

The Columbia Broadcasting System
485 Madison Ave., New York 22, N. Y.

Questions
and Answers
about
Color
Television

*C*olor television broadcasting began Monday, June 25, 1951 on a regular, commercial, non-experimental basis. The enormous interest in all quarters means that color will gain momentum fast.

We assume that, as the color story unfolds, informed people will be interested in separating fact from propaganda. For that reason we are giving answers to some of the questions which have frequently been raised.

1 Will black and white receivers that the public now owns become obsolete with the coming of color broadcasting?

Nothing could be further from the truth. Regular black and white television broadcasts will continue. As a practical matter, color programs will not, overnight, replace black and white programs. The number of color programs will increase at an orderly rate as the number of sets capable of receiving them increases.

But most of the popular black and white programs will continue to be broadcast until a large percentage of the sets are capable of receiving color. So people who now own sets will continue for the next few years to receive a substantial proportion of the present black and white schedule from the various networks.

2 Can existing sets be modified to get the new color broadcasts?

Yes. First of all your present set can be "adapted" so that you can get the new color programs in black and white. This way, of course, you will not enjoy the added beauty and clarity of color pictures, but you at least will not miss seeing any new programs.

Beyond this, your present set can also be "converted" so that it will get the new color broadcasts *in full color*. It is important also to emphasize that whether your set is adapted or con-

verted, the set will still be able to receive the regular black and white broadcasts in exactly the same form and manner as it is receiving them now.

So it is clear that present television sets will remain useful to their owners.

3 Is the FCC-approved color system (the field sequential system) "mechanical"?

As FCC Commissioner Robert Jones has stated, this is a myth. The fact is that it is *not* a mechanical system. There is no question that *the field sequential system can use all-electronic equipment as readily as any other system*. If and when a tri-color tube is perfected, it can be used to receive field sequential color broadcasts. But no one knows with any degree of certainty when such a tube can be mass produced and at what cost. Recent predictions put the production of such a tube at least two years away.

Meanwhile a disc (or drum) receiver can be used with the field sequential system. The disc receiver is, at present, the only existing method by which faithful stable colors can be received. And, the ultimate advent of a successful tri-color tube in the years to come will not make obsolete the disc receivers then in the hands of the public. In other words, if you have a disc-type color set when tri-color tubes come on the market, you will *continue* to receive color pic-

tures on your disc-type set from all stations broadcasting on field sequential standards. If your neighbor later buys another receiver—one with a tri-color tube—you will both be able to watch the identical color program at the same time on both sets. Your neighbor will simply have a new set which will do by a different means what your own set does, and your own set will continue as good as ever.

Field Sequential System Can Use Tri-Color Tube. Although RCA continually refers to the field sequential system as "mechanical," both General Sarnoff and Dr. Engstrom admitted under oath during the FCC color hearing that the RCA tri-color (electronic) tube *can* be used with the field sequential system. Yet RCA's determination to keep the public and the industry confused on this point is clearly shown by the fact that at a recent tube "symposium" in New York, RCA refused to discuss the application of the tri-color tube to the field sequential system.

RCA's now famous "Joe DiMaggio" letter to the FCC is another example of RCA's tenderness on this point. The RCA letter created the impression that the FCC had asked RCA to turn over to CBS the invention of the tube as well as sample copies, and to surrender to CBS all rights to the invention and all royalties they might bring.

That, of course, was sheer distortion. All the

FCC asked was that RCA let CBS have a tri-color tube so that the industry and the Commission could see how it worked with the field sequential system. RCA's rights and royalties could only have been enhanced if the tube in fact worked well. The FCC request was certainly not unreasonable, but RCA twisted it beyond all recognition.

4 Is the field sequential system limited to 12½" pictures?

Definitely no. The fact is that *there is no picture size limitation inherent in the system.* Large size projection pictures have already been demonstrated. So has a 17" direct view picture on a drum set—now under active further development. And, of course, if and when the tri-color tube is successfully developed, the picture size of color receivers using the field sequential system will have no greater limitation than black and white.

5 Is the field sequential system an interim system which will, in a few years, be replaced by some new system?

Here are the facts:

Color television has been under active development in this country for eleven years. In recent years leading research engineers have been trying under forced draft to develop some system other than the field sequential system. Yet

throughout the eleven-year period the field sequential system has been the only one giving adequate results. A number of attempts have been made (of which the latest National Television System Committee's proposal for a "composite" system is the third and most brazen) to impede the field sequential system by concocting paper promises for the obvious purposes of misleading the public and the industry and keeping color television from the public.

In 1947, when the field sequential color system was being considered by the Commission, a predecessor industry committee sought to forestall adoption of the field sequential system by advocating a different and "compatible" system* for which they promised under oath that standards could be set within eighteen months. No standards for that compatible system were ever recommended. In fact that system then proposed died in the laboratory because it would not work.

