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As a special service to all subscribers, Television Digest is enclosing herewith a printed copy of FCC's "Report on Color Television Issues," including the separate opinions of Comrs. Hennock, Hyde and Jones, omitting only the appendices listing witnesses and exhibits and the 80-page Annex to Comr. Jones' "dissent in part." Published also—on page 24 of this Special Color Report—is text of proposed rule on suggested "bracket standards" under which TV

manufacturers would build sets capable of receiving not only present monochrome but also black-and-white from CBS color transmissions. We are especially indebted to the Law Reporter Printing Co. and its staff for foregoing part of the holiday weekend to enable us to publish these long texts, made available late Friday, in time to have them in the mails to our subscribers the following day. Extra copies are available to subscribers at \$2 each.

FCC PICKS CBS COLOR SYSTEM—UNLESS: FCC stopped just short of giving CBS the color decision this week. It virtually tossed out RCA and CTI, though gave them and other claimants one last chance by making no final decision as yet.

Placing small store by compatibility, apparently willing to kiss off 1950's 10,000,000 set owners, it told a stunned industry to produce and demonstrate a system superior to CBS's -- within 3 months -- or else it would wrap up final decision and hand it to CBS. And it was quite clear from context of its Sept. 1 "first report" that it really doubts industry can do it.

FCC threw an ingenious gimmick into its report. Having no direct jurisdiction over TV manufacturers, it threatened to adopt CBS system even sooner -- within a month -- unless receiver manufacturers promised to start building sets capable of receiving CBS system in monochrome (i.e., compatible with CBS) as well as present black-and-white signals. It is asking manufacturers to report on their intentions.

This squeeze play on manufacturers, plus whole tenor of report, clearly shows FCC harbors violent distrust of industry's judgment and testimony. Said Commission of industry testimony: "We cannot overlook the fact that many of these same parties offered recommendations and expert opinions of the same kind as the basis of their advocacy in the 1946-1947 hearing of the simultaneous system -- a system which never survived field testing."

In view of manifest attitude toward the set makers, it's a wonder that FCC is asking for any sort of promises from industry.

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But FCC hasn't given color TV to the country -- yet. Nowhere in its lengthy and intricate report does it tell how CBS system, if finally chosen, will be made to work -- whether thought is to force telecasters, in future rules, to transmit incompatible color all or part time and thus start tortuous task of building up audiences all over again.

Thoroughly wedded to urgency of color, FCC states: "We believe that an informed public would demand receivers that are capable of getting programs from all TV stations in the area and that the manufacturers would build such receivers."

Nor does FCC reckon with mobilization. It's common knowledge whole electronics industry is preparing to shift brains and brawn to military production, will soon face reduced civilian output, must soon consider cutting frills and furbelows from TV-radio lines that will inevitably be limited by military priorities on materials and manpower.

Stepup of war production could render whole color issue academic.

Color report was released 3 p.m. Friday, after rumors had ricocheted around country all week, pushing CBS stock up from 28½ on Monday (Aug. 28) to 33½ when N.Y. Stock Exchange closed Friday. Commission's precaution in issuing statement after exchange closing didn't preclude trading on San Francisco Exchange (closing 3 hours later), and seldom-traded issue there sold 600 shares and leaped to 37%. Curiously enough, RCA stock wasn't adversely affected, ended week strongly at 18%, up ½ from day's opening.

It's now apparent from persistent rumors, which started Monday when word was CBS had alerted vacationing executives to be on hand for Friday meeting on color -- and from early-week action in CBS stock -- that FCC's "best kept secret" had leaked.

Industry scarcely had time to react. Like many of Commission and staff, its leaders were hastening away for Labor Day weekends or gone on longer vacations. FCC Chairman Coy leaves next week for 10 days or more.

Obviously elated, CBS president Stanton said: "The FCC's color TV report is a gratifying victory for the CBS color system. The Commission has given unqualified approval to the excellence and practicality of the CBS system and has found it clearly superior to the other systems considered...We plan to be on the air with 20 hours per week of color TV programs within 30 days after the Commission makes its final decision...The Commission's report is a tribute to Dr. Peter C. Goldmark and his CBS laboratory associates..."

