

Spot Radio News

★ Presenting latest information on the Radio Industry.

By RADIO & TELEVISION NEWS'
WASHINGTON EDITOR

COLORCASTING, riddled with conflicting theories for over a decade, shelved quite emphatically by the D.C. ether policemen a few years ago, now appears to have found a legal haven with the warm approval of the lawmakers of the land, at least some of them. With the issuance of that second report by the Commission has come the news that the whirling shaft or Goldmark's pinwheel, as it has been dubbed by some, will be the official medium for huecasting, news which rocked most of industry and caused many to predict that the disks will speed to an early demise.

Indications that field sequential would win, at least the first phase of the color war, appeared in many sections of the first report. The bracket-standard time table was the most significant rough spot, for the sixty-day limit was immediately conceded by many as an impossible deadline date. The mechanical switch requirement was another stumbling block, practically all in industry stating that they didn't even know how to include the 405-525 line provision in an effective way in so short a time. In addition, there were the statements declaring that unless the proponents could produce equipment that would unqualifiedly meet the Commission's criteria, all bets were off and CBS would be declared the winner for the time being. After reviewing the criticism heaped on the other two systems, citing that neither method appeared to be capable of rapidly overcoming their innate defects, the consensus was that in the short time allotted little could be done to alter the legislators' opinions.

The second report reaccented the majority views of the airwave judiciary. For instance, there appeared the statement that in the opinion of the Commission . . . "the CBS system squarely meets the test of adaptability and convertibility. . . . It is the CTI and the RCA systems that fail to meet the test, for neither CTI nor RCA demonstrated a practical converter and hence failed to meet the test of convertibility." Describing the basis under which the new standards were being adopted, the Commission said that the new rules being promulgated were the result of . . . "expert calculations based on the characteristics of the present standards and the

evidence concerning the CBS field-sequential color system. It is clearly within the province of the rule-making proceedings, as prescribed by the Administrative Procedure Act, to adopt such standards without the necessity for further proceedings."

As in the first report, contrary remarks appeared throughout many paragraphs which attempted to explain the Commission's reasoning behind the conclusions reached. For instance, in a review of the problem of horizontal interlace, it was pointed out that the record shows quite clearly that if this technique is successfully developed for the CBS system, and it can be added at a later date, horizontal resolution would be increased and provide an appropriate picture improvement. However, said the Commissioners, if it had been possible to adopt bracket standards now (which it couldn't because of the reluctance of industry to go along) the Commission could . . . "determine whether to increase vertical resolution as well as horizontal resolution. . . . Since receivers without brackets could not be adjusted to a different line rate, our inability to adopt brackets at this time probably means that as a practical matter, when and if horizontal interlace is adopted for the color system, the improvement may be confined to horizontal resolution." Thus any suggestions for improvement of vertical resolution may be bypassed.

The problem of long-persistence phosphors, cited as means of providing better and brighter pictures with no objectionable flicker, may have to be overlooked now too, because of the immediate adoption of the CBS setup. In the words of the FCC: "Had it been possible to adopt brackets now, then if developments in the field of long-persistence phosphors turned out to be sufficiently impressive, the Commission could consider lowering the field rate and increasing the resolution without objectionable flicker."

Ripping into those who were requesting new hearings because of improvements in color systems, the second report declared that in the Commission's opinion . . . "a new television system is not entitled to a new hearing or reopening simply on the basis of a paper presentation." Citing that in the radio field many theoretical systems exist and that it's a long step from a description to a successful

operation, the Federal experts added: "There can be no assurance that a system is going to work until the apparatus has been built and tested."

The denial of an appeal for a test by RCA a few days before the second report was issued, presaged the stern beliefs the Commission had on reopenings. In denying this petition, the ether guardians rebuked the dot-sequential proponent, declaring that the . . . "state of television is such that new ideas and new inventions are matters of weekly, even daily occurrence . . . the question of approving a color television system which will best serve the interests of the American people is one which has been before the Commission for almost ten years . . . in all proceedings such as the instant one a point is reached which calls for administrative finality . . . and in the sound discretion of the Commission a delay in reaching a determination with respect to the adoption of standards for a color television service . . . would not be conducive to the orderly and expeditious dispatch of the Commission's business and would not best serve the ends of justice."

Notwithstanding the Commission's sharp rejoinder, RCA announced that they were not only going ahead with their color research, but would hold a series of demonstrations in Washington, during which the latest improvements in compatible all-electronic high definition color would be shown. In a telegram to all licensees, RCA said: "At this demonstration we will supply you with information about our latest simplified circuits, the converter and the tri-color tube. We shall continue to give you further demonstrations periodically so that you may see the successive steps in our progress. . . . By June 30, 1951, we will show that the laboratory apparatus which heretofore has been demonstrated has been brought to fruition in a commercial, fully-compatible all-electronic system . . . available for immediate adoption of final standards."