Again during the 1949-50 color television hearing, still another "compatible" system was advanced at the last minute in order to forestall

*A "compatible" system would be one under which color programs could be received in black and white on existing sets without any modification of these sets. The field sequential system is not "compatible." However, under the field sequential system existing sets can be adapted (as pointed out in the answer to Question 2) to enable them to get color programs in black and white, and—even more important—they can be converted to receive color programs in color.

adoption of the field sequential system. The same group of manufacturers almost unanimously acclaimed this "compatible" system and advocated adoption of standards for it.

Last July, after the hearing ended, the General Electric Company announced still another "compatible" system which was to be ready for demonstration in ninety days but from which nothing has since been heard.

Again, just four days after the Supreme Court decision upholding the Federal Communications Commission's approval of the field sequential system, the same group of manufacturers which had tried to forestall adoption of the field sequential system in 1949-50 came forth, under the name NTSC, with a vague paper proposal that an effort be made to develop still another "compatible" system.

The NTSC Presentation. The NTSC proposal is not a working system at all. It is no more than a vague outline on paper; it is stated that at some indefinite date in the future, a system and standards may be developed.

In evaluating such a proposal it is well to recall the statement of the FCC, quoted by the United States Supreme Court in its recent decision upholding the FCC's approval of the field sequential system:

"A new television system is not entitled to a hearing... simply on the basis of a paper pres-

entation. In the radio field many theoretical systems exist and can be described on paper but it is a long step from this process to successful operation. There can be no assurance that a system is going to work until the apparatus has been built and has been tested."

The question of a possible new color system is one which the FCC fully considered. It concluded, on the basis of technical evidence, analysis, and demonstration, that so far it had not been possible to produce a compatible system which did not suffer either in its color quality, or in complexity, or in both. It concluded, also, that there was *no reasonable probability that such a system could be produced in the foreseeable future.*

True, the Commission, although skeptical about the prospects of developing a compatible system, left the door open for consideration of new and improved systems for possible authorization. But despite recent promises and claims, no one has yet knocked on the door.

The Requirements That Any New System Must Meet. A few weeks ago, the Commission made it clear that a new system must pass very rigid tests—tests which all systems to date, except the field sequential system, have failed to meet. The Commission set forth what it terms "a specific and detailed schedule which any new color system must meet." This is the schedule:

First, the proponent of a new color system must file a petition asking that color television standards be changed from those now adopted.

Second, receivers must be delivered to the Commission's laboratories.

Third, the new system must transmit signals in Washington for the purpose of demonstration to the Commission.

Fourth, these demonstrations must show to the Commission's satisfaction that the proposed new system has a reasonable prospect of satisfying each of seven criteria—among them high quality of color fidelity, adequate brightness, simplicity and reasonable cost of equipment, and ability to be networked.

Fifth, if *all* (the Commission itself underlined the word "all") of these steps are satisfied by the proponent of a new system, then the Commission would order a hearing to consider the petition. But even then, as the Commission stated:

"In accordance with established procedure, the ordering of a hearing would not have the effect of cancelling the Commission's order establishing color standards. The field sequential system is the approved method of broadcasting and will continue to be so unless it is changed by specific order of the Commission."

Those are the actual facts. You can come to your

own conclusions on the probabilities, in the light of the history and of the Commission's findings and policy announcements, whether the field sequential system is an interim system or whether, as we are convinced, it is here to stay.

6 When and if a practical tri-color tube is developed, will it mean that a "compatible" color television system will then be ready for public use?

Definitely no. The question of "compatibility" (see footnote, Question 5) is a fundamental one, determined by the choice of a color-transmitting system. On the other hand, a tri-color tube is only a matter of equipment and not of system.

Different types of equipment may be used at the studio to transmit the signal, and different types of equipment may be used in the home to receive it. But the basic quality of the picture is determined initially by the nature of the system by which the signals are transmitted. If the system is itself defective, or incapable of producing good color pictures, no equipment—the tri-color tube or any other—can cure the defect. For example, the Commission found that there were a number of inherent defects in the RCA and CTI systems—defects which would not be cured by a tri-color tube.

The mere fact that a tri-color tube may be developed to a practical state does not by any means assure the success of some new color system which may be inherently defective. On the other

hand, the field sequential system has proved that it produces an excellent picture. Hence we know that if a tri-color tube is successfully developed, it is readily usable with the field sequential system. But disc or drum-type receivers will still continue to receive color service over their normal life.

7 How does the NTSC "composite system" differ from the RCA "dot sequential" system?

There is no way to tell, because the "composite system" has not yet been developed. There is only a paper proposal that an attempt be made to try to develop such a system.

So the "composite system" proposed by the NTSC, and concurred in by the RCA representative, is either nothing more than the RCA system—which the FCC has already rejected—under a new name, or RCA's Vice President in Charge of Research, who signed the report advocating the development of a "composite system," has abandoned the RCA system which RCA and the industry so vigorously advocated as the final answer to color television. Confronted with facts like that, no wonder the public is confused.