Obviously disappointed, RCA issued brief statement noting FCC's "failure to adopt a final decision," adding that "when a final decision is reached it is confident the RCA all-electronic, fully compatible system will be approved." It would say little more, asserting "FCC's lengthy first report will require detailed study."

"We will win the last lap of the color race," was prediction of CTI president Arthur Matthews, of San Francisco, who was in Washington Friday. "The Commission has left the door open for CTI to demonstrate its completely new Uniplex system between Dec. 5, 1950 and Jan. 5, 1951. We will build our equipment and be prepared to demonstrate a color TV system definitely superior to the CBS system or any other thus far proposed." He added new CTI system will be fully compatible, took comfort in interpretation that "FCC decision indicates color problem is far from solved."

GE's Dr. W. R. G. Baker, who is RTMA engineering director, could not be reached for comment about how GE's proposed but as yet undemonstrated system (Vol. 6:30) can stack up. Dr. Allen DuMont said he hadn't studied report "but from preliminary examination it looks as if the FCC agrees with our premise that color is not ready commercially at the present time." Just 2 days earlier, he had told N.Y. World-Telegram: "I'd toss [CBS] out the window."

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Situation is now squarely up to bulk of manufacturers, who must make up their minds fast. Even if a "perfect" system were developed by anyone, FCC indicates it will ignore it except under following specific procedure:

(1) By Sept. 29, set makers are requested to tell FCC whether they'll build all sets henceforth capable of operating on "bracket standards" -- i.e., with a line-frequency ranging from 15,000 to 32,000, field frequency from 50 to 150. (Black-and-white has 15,750 and 60; CBS has 29,160 and 144.) These sets would be compatible with CBS system, get black-and-white from color transmissions, as well as ordinary black-and-white. Switch invented by FCC engineers Edward Chapin and Willard Roberts (Vol. 5:46,48,49) would presumably be useful here in that it permits set to change automatically between monochrome and CBS standards.

(2) If manufacturers promise to make such sets, FCC will still propose to adopt CBS system. But it will also consent to study new systems and improvements on old (such as RCA, GE, CTI, Hazeltine, Lawrence). However, new developments must be on air in Washington from Dec. 5 to Jan. 5, and FCC labs must have representative receivers by Dec. 5. To qualify for further consideration after that, these developments must meet 7 stringent requirements of performance as set forth in report's paragraph 122.

(3) If "bracket standards" sets are forthcoming, FCC says only then will it

look into 3 questions concerning CBS system -- how it works with tri-color tubes, how well it can use horizontal interlace to increase resolution, how good its chances are of using long-persistence phosphors to cut down system's flicker and increase brightness.

(4) If manufacturers don't come across, CBS system will be adopted pronto; Commission will forget its 3 questions about system. Positive language here is in best Chairman Coy manner.

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What industry thinks of "immediate color" was well-reported by Wall Street Journal's Joseph Guilfoyle, Sept. 2. Air King's D. H. Cogan, who had plugged for CBS during hearing, said: "It would be suicidal now for a manufacturer to switch to making color receivers in the face of today's material problems -- especially when we can't even make black-and-white sets in the quantities we had originally scheduled because of the lack of parts."

Philco's James Carmine: "If plenty of parts were available and there had been no Korean incident, it still would have taken at least a year from today to get into production of color sets. But now it's going to take a lot longer."

Emerson's Benjamin Abrams: "We're not going to rush into color overnight. There's no doubt color TV is coming, but it will be an evolutionary process. Color still isn't as good as black-and-white and it's going to take a long time to iron out the bugs." Another manufacturer: "The masses might just as well forget about color TV until 1953 at least."

"And when color does come," said Guilfoyle, "don't think you're going to get it just like that. It's going to cost you money. For instance, present black-and-white receivers now in use will not be able to pick up the CBS color signals and reproduce them unaided, even in plain old black-and-white. To do that you'll have to add an 'adapter' -- a contraption not to be confused with a converter, which would yield the peacock tints to your set.

"How much will an adapter cost? Mr. Cogan about 8 months ago told the FCC his firm would make adapters to retail for about \$39. But now he thinks the price may be nearer \$59. This means it will cost TV addicts more than \$400,000,000 to keep their 7,000,000-odd black-and-white receivers in operation when the CBS color signal goes on the air."