Blunt addresses by FCC headman Wayne Coy before advertising and engineering groups, days before the CBS edict was issued, also served as a forecast of how the color-wind blew in Washington. Discussing the demonstrations, Coy said that during all of the tests the dot and line-sequential proponents had . . . "trained operators who worked assiduously before each demonstration to make sure that the equipment was adjusted in tip-top shape and who hovered over the equipment . . . continuously making adjustments to insure optimum performance. . . . Despite all of these efforts . . . the proponents were unable to maintain accurate registration and color control. . . . You can imagine what the situation would be like in the ordinary home where children or untrained adults had to operate such receivers. . . . The conclusion seems to be inescapable that CTI and RCA

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devoted so much of their efforts to the compatibility part of their systems that they never succeeded in producing satisfactory color."

As cited previously all of the Commissioners did not agree that the mechanical system should be the chosen one. And when the second report was released, continued evidence of revolt within the ranks appeared, with seething dissenting opinions from the pens of Commissioners George Sterling and Frieda Henock. Declared Madame Commissioner: "In the light of the progress made in the development since the start of the proceeding, I think it essential to defer the final decision in this matter until June 30, 1951. . . . It is of vital importance to the future of television that we make every effort to gain the time necessary for further experimentation leading to the perfection of a compatible color television system. . . . It is important to repeat the conviction, expressed in my separate views in the first report, that there is a moral obligation on this Commission to insure that a reasonable amount of valuable programming service will continue to be rendered to present set owners, both day and night, for a transitional period; e.g., three to five years, without the necessity for making any expenditure to change their sets."

Sterling, also quite critical of his fellow Commissioners, pointed out that a cooling-off period of at least two days should have been provided after the bracket deadline, so the industry could have thrashed out its differences and perhaps come up with a series of helpful answers. The shortsighted action, closing the door on future developments, will in his opinion, seriously impede color progress. He felt, also, that the decision now to insist on chassis changes, when industry is becoming more and more involved in emergency activities and shortages are beginning to mount, was a faulty one which could raise havoc. He particularly struck out at the views that the public would accept smaller screens, when the trend was toward larger and larger picture tubes. Such thinking, he implied, was inconsistent with the bigger tube programs, regardless of the attractiveness of colored reproduction.

In Sterling's report there were references to the bags of mail from industry, the bulk of which carried angry denunciations of the wheel ruling. In a letter from one manufacturer, the FCC was told that the program, if carried out . . . "will cause irreparable injury to broadcasters, manufacturers, and present set owners." Another set maker said that the increased list price, required by the addition of the switch and other components, is . . . "a severe penalty for the public to pay . . . for a feature

which may never be used." From another chassis producer came the comments that it could not conform with the conversion request since, first, no CBS color signals are available for engineering tests, and second, certain technical difficulties have been encountered in obtaining pictures of geometric linearity and brightness on higher frequencies, as well as reduced scanning efficiency due to the return time of the horizontal sweep. In the opinion of one of the leading set makers in the country, not over 5 percent of the ten-million sets which will be in service before the year is out, will ever be made compatible with the Columbia system. Still another large video receiver producer declared that they regarded the decision scientifically unsound and against the public interest. "No incompatible system is good enough for the American public," said this manufacturer, who added that the hundreds of millions of dollars that present set owners would have to spend and that future set owners would have to pay to obtain . . . "a degraded picture with an incompatible system reduces . . . the order to an absurdity."

One manufacturer, who said that he would make available adapters and converters for the disk system, declared that apparently their intentions were misinterpreted and hastened to release a statement which said, in part: "We are neither in agreement with nor do we condone the ill-considered decision of the FCC. . . . The decision, however, has been made. It probably will not, and we hope that it does not, remain. . . . It is our earnest hope that the present non-compatible system . . . will be replaced by a compatible system before it is necessary to market these devices."

Prior to the decisions there were rumblings that lawsuits would be filed, should the Commission adopt the wheel scanner. Two such suits appeared on the judicial calendar within a week after the second report appeared, one from a proponent and another from a set maker in New York City. Both complaints, filed in the U. S. District Court in Chicago, declared in part that industry, broadcaster, and set owner stands to be seriously affected by the field-sequential order. One complaint charged the order was contrary to public interest, was arbitrary and capricious, exceeded the authority of the Commission, and was not supported by the evidence. Continuing, this suit which attempted to restrain the Commission from enforcing its order, stated that . . . "Although the Commission has no jurisdiction over television manufacturers, the Commission sought to require that such manufacturers agree with the Commission to build all their black and white receivers according to the specifications laid down by the Commission. These specifications required extensive alterations in present production model receivers. The Commission stated to the television set manu-

facturers that if they did not agree so to build their sets the Commission would forthwith and finally adopt the CBS color system."

Within twenty-four hours after the suits were filed, FCC issued a blunt statement which declared that they would vigorously oppose the issuance of any injunctive relief. Then, referring to a portion of the complaint which inferred that the Commission had been unduly influenced in its decision by an employee of the Commission who had patented a device usable in connection with the CBS system, the government specialists pointed out that their position in this matter was clearly detailed in the record.

