

FULL-COLOR TUBES FOR TV

TWO TRULY remarkable new color-television tubes recently demonstrated by RCA are claimed to provide the key to all-electronic fully compatible color television for the home. Two color TV receivers were used in the demonstrations as the new tubes are of different types. One employs a single electron gun to "paint" the pictures. The other uses three electron guns each of which has an electron beam geared magnetically to actuate each of the three primary colors—red, green and blue—on the face of the tube and blend them true to the original scene being telecast, as illustrated in the simplified sketch, Fig. 1.

Television in natural colors has been possible for some time. The reason that it was not authorized for commercial broadcasting was due to the fact that none of the nine proposed systems met the Federal Communications Commission's compatibility requirements that were necessary to prevent obsolescence of equipment and several millions of television receivers now in the homes. The compatibility requirement states that the system used to produce TV color pictures must operate in harmony with existing black-and-white television to receive the color TV programs on present TV sets in black and white. Receiver circuit principles of both types of the tricolor Kinescope tubes are detailed in block diagrams, Figs. 2 and 3. These include the conventional black-and-white TV chassis.

The face of each color tube is coated on the inside with dots of color phosphors arranged in triangular groups of three—one red, one green and one blue as indicated in Fig. 1. There are 117,000 dots of each color, making a total of 351,000. Behind the tube face there is a metal masking screen containing 117,000 holes approximately the same size as the dots of color phosphor. The holes are so placed that they overlap equally each red, green and blue dot of a triangular group. The angle of the electron beam determines the color. The amount of light in color given off by each dot varies in exact accordance with the information supplied from the picture signals taken from the air. This action occurs so rapidly that the light from the activated color dots blends into the natural colors of the original scene.