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FCC picked CBS after rating the 3 systems as follows:

CBS -- Picture's fidelity, texture, contrast "most satisfactory." Equipment simple, inexpensive. Brightness adequate for home use. Flicker not bad, and long-persistence phosphors offer "hope" for improvement in flicker-brightness relationship. Color fringing and breakup not serious, since people "tend" not to see them and production techniques can "minimize" them. Low color resolution offset by addition of color. Low black-and-white resolution no worse than ordinary black-and-white after passing through 2.7-mc coaxial. Picture size limitations can be overcome by tri-color tube or projection sets.

RCA -- Color fidelity "not satisfactory." Texture bad due to misregistration and dot structure. Contrast difficult to maintain. Equipment "unduly" complex. Black-and-white compatible picture "somewhat degraded." More susceptible to interference. Not satisfactory over 2.7-mc coaxial. Inadequate field testing.

CTI -- Picture "not at all satisfactory" because of crawl and bad texture. Compatible black-and-white degraded. Equipment "unduly" complex.

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Compatibility is dismissed as too high a price to pay for color. While admitting desirability of compatible system, FCC report avers "no such satisfactory system" was shown during hearings. Those shown suffered from poor pictures or were too complex, report stated.

As for 7,000,000 monochrome sets it says are now in hands of public, which

will probably be 10,000,000 by time of final decision at earliest date probable, FCC believes acceptance by industry of "bracket standards" would "dilute such incompatible sets year by year -- until everything is dual standards or color."

Present set owners, FCC said, will still be able to get monochrome signals for "several years after decision." If they want to, it adds, today's set owners can adapt sets inexpensively to get black-and-white picture from CBS color transmission, or can convert sets to get color pictures for "slightly larger amount."

"It would not be in the public interest to deprive 40,000,000 American families of color television in order to spare the owners of 7,000,000 sets the expense required for adaptation," report stated.

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It's too early to analyze report fully as this is written, few hours after release, but several weaknesses in FCC's evaluations suggest themselves immediately:

(1) Two wrongs scarcely make right when it comes to resolution. Fact that coaxial degrades present black-and-white hardly justifies CBS's low resolution. Anyway, bulk of AT&T's interconnections will soon be 4-mc microwaves, improving black-and-white. Then Commission says, in effect, "If CBS resolution isn't good enough for you, buy a color set -- that will make up for it." This "let them eat cake" attitude seems hardly in line with Commission's professed concern for consumer's pocketbook.

(2) FCC is for "color immediately." Yet it recognizes CBS system must have tri-color tube to overcome size limitations. (CBS's 12½-in. maximum is now black-and-white's minimum, and that size is about to disappear from production lines.) But mass production of tri-color tubes is unquestionably quite a ways off. Besides, FCC isn't yet satisfied that RCA's tri-color tube is good enough. And it hasn't even seen Lawrence tube yet. So it's willing to run risk of being stuck with whirling disc and small picture -- unless public can be won to projections, for which buyers have thus far shown decided antipathy.

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It's ironic that FCC and RCA inventions seem to have done much to sell CBS system to Commission. Chapin-Roberts automatic switch certainly was a boost. And it's hard to believe FCC would favor CBS system if RCA tube (possibly Lawrence tube, too) didn't promise to release it from mechanical disc and 12½-in. picture maximum.

Noteworthy, too, is fact Condon Committee report carried almost no weight; it had encouraged further look-see into RCA and Hazeltine developments (Vol. 6:28).

Surprising were separate views of Comr. Hennock -- she who had nagged industry witnesses mercilessly, demanding "color now." Compatibility is so important to her, she stated, that she feels 3 months far too short for industry to try to develop satisfactory compatible system. She'd give it until June 30, 1951.

Comr. Jones' views weren't surprising; actually, he makes sense when he rides majority for saying it wants more information on certain aspects of CBS system, though only if manufacturers promise to make sets under "bracket standards." Jones wants CBS color now, as does Comr. Hyde. Annex to Jones dissent, longer than all rest of report combined, purports to be "a study of the disgraceful treatment of the field sequential system by the industry from 1940 to date." He also casts reflection on predecessor Commissions of last 10 years for being party to it.

