmitter is shown in diagram form at the left, and the receiver at the right. The disc (Fig. 1A) scans two distinct images, one for each eye.

# How "Stereoscopic" Television Is Shown

John L. Baird Produces Moving Images Which Are Given the Appearance of Solidity

By R. F. Tiltman

THE last few months have witnessed spectacular advances in television. In June, John L. Baird demonstrated before Professor Fleming and other distinguished scientists and press representatives the transmissions of persons illuminated only by ordinary daylight, thus removing television from the laboratory to the

out-of-doors. This was followed almost immediately by transmission of objects in natural colors, as described in RADIO NEWS for October; and now, immediately on top of all this, comes the demonstration of stereoscopic television.

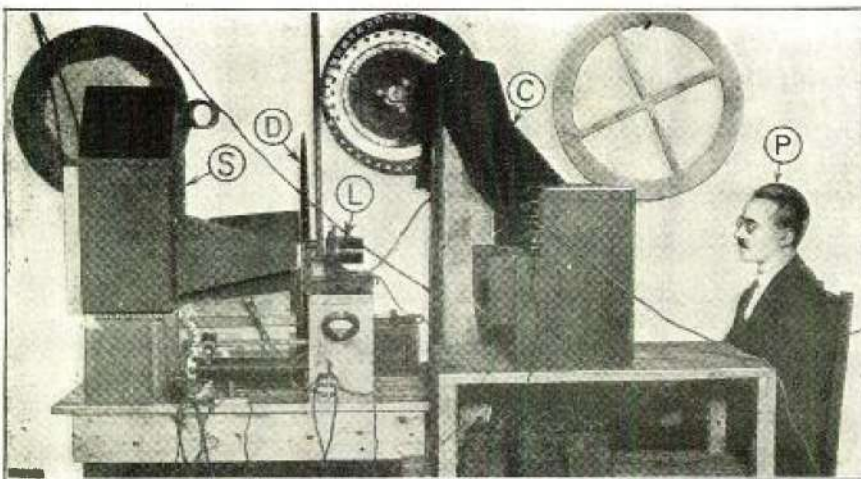
Television images in, apparently, three dimensions were demonstrated for the first

time on August 10 in the Baird laboratories in Long Acre, before an audience of scientists and representatives of the press.

### THE PRINCIPLE OF THE STEREOSCOPE

Stereoscopic television gives the image the appearance of solidity or depth, so that it does not look like a flat picture, but like an actual living object. The stereoscope does the same thing for photography and, in explaining stereoscopic television, we must first of all examine the principles of stereoscopy. The appearance of solidity or depth which we have arises from the fact that we view the exterior world through two eyes, each of which sees the scene from a slightly different viewpoint. The mind combines these two different images into one, and it is the blending of the left-eye and right-eye images that gives the impression of depth.

In the stereoscope, with which we are all familiar, two photographs, taken by cameras separated a distance equal to or greater than the distance between the two eyes, are placed side by side in a viewing device consisting of two prisms, so arranged that on looking through the prisms the images are converged and made to overlap. The extraordinary result is then obtained that, instead of our seeing two overlapping images, the mind combines these two dissimilar pictures into one composite view; and this



In this picture of the Baird transmitter, the photoelectric cells are in the box at the right: S, light-source; D, scanning disc; L, lens; C, cloth covering cells; P, subject undergoing television.



composite view does not appear as a flat photograph, but gives the observer the impression that he is looking into the actual scene itself. The illusion is very striking.

#### A DOUBLE TELEVISION IMAGE

By applying the stereoscopic principle to television, it has now become possible to transmit television images with all the appearance of depth and solidity; and, by a further combination of colored television with stereoscopic television, the complete illusion of images in natural colors, and with depth and solidity becomes possible. All this has recently been demonstrated in the Baird laboratories.

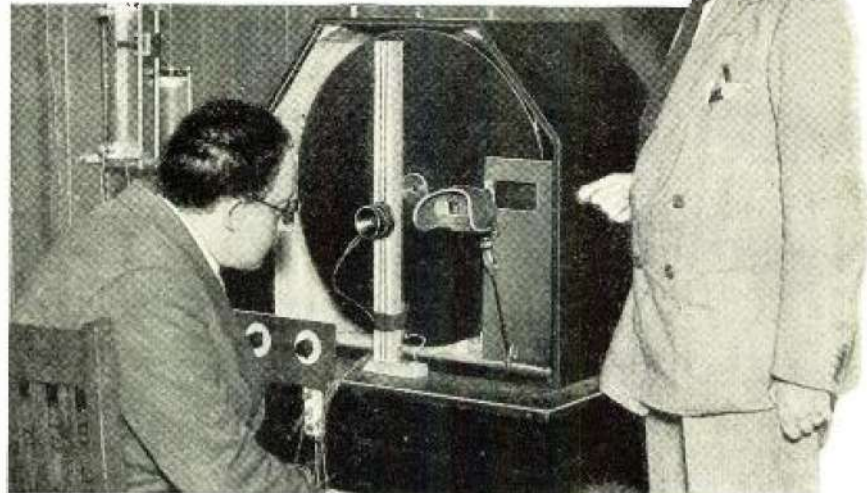
The transmitting apparatus consists of a disc, perforated as shown in Fig. 1A with two spirals; the first spiral being arranged round one-half of the circumference of the disc. The other spiral occupies the other semi-circumference, about four inches further in; the separation corresponds to the distance between the eyes of a human being.