8 Will there be only an insignificant amount of color broadcasting by only one or two stations?

Far more than just a handful of stations will broadcast color. Most of our own affiliates will carry many of our network programs. Some tele-

vision stations already have color equipment on order so that they can originate their own color programs.

And many television applicants throughout the country, who have filed applications to construct new stations in the next year or two, have also committed themselves to substantial color broadcasting.

On June 25, we began a regular daily schedule of color broadcasts. This schedule will increase during the summer so that by fall Columbia will broadcast a schedule of some 20 hours a week—an average of about three hours a day.

It should be noted that it took some five years after black and white standards were first established before most broadcasters reached a schedule of 20 hours a week in their black and white programs.

9 *What kinds of programs will be presented in color?*

Columbia will broadcast in color all types of programs now broadcast in black and white—drama, variety, education and information, dance, sports, and interviews. Also some—like art, gardening, and certain fashion and home decorating programs—that cannot be done effectively in black and white. Some of our programs will be color versions of our most popular black and white shows, such as "Toast of the Town."

10 *Will television be like the movies, with only a small percentage of shows in color?*

First of all, nearly half of the movies are *already* in color and the amount is increasing. That is more than a "small percentage." In addition, the motion picture analogy is entirely mistaken. For a number of reasons—the added cost of production and printing of film, limited color film-processing capacity, and a number of other factors—color motion pictures have, in fact, been limited. *But these reasons are not applicable to color television.*

Extensive experience in producing color programs demonstrates that there is no significant difference between the costs of producing a color television show and doing the same show in black and white.

11 *Is it true that there will be no color receiving equipment for years and hence that color is nothing for the public to take into consideration?*

No. A number of responsible manufacturers are now preparing to produce color receiving equipment. We recognize that a few large manufacturers have flatly announced that they will not produce such equipment for the field sequential system. But we are confident that if they hold to that position, their places in line will soon be filled: they will either change their minds be-

cause the public and the television dealers will insist that they do, or they will no longer be large manufacturers.

In refusing, at least vocally, to make color equipment and in creating confusion to delay the making of color equipment by others, the large manufacturers are forcing television dealers into a very precarious position.

These dealers find themselves, for reasons entirely unrelated to color, with heavy inventories of black and white sets that are presently unable to receive field sequential color signals even in black and white. Unless adapters, converters, and companion pieces come on the market soon in substantial quantities the dealers may be unable to move their inventories.

The Dealers' Stake in Color Set Production. The dealers are coming to realize that the advent of color can be a tremendous stimulus to sales, and CBS is daily receiving many urgent requests for color equipment for demonstration purposes. The viewpoint that color can be an impetus to sales is reflected in an excerpt from the New York Herald Tribune story of June 21, 1951, on the NRDGA Television Report:

"STORES URGED TO PUSH COLOR TV AS '2ND SET' FOR PRESENT OWNERS. *Retailers should be ready to sell color television receivers as a 'second set' to owners of black and white receivers*

when stations start transmitting color programs to an appreciable degree, according to 'The NRDGA Television Report' released yesterday by the merchandising division of the National Retail Dry Goods Association.

"The report said it was generally believed that color video will be the development which will account for a potential 'second set' television sale to each dwelling unit, and added:

"'Although black and white television as it now exists is being enthusiastically received, and the public is convinced that any reception difficulties are sure to be eliminated in the near future, nevertheless a comparison with color television when this is available will make this same black and white reception appear suddenly "antiquated" and unacceptable.'"

12 What are Columbia's set manufacturing plans?

Columbia also has comprehensive manufacturing plans. As still further concrete proof of our faith in the field sequential system, and to assure the public it will get color receiving equipment, Columbia has acquired Hytron Radio & Electronics Corp. This is a leading tube manufacturer, and its subsidiary, Air King, is one of the ten major receiver manufacturers. Through these companies Columbia is going forward with its plans to produce television receivers under the name "CBS-Columbia."

Within a few months all television receivers produced by CBS-Columbia will be capable — without any further adjustments or additional equipment — of receiving not only every black and white broadcast, but every color broadcast. These receivers will be of two types. One type will be internally adapted black and white receivers, which will receive standard black and white broadcasts and color broadcasts in black and white. Their cost will be only a few dollars more than the cost of present standard black and white sets.

The second type of set produced by CBS-Columbia will be a combination color and black and white set, which will receive standard black and white broadcasts in black and white, and color broadcasts in color.

The initial cost of this latter set will be \$499 for one model of effective 12½" size and \$399 for a simplified model of the same size. They are expected to be available to the public by the end of the summer.

13 Will CBS license other manufacturers and broadcasters to operate under its patents?

Absolutely. Columbia wants no monopoly either in color broadcasting or in manufacturing of color equipment.

Our doors are open, our laboratories are open, our help is available to any manufacturer who

wishes to enter the field, and to any broadcaster who wishes to begin color broadcasting. Licenses to our patents are available to all responsible manufacturers, at a nominal royalty, and any licensed manufacturer may have our latest designs for the asking.