One top industry figure suggests FCC ought to go ahead and adopt CBS system, then watch it fail. Another one remarked: "If they adopt CBS, we'll be in the same shape, in color, that England is in black-and-white. Just watch the Europeans, who feel they have plenty of time, pick up the dot-sequential system and run with it. They'll make us look like monkeys in a few years."

It's evident FCC -- and of course CBS -- still face huge job of convincing manufacturers, telecasters and public that they're on right track. But a unanimously convinced FCC certainly is a notable first victory for CBS.

END-OF-FREEZE HEARINGS START OCT. 2: FCC moved promptly to clear remaining obstacles to ending of TV freeze, immediately after breaking color log-jam (see p. 1). It set Oct. 2 as date for opening hearings on general issues, including propagation, uhf, Stratovision, Polycasting, educational channels, "metered TV" etc. FCC said it also wants, by Oct. 31, any comments on use of horizontal interlace for monochrome TV.

Hearings on specific allocation proposals and oppositions, including FCC's own and DuMont vhf-uhf allocation plans, start soon after close of those on general issues -- date to be set later. Cross examination by Bell Labs and others seeking 470-500 mc (Vol. 6:22-24) will be part of general issues hearings.

[For official notice of Oct. 2 hearing, list of companies to appear, order of testimony, get FCC Public Notice No. 50-1066. For details of general issues, see Appendix A of our Supplement No. 64, July 11, 1949. For FCC allocation plan, see our TV Directory No. 11. For DuMont allocation plan, see Supplement No. 68. For specific allocation proposals and oppositions, see Supplement No. 67 series.]

GUESSES & FACTS ABOUT DEFENSE ORDERS: You get all sorts of estimates of impact of military orders on civilian electronics production -- but from all we can gather they're sheer guesswork. Thus far, Uncle Sam's demands have been relatively small, largely routine supplies and developmental or semi-developmental orders placed pre-Korea. These haven't interfered with TV-radio production as yet, for example. But there's little doubt upcoming govt. orders will create inevitable shortages in an industry already feeling strain of shortages brought about by high civilian demand.

"When they tell us what they want, we'll make it." That's attitude of most TV-radio producers, who say they still have lots of added capacity but are dubious about materials. Consensus seems to be govt. planning takes so long that it will be end of year before impact on present production is felt. Everybody seems to be counting on "normal" production through rest of this year.

GE's Dr. W. R. G. Baker said he thinks TV production will be cut 20% by January -- but he admits no one really knows. In addition to acknowledged slowness to let contracts, red tape involved, etc., there's matter of type of contract; for example, many military items have to be engineered for mass production, and there may be no effect on TV-radio lines until engineering and design work is completed.

Dr. Baker's 20% figure was mentioned in statement to GE employes Aug. 28, assuring them that if TV production is cut back they will be reassigned to other work. He said some employes were getting jittery. He hoped TV cuts would be held to minimum since TV is instrument for public information and morale.

Neither at GE, Philco, Motorola, RCA nor Westinghouse has govt. work as yet interfered with TV-radio production. All are govt. contractors. RCA Victor spokesman said if govt. orders increase, civilian production would "of course" be cut as needed to meet military requirements. At New York press conference, Crosley's John W. Craig said company can maintain TV-radio and white goods production through rest of this year, but is uncertain about first quarter 1951. In Los Angeles, Packard-Bell president H. A. Bell opined that in 1951 "if we do not become involved in a major war, TV production should hold to at least 75% of 1950's fabulous rate."

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On eve of President's signature of Defense Production Act of 1950 (H.R. 9176), Dept. of Commerce was readying to take over allocations and priorities control under Maj. Gen. Wm. H. Harrison (Vol. 6:34). Inventory freeze order is framed and questionnaire is supposed to go out to all manufacturers, but indications are Commerce Dept.'s National Production Authority won't really get functioning for another week or more.

Even as top-level Joint Electronics Industry Committee (Vol. 6:32-33) was getting ready for Sept. 5 organization meeting in New York office of its chairman, Western Electric's Fred Lack, Commerce officials were sounding out industry for man to head up NPA's electronics division. Ray C. Cosgrove, ex-Crosley, has been mentioned. And for other NPA executive posts, Commerce specialists who may be assigned are Horace B. McCoy, now chief of office of industry & commerce; Dean O. Bowman,

asst. director in charge of industry division; Thomas W. Delehanty, director, general products branch; Donald Farris, chief, consumer durables section (of which radio-TV is part).