Behind the disc, when it is mounted in the transmitter, as shown at the left of Fig. 1, is arranged an intense source of light. In front of the disc, and in line with the light-source, a lens is placed in such relation to the disc that a spot of transmitted light is caused to traverse the object. This arrangement is duplicated, so that each spiral has its lens and light-source; thus, two light spots traverse the object alternately, and two images are transmitted, one for the left eye and one correspondingly for the right eye.

At the receiving station a similar device is used, as indicated at the right of Fig. 1. A disc with the same arrangement of holes runs exactly in step with the transmitting disc; but behind the receiving disc is a neon tube, arranged as in ordinary television. The neon tube, however, covers both spirals and illuminates them alternately; so that on the receiving screen appear two images side by side, and separated by approximately half an inch. One of these corresponds to the object as seen by the right

Mr. Baird (right) is here shown demonstrating his "stereovision receiver." The familiar eyepiece with its twin prisms is at the right of the apparatus; the Baird receivers "frame" the image at the side of the scanning disc instead of the top. The microphone in front of this receiver is for communication with the transmitting room.

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eye, the other to the object as seen by the left eye. These images are then viewed through a stereoscopic viewing device, consisting of two prisms, which cause the images to converge and blend into one, just as in the ordinary stereoscope for photograph viewing.

It may be of interest to note that this stereoscopic viewing device is really unnecessary, and those who have the knack can make the images blend without the use of prisms; merely by looking fixedly at the images, and concentrating, by an act of will, the left eye upon the image at the left and the right eye upon the other. This is, in fact, the method used by most experts in stereoscopy. They seldom use the stereo-

scope, but rely upon the naked eye; in much the same way as a user of the microscope keeps both eyes open, but still sees only the object under the microscope. The eye which is not looking through the microscope is sub-consciously rendered, as it were, blind.

Professor Cheshire, lately president of the British Optical Society, who was present at these demonstrations, stated that a man sitting at the transmitter was very clearly seen on the receiver in another laboratory in the same building, in perfect relief, showing the facial delineation and expression; and declared also that these experiments promise considerable development and importance in their practical application.

## Televentures, Telewitticisms and the Televocabulary

WITH the first public demonstration of successful television, on however modest a scale, the press has taken up the task, in a spirit of humor blended with seriousness, of accustoming itself and its public to the new conditions which must be met. As with the telegraph, the telephone, the electric light, the moving picture, the airplane and the radio broadcast system, all of which have successively emerged from the laboratory in an unperfected condition, to develop into public utilities of the most commonplace nature, so it is to be with television.

A certain amount of gibing at the present unperfected nature of the invention alternates with half-serious prophecy of what it will be when it has reached its fullest growth; in many cases, no doubt, the reality will outrun the joke.

"Moving pictures by radio," remarks H. I. Phillips in "The Sun Dial" of the *New York Sun*, "are soon to be a household commodity. The time may come when every radio set will carry a chart giving Charlie Chaplin's wavelength, the number of kilocycles it takes to get Tom Mix and the right type

of bulb to use to give perfect reception to Douglas Fairbanks."

"Probable complaint to radio service station: 'This set you sent me is no good. I can't get Famous Players or Metro-Goldwyn.'"

"The owner of a two-bulb set soon will be able to get everything a picture house can offer except the ultra-polite ushers, the lobby statuary and the liar outside the box office who tells you there are 'plenty of good seats inside.'"

"The radio is making it more and more unnecessary to leave home for diversion. All that is needed now is announcement from some genius that he has found a way for the family to make its week-end automobile trip by radio and for all men to go to work by television."

#### THE INVENTOR'S CHANCE

More conservatively and sedately, as ever its editorial wont, the *New York Times* looks at the present experimental stage of the art:

"Probably the tinkering televisionary will never be as ubiquitous as was the 'listener-

in' in the heyday of home-set building. The construction of a television apparatus in the garret demands an equipment and a skill beyond the average amateur. At best the 'televised' images must be coarse and barely recognizable, with an almost uncontrollable tendency to shift from the screen. It must not be forgotten that the brilliant demonstrations by the American Telephone and Telegraph Company were possible only with the aid of a score of trained engineers who knew their technical roles as well as the actors of a theatrical company know their lines. 'Fading,' one of the hughears of radio, causes unpleasant distortion of the image, and so does poor synchronization of the transmitting and receiving apparatus. Radiation of faces on a lavish scale is at present a technical impossibility because each television transmitter requires an excessively wide channel in an ether already overcrowded.

"Clearly, the development of television belongs to the engineer. British and German authorities view his task with misgivings and even doubt if it will be possible

(Continued on page 466)