During the hearings Harry Plotkin, FCC counsel, told those in the session room that Ed Chapin had constructed in the lab a receiver which featured automatic adaptation from one set of scanning records to another, and that such a set would be demonstrated in a room nearby. As soon as the circuit of the change and a description of it were received in evidence, and tagged with a legal exhibit identity, counsel for the dot-sequential proponent rose to say that he understood that . . . "this development of Mr. Chapin's constitutes what might be considered an improvement in the particular system being proposed by CBS in these proceedings." He then added that in this case the Commission might be considered as serving in a judicial capacity . . . "because it may have to choose between contesting proponents here, and when the Commission comes forward with a development which seems to be an improvement in the system proposed by one of the litigants, it sounds a little bit like a person in a judicial capacity assisting one of the parties in the contest. . . . I just want to make that statement and say that we take exception to putting this development into these proceedings, because we think it is inconsistent with the judicial position which the Commission should take in the proceedings."

Chairman Coy took one steely look at the attorney and said that Mr. Chapin is the head of the lab and not a member of the Commission, and in no way . . . "in position to determine the vote of a single member of the Commission; nor is any other member of the staff of the Commission." Declaring that the members are perfectly competent, the chairman added that they have . . . "the ability to determine between contesting forces." And then Coy remarked that he resented . . . "the suggestion very much that the Commission is influenced in its determination by the work of a single member of its staff or all of its staff when it comes to making a decision on the record." The chairman concluded his portion of his reply with the statement: "If there is anything else to be said on this, let's get it off our chest now." The attorney for the contestant arose again and repeated that he still thought the procedure

a little bit out of order, a comment that riled Coy and prompted him to say that the Commission had asked for equipment from others so that they might have an opportunity to work on it. "I suspect," said Coy, "that some of our people have capabilities of effecting some improvement in that system and that we may, when and if we get hold of that equipment, file a patent on an improvement on that equipment for the benefit of the Government of the United States." Coy then pointed out to the attorney that . . . "you will recall privately that I have had something to say to you about equipment and have had some argument with you whether it is proper for us to have the equipment. We have not yet received the equipment. When we receive the equipment, we will have the same opportunity to work on the equipment as we do on *CBS* equipment." This brought forth a reply that . . . "We will welcome that, and as soon as we can get the equipment to you, we will."

In a parting blast, before the group left to look at the disputed receiver, Coy said: "Is there anybody else who has questions. I am perfectly willing to answer questions on this as chairman of the Commission, and I do not feel any one of us considers it improper for us to have taken such action, and want to add further, if you do not know it, that I have already signed the letters to patent the equipment that you are going to see."

In an attempt to clarify the operation of its system, *CBS* reviewed the basic features for the press. In their method, colors are changed after each vertical scanning period or field. There are 144 fields per second, and as in black and white, two-to-one interlacing is employed. The number of lines per frame is 405, or 205.5 per field (262.5 in black and white). Thus, the total number of lines per second, or horizontal line frequency, is 72 times 405 or 29,160, which is slightly less than twice the black and white horizontal line frequency, which is 30 times 525 or 15,750.

The colors are transmitted in the following sequence: red, blue and green. Each color lasts for 1/144th of a second, and the color sequence repeats itself after 1/48th of a second. This period is called a colorframe interval. Since only one-half the number lines will have been scanned in all colors in 1/48th of a second, twice this period, or 1/24th of a second is required for all lines to be scanned in all colors. This period of 1/24th of a second is called a color-picture interval.

The color disk rotates in front of the receiver tube at a rate of 1440 r.p.m. When six color filters are employed, two sets of red, blue and green filters are used. The over-all diameter of the color disk is determined by the size of the picture tube used. It will be slightly more than twice the diameter of the tube.

At the transmitter, a color filter disk, fully enclosed, rotates in front of the pickup tube and contains a series of color filters. If the camera disk has twelve filters or four red, four blue and four green, the disk rotates at 720 r.p.m. Every 1/144th of a second the camera scans electronically the image to be transmitted from top to bottom, while one of the colors in the filter disk, permits, let us say, only the red components of the scene to be picked up. The next 1/144th of a second, the blue filter is between the lens and the camera tube, and only blue components of the scene are scanned. The same sequence occurs to the green components. The vertical scanning rate of 1/144th of a second is synchronized with the disk rotation, and in addition, an extra pulse is inserted in the transmitted signal every third field, or every 1/48th of a second. This impulse permits the receiver disk to be phased automatically, if so desired.

As this column was being readied for the mailbag, about a half-dozen manufacturers had indicated that they would make adapters, converters, and switch models. A few others declared that they might follow along, but most indicated that they would not be able to produce *CBS* pickup chassis for quite awhile, with many saying that they just wouldn't make such sets at all. The year '51 should provide an intriguing answer to this tantalizing situation. . . . L.W.