Economic control act covers not only allocations and priorities but also price-wage-credit controls, loans to industry, etc. Manufacturers should get copy of H.R. 9176 from their Congressman or Senator.

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Talk of war contracts being let in matter of weeks can be discounted. First, all appropriations haven't been passed yet by Congress; until that's done, military procurement folk seem to be finding it hard to "nail down" requirements. Electronics requirements for new aircraft, for example, can't be determined until services finally decide on how many and what kind of planes are to be made.

Regular fiscal 1951 bill (H.R. 7786) was awaiting President's signature this week end -- its \$36.15 billion total including some \$13.5 billion for defense, of which \$500,000,000 is earmarked for electronics. Supplemental H.R. 9526, totaling \$16.77 billion, has passed House, is still in hearing before Senate committee, includes \$1.8 billion for electronics.

24-HOUR-A-DAY TELECAST SCHEDULE: TV schedule to top all TV schedules is one planned for Scripps-Howard's WCPO-TV, Cincinnati, already operating 6 a.m. to 1 a.m. week-days and round-the-clock Saturdays and Sundays. Starting this winter, Manager Mortimer Watters plans 24-hour operation 7 days a week. He's the chap who just about a year ago (Vol. 5:30) created quite a stir in TV-radio circles by signing on his then brand-new station at 12 noon and operating it until 11 p.m. every day in the week, featuring some 4 hours of daily disc jockey shows. Now, WCPO-TV is getting such "tremendous reaction" from its 6-7 a.m. daily hillbilly show (interspersed with time, temperature, notices) and its 7-8 a.m. children's feature, that Watters says he's being "forced" to the expanded schedule. Moreover, Crosley's WLWT, which announced it would expand to 8:30-midnight Mon. thru Fri. and noon-midnight Sat. & Sun., as of Labor Day (Vol. 6:32), actually began daily at 7:30 a.m. as of Aug. 31.

Cincinnati is a particularly "hot" TV area (claims 200,000 TVs, though generally accepted figure is around 150,000) -- but trend to longer telecast days is marked throughout the 106-station industry. We've reported them regularly in these columns, notably fact all 5 NBC-owned stations in as many cities are due in October to go on 9 a.m.-to-midnight-or-later schedules 7 days a week (Vol. 6:34).

Watters holds no brief for TV operators who fear to expand, says every time he approached break-even point he added another hour and thus helped build up audience. "Today, operating 19 hours a day for 5 days, and 24 hours the other 2 days, we're almost breaking even again," he said, "and should be earning a profit soon. That's my idea of TV's future -- a bold program of expansion, based on faith in a revolutionary new medium."

MR. MALIK AS A TV MISSIONARY: Russia certainly didn't invent TV, as so blandly claimed (Vol. 6:12) -- but its Mr. Malik has undoubtedly given daytime TV its biggest boost yet. One viewer was heard to remark that Malik's revealing "performances," while presiding over United Nations Security Council last month, have proved that "the future of daytime television isn't soap operas." His point was that the highly popular UN telecasts may be harbinger of higher plane of program fare via TV than radio. Possibly more news events and public service and educational programs -- even banquet speeches -- will find outlets in daytime schedules while leaving night hours mainly to entertainment. (It's noteworthy, though, that President Truman's Friday night fireside talk cleared all TV-radio channels, 10-10:30.)

TV networks and stations earned many plaudits, TV as whole got enormous publicity, for handling of UN telecasts -- probably as historically significant to TV as "Alabama casts its 24 votes for Underwood" was for the infant radio in early '20s. Columnist Peter Edson said success of telecasts raises anew possibility of televising Congress. But TV, he notes, would reveal most members weren't on floor most of the time, to say nothing of "demagogues and flannel mouths hogging mike..."

