Color Television Makes American Debut

Television

The day when we shall not only see our distant friends as we talk to them over the telephone, but when we shall also see the flesh tints of their faces, the red of their lips and the colors of their clothes, was brought nearer with the demonstration of color television at the Bell Telephone Laboratories in New York on June 27. Color television has been achieved previously in England, but the Bell demonstration was the first time that it had been done in this country, and much nearer perfection.

In one part of the laboratory building a girl in a fancy dress sat in front of the transmitter, as shown on our cover picture. A group of newspaper men and scientists in the auditorium sat in front of the receiver and saw a faithful reproduction of her dress and features in all their natural hues. An American flag was held in front of the transmitter and the red, white and blue were immediately reproduced in the receiver. Flowers, fruit and other colored subjects were also transmitted.

It was on April 7, 1927, that the first satisfactory long-distance television was demonstrated by the Bell engineers, when Mr. Hoover, then Secretary of Commerce, sat in front of a machine in Washington and was seen and heard in New York. This was the result of researches of a group of scientists under the direction of Dr. Herbert E. Ives. Years ago Dr. Ives' father, Frederic E. Ives, of Philadelphia, invented one of the first successful methods of color photography. The new method of color television is essentially a combination of these two achievements of father and son.

DR. HERBERT E. IVES, at the color television receiver

In the Ives color photography, three photographs were made of the same scene. One was taken through a red glass filter, and recorded the reds of the scene. Another was taken through a blue filter and recorded all the areas of this color, while a plate exposed behind one of green showed all the greens. These were made into lantern slides. In a triple magic lantern all three were projected on the same screen. Over the slide showing the reds was placed a red glass, over the one showing the greens a green glass and over the third a blue glass. Thus, all three colors of the original scene were combined on the screen, and a natural color reproduction was the result.

A method used by Mr. Ives, Sr., in a later color camera to combine three images is now used to combine the light from three glow lamps in the color television receiver.

The following article, by Dr. Herbert Ives, tells the details of the new method. Previous television achievements of Dr. Ives and his colleagues were described in the SCIENCE NEWS-LETTER for April 16, 1927, page 237, and for July 21, 1928, page 35.

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Television in Color

Television

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Over two years ago Bell Telephone Laboratories demonstrated a practical system of television. For the first time successful representations of objects at rest or in motion were transmitted electrically — over wires or through the ether—for considerable distances. The reproduction of the scene then transmitted was in monochrome—the orange-red color of the neon lamp. Recent developments of the laboratories, however, have made it possible to reproduce scenes with their true color values. The appearance of reality in the reproduced scene is thus greatly enhanced.

One of the most significant features of this new achievement is that it does not require completely new apparatus. The same light sources, driving motors, scanning discs, synchronizing systems, and the same type of circuit and method of amplification are used as in the monochromatic system. The only new features are the type and arrangements of the photo-electric cells at the sending end, and the type and arrangements of the neon and argon lamps at the receiving end. The outstanding contributions that have made the present achievement possible are a new photo-electric cell, new gas cells for reproducing the image, and the equipment associated directly with them.

To render the correct tone of colored objects, it was necessary to obtain photo-electric cells which—like the modern orthochromatic or panchromatic plate—would be sensitive throughout the visible spectrum. This requirement has been satisfactorily met. Through the work of A. R. Olpin and G. R. Stilwell a new kind of photoelectric cell has been developed, which uses sodium in place of potassium. Its active surface is sensitized by a complicated process using sulphur vapor and oxygen instead of by a glow discharge of hydrogen as with the former type of cell.

The response of the new cell to color, instead of stopping in the blue-green region, continues all the way to the deep red. Because the former potassium cells were responsive only to the blue end of the spectrum, objects of a yellowish color appeared darker than they should have and the tone of the reproduced scene was not quite correct. This disadvantage applied particu- (*Turn to next page*)