# Queries, Answers on Color TV

By JACK GOULD

Approval of the Columbia Broadcasting System's method of transmitting television pictures in color raises a host of complex questions, and to the extent that they can be given now, here are the answers:

*What will be the effect of the color decision on the almost 8,000,000 black-and-white sets now in use?*

Existing sets will not become obsolete overnight. Even C. B. S. acknowledges that programs will be offered in black and white for probably several years. But at the same time existing sets—and this has been perhaps the major controversy surrounding all color television—are not as modern as they were prior to yesterday. The consumer will have to pay more for additional equipment if he wants to have the most up-to-date device in his home.

*When will color television come?*

No one knew exactly last night. If some manufacturers take recourse to the courts to contest the C. B. S. victory in the Federal Communications Commission, the delay might be of some length. C. B. S. itself plans to start twenty hours of programs a week within two months. Most of these hours, however, will be in "marginal time"—after the evening sign-off, in the daytime, etc.

Another factor, perhaps more important, is how quickly manufacturers will adapt themselves to the C. B. S. system. Thus far most have expressed strong disapproval of the system on both technical and economic grounds, but C. B. S. was confident that the normal laws of competition would "break the jam."

*How good is C. B. S. color?*

At their best, the color images are superior to the Technicolor seen in the movies. The hues are softer and more restful. The added "information" contained in color images, such as identifying the jerseys of competing football players, is self-evident. The advantages of color are exemplified perhaps even more vividly in the costuming for musical revues. A few looks at color television and black-and-white seems drab indeed.

*How does C. B. S. color work?*

The basic television colors, which are red, blue and green, are injected by mechanical means. A disk containing segments of filters of the three colors rotates back of the lens of the camera that is picking up an event. In nontechnical language, it might be said that a picture is taken first in one color, then the next and finally the third.

On the receiving end, the process is reversed. Before the picture reaches the human eye, it passes through another revolving disk with the three primary colors. The persistence of vision of the human eye makes what technically are separately colored images appear as one full-color picture.

This "field sequential system," as it is called, was developed by Dr. Peter C. Goldmark.

*If C. B. S. is transmitting a color program, can a set now in the home continue to get C. B. S. in black and white?*

No. C. B. S. color does not employ the same scanning standards as black-and-white. This means that a set owner must purchase an adapter to get the same service that he enjoys now. Such an adapter will cost about $35, according to C. B. S. Installation charges probably will be extra.

*Can a set now in use be converted to C. B. S. color?*

Yes. The cost of the necessary adapter and converter would run to at least $100, according to C. B. S. estimates. Some manufacturers, who note that C. B. S. is not engaged in set production, believe the cost may run higher.

There is a serious drawback to converting some types of present receivers to the C. B. S. system. The rotating disk on the receiving end must be placed directly in front of the cathode tube. This would be virtually impossible, however, on receivers with doors or recessed tubes. The alternative would be to buy a costly new cabinet.

*How big a color picture can be obtained with the C. B. S. system?*

The rotating disk is a limiting factor, since its diameter must be twice the picture size. The practical maximum is a 12½-inch picture, a size that already is rapidly being outmoded in black and white. With magnification through an appropriate lens, the size could be brought up to 16 inches.

*Will a color set be more expensive than today's black-and-white receiver?*

Yes, substantially. C. B. S. suggests that it might be from $50 to $100 more, but most manufacturers, mindful of rapidly increasing costs, believe it would be appreciably more.

*When will color sets as such come on the market?*

Assuming there may be no further delays, which may be a big assumption, color sets probably would not be on the market for many months, with the factor of competition again providing the final answer. A major set manufacturer was known to be in conference late yesterday with C. B. S. officials.

*What has been all the controversy over color television?*

The dispute has been raging for ten years and has covered many complicated issues. Most recently, however, it has centered on the matter of "compatibility" of transmitting standards.

Most set manufacturers charge that it is not in the public interest to introduce a different set of technical standards, as required by the C. B. S. system, with the added cost to the consumer. They have favored an all-electronic system of color that could be introduced without disturbing reception on present black-and-white receivers.

The Federal Communications Commission—and C. B. S.—argued, however, that such electronic systems were not ready technically. If there were a long wait and then the systems should not prove practical, it was held, there would be the risk of outmoding many times the present 8,000,000 sets.

*Why was approval granted to the C. B. S. mechanical system, which is incompatible with present television standards, and denied to the Radio Corporation of America system, which is compatible?*

The F. C. C. answer is that the R. C. A. method does not produce a good picture with adequate color fidelity and that "there is no reasonable prospect that these difficulties in the R. C. A. system can be overcome."

In addition, the rotating disk is not indispensable to the C. B. S. system. If an electronic tube is developed to inject the colors—and several companies including R. C. A. are working on such a tube—it can be incorporated in the C. B. S. method, thus eliminating the disk and the motor needed to spin it.