TV can tell the Big Truth about the Big Lie, in opinion of Brig. Gen. David Sarnoff, RCA chairman, speaking this week before national convention of Veterans of Foreign Wars. Referring to Soviet delegate Malik's revelatory "performances" during his August presidency of the UN Security Council, Gen. Sarnoff observed: "If we had international TV today—and I believe we shall have it within the next 5 years—the Voice of America would be the Voice and Vision of America. What a powerful weapon of propaganda that would give us! For then the whole world would see what millions of American viewers saw—the wonder of the UN sessions at Lake Success—and the arrogant filibuster of President Malik would have been its most effective antidote for the Russian propaganda."

Theatre TV will supplement, not compete, with home TV. That was assurance from theatre representatives at NAB TV committee meeting Aug. 31-Sept. 1. Committee heard TOA's Nathan Halpern and United Paramount Theatre's Robert H. O'Brien, both of whom indicated only theatre-TV exclusives would be in major events (such as World Series, championship boxing bouts, etc.). NAB committee named following subcommittee on theatre TV: Ted Cott, WNBT, New York, chairman; Victor A. Sholis, WHAS-TV, Louisville; Charles A. Batson, NAB TV director. NAB committee also recommended hiring of sports consultant to advise association on sports-TV, urged that film producers be accepted as associate members.

Unusual possibility in use of dot-interlace for black-and-white is that of doubling resolution passed by 2.7-mc coaxial. Engineers say that nothing in stations or receivers need be changed, that modification of coaxial terminal equipment is all that's needed. However, some regard such techniques as mere patchwork compared with AT&T's long-range program for widening coaxial bandwidth. As for monochrome stations themselves employing dot-interlace, there seems to be question about value of doubling horizontal resolution with dot-interlace, without increasing vertical resolution at same time. To do latter, of course, means change in standards, obsolescence of sets.

To tune of continued praise, TV this week continued coverage of UN Security Council (page 6 & Vol. 6:32). Editorialized *New York Times*: "This was television's greatest show and its greatest contribution to public service. It was a foretaste of what the medium can mean, for better informing the public on international and governmental affairs." Wrote *Times*' foreign affairs expert James Reston: "The citizen in the television belt does not merely read or listen to the happenings at Lake Success; he participates in them. Mr. Malik challenges, not some impersonal and distant council, but the citizen himself in his own house."

Plug for Phonevision by Millard C. Faught leads off Aug. 25 issue of intellectually august *Saturday Review of Literature*. Long article mirrors original report by Zenith's paid consultant (Vol. 5:51, 6:6), and makes high-pressured pitch for pay-as-you-look TV, claiming it can "emancipate" TV from "economic shackles of costly programming that now bind the feet of this infant giant." For estimate of how well the "infant giant" is doing, with majority of stations now in black, see "Most TV Stations Now Doing Well" (Vol. 6:32).

Anti-trust ruling against *Lorain (O.) Journal*, for conspiring to injure WEOL (Vol. 5:39), was upheld in Cleveland this week by Federal Judge Emcrich B. Freed. In first such case, Justice Dept. had charged that paper refused to carry ads of business men who also used WEOL or a *Lorain* weekly.

"Red purge" of radio-TV performers, writers, directors, etc. is considered possible, following this week's much-publicized firing of actress Jean Muir, by sponsor General Foods (Jell-O), from cast of NBC-TV's *Aldrich Family*, which accordingly failed to make Aug. 27 debut. Sponsor had received complaints Miss Muir had been associated with Communist front groups, decided to drop her as a "controversial personality," but emphasized it wasn't passing on merits of charges. Nancy Carroll replaces Miss Muir on Sun. 7:30-8 show. Complaints were prompted by fact Miss Muir was listed in booklet called *Red Channels*, as one of 150 radio & TV performers whose names have been associated with Communist-tinged groups. *Red Channels* was published by Theodore Kirkpatrick, an ex-FBI agent, editor of *Counter Attack*, and was issued from office at 55 W. 42nd St., N. Y. Miss Muir issued vigorous denial, saying she has never been a Communist and regards Communism as a "vicious and destructive force." Special group to study broadcast industry has been set up by Joint Committee Against Communism in New York. At same time, American Civil Liberties Union came to Miss Muir's defense, saying: "We are sure that Communist propagandists the world over are using this case as further proof of their claim that the freedom of American radio is a sham." Taking cognizance of "red issue" in TV-radio, Sept. 2 *Billboard* carries full list of groups termed subversive by Justice Dept.

TV commercials are lampooned in page-long condemnation by associate editor Charles W. Morton in September *Atlantic Monthly*. Author bemoans what he claims is sponsors' predilection for the obvious (pictures proving that automobiles move, doors close, etc.) in face of TV's power to show "how cars came into being . . . testing tracks, laboratories . . ." Apparently he's never seen Ford's educational commercials by Dr. Roy Marshall.

"Hoffman Plan" to save sports for TV, started by Los Angeles set maker H. L. Hoffman, provides for establishment of a "Gridiron Club" to sell college football tickets through TV dealers. Then, sponsor foots bill if gate falls below specified minimum. Hoffman is sponsoring various Pacific Coast Conference games. Admiral recently made deal to guarantee minimum gate while sponsoring Los Angeles Rams pro games (Vol. 6:33).

Next NAB convention will again be held in Hotel Stevens, Chicago, sometime next April, it was decided by committee comprising Eugene S. Thomas, WOR-TV; Harold Wheelahan, WSMB; James Shouse, WLW.

NBC is planning "revolutionary new" AM time sales plan, according to trade press stories claiming knowledge of "top secret." Unconfirmable scuttlebutt has it that NBC is out to build its own top-notch shows, sell spots in and around them. This would break with traditional pattern whereby sponsors and their agencies buy and put on own network shows. Plan is regarded as projection of local spot sales practice to network level.

New system would parallel newspaper and magazine practice. These media produce editorial matter, merely sell space to advertisers. Plan is said to provide for sale of 2-minute spots to be rotated among fixed group of such shows as Phil Harris-Alice Faye, Charles Boyer, NBC Symphony, Duffy's Tavern.

One story says \$1,001,000 worth of time, in 39-week cycle, is now being offered. Another reports that some sponsors have already signed. Top brass—Niles Trammell, Charles Denny, Harry Kopf, Walter Scott, Maurice Mitchell—is said to have returned recently from cross-country trip made to lay groundwork.

Telecasting Notes: More TV rate card increases as of Sept. 1: KTSL, Los Angeles, base hourly rate up from \$500 to \$600, one-min. announcements from \$100 to \$120; WCAU-TV, Philadelphia, from \$700 to \$900 & \$100 to \$150; WBKB, Chicago, \$750 to \$925 & \$105 to \$160 (also added new Class A-1 time for 20-second ann., 6:30-10 p.m., at \$200 each); WHAM-TV, Rochester, \$300 to \$400 & \$60 to \$100; WSAZ-TV, Huntington, \$150 to \$200 & \$24 to \$36... WXEL, Cleveland, has raised announcements from \$80 to \$100... As of Oct. 1, WMAL-TV, Washington, goes from \$400 to \$500 & \$60 to \$90... WTVR, Richmond, Aug. 1 raised from \$300 to \$375 & \$60 to \$75... WCPO-TV, Cincinnati, planning to go from \$550 to \$650 & \$100 to \$125... AT&T put \$12,000,000 New York-Chicago microwave system (Vol. 6:31) into operation Sept. 1, adding 4 circuits to TV's present East-Midwest coaxial facilities. However, one present coaxial loop went into standby status, thus making total available circuits 4 westbound, 2 eastbound... WSAZ-TV Huntington-Cincinnati private relay due for momentary opening, while WTTV Bloomington-Cincinnati link has run into site trouble, may be delayed beyond Sept. 1-15 planned opening... RCA International's Meade Brunet one of notables at Aug. 31 opening of Mexico City's new XHTV on Channel 4 (Vol. 6:25, 33); though station operates on American transmission standards, American TVs shipped into Mexico must be designed for 50-cycle power source... Formal inaugural of Emissoras Associadas TV (PRF-3-TV) in Sao Paulo, Brazil (Vol. 6:30), testing on Channel 3 since July, is set for Sept. 16, Brazilian Independence Day; all standards are identical with U. S... Musical clock type show, titled *Wake Up & Live*, with music, news, weather running one-hour, will open telecast day at 7:30 a.m. Mon. thru Fri. on WLWT, Cincinnati.

Personal Notes: ABC v.p. Robert H. Hinckley leaves by plane for Europe Sept. 2 on mission for ECA, will also study European broadcasting with particular attention to means of countering Russian propaganda... Maj. Gen. Frank E. Stoner, retired wartime chief of Army Communications Service, now Seattle mgr. for consultants Weldon & Carr, has been recalled by United Nations to draft plan for its telecommunications service and aid in planning short-wave broadcasting of General Assembly starting Sept. 19; he served as UN director of communications from 1947 until last Feb... James M. Gaines, director of NBC owned-and-operated stations, elected v.p... Harry Wismer quits as gen. mgr. of WJR, Detroit, succeeded by asst. gen. mgr. Worth Kramer; John Patt, mgr. of WGAR, Cleveland, also controlled by G. A. (Dick) Richards, elected president of WJR as well as WGAR & KMPC... Kevin B. Sweeney promoted to gen. sales mgr., John Bradley to asst. sales mgr. of KFI & KFI-TV, Los Angeles... John T. Wilner, engineering director of WBAL & WBAL-TV, Baltimore, onetime CBS-TV, elected v.p. in charge of engineering of Hearst Radio Inc., reporting to Tom A. Brooks, v.p. & gen. mgr... Arnold O. Leeds promoted to TV director of Moss Associates, New York... Fred Osgood named technical supervisor of WBZ-TV, Boston, Sidney V. Stadig having been recalled to Navy duty... Everett D. Johnston has left law firm of Kirkland, Fleming, Green, Martin & Ellis to open own law offices at 1038 Washington Bldg., Washington, D. C... William D. Murdock, ex-sales mgr., WOIC, Washington, has established William D. Murdock Adv. Agency; among clients is big Peoples Drug Stores (retail chain), which plans TV advertising... James Blair, ex-WOIC, joins TV dept. of Lamb & Keen Inc., New York, which also has added Patricia M. Randolph, ex-TV-radio director of Adrian Bauer Adv.

Network Accounts: When NBC-TV *Saturday Night Revue*, starring Sid Caesar and Jack Carter, resumes Sept. 9, Sat. 8-10:30, Campbell Soup will sponsor 8-8:30 segment, Snow Crop Foods 9-9:30, Crosley 10-10:30; with one-min. spots for Whitman's Chocolates, Johnson's Wax and Wildroot Hair Tonic in 8:30-9 period, and for Scotch Tape, S.O.S. Cleanser and Benrus Watch 9:30-10... Prudential Insurance Co. Oct. 10 starts unnamed dramatic show every other Tue. 8-9 on CBS-TV (opposite Milton Berle)... Magnavox Sept. 15 starts unnamed dramatic show, probably to be called *Magnavox Theatre*, to alternate with *Ford Theatre* Fri. 9-10 on CBS-TV... Nash-Kelvinator starts its *Morton Downey Show* Sept. 28 on CBS-TV, Fri. 10-10:30... Revere Cooper & Brass has purchased *Meet the Press* on NBC-TV, time to be set.

Station Accounts: Local TV time purchases, for personal appearances as well as films, are planned by Congressional and local candidates in TV areas, starting in Sept. and running to Nov. elections. Senator Tydings, Democrat, has already bought time on Baltimore and Washington outlets. In Connecticut, Republican candidate Prescott Bush, running against Senator Wm. Benton, is reported to have reserved spots before and after World Series on WNHC-TV, New Haven, planning total TV campaign budget up to \$10,000. (Incidentally, he's a CBS director.) Republican National Committee's own photographer, Ken Adams, is preparing five 5-min. films on political issues, to be made available to candidates—but they must foot own time costs... Among commercial sponsors reported using or planning to use TV (all agencies New York unless otherwise stated): Reader's Digest, thru BBDO; Oakite Products Inc. (cleansers), thru Calkins & Holden, Carlock, McClinton & Smith Inc.; Wellso Shoe Corp. (Foamtread slippers), thru George N. Kahn Co.; Sunbeam Corp. (appliances), thru Perrin-Paus Co., Chicago; E. J. Gallo Winery (Gallo Wines), thru Jordan Adv. Co., Los Angeles; DePree Co. (Mullo Deodorant Tablet), thru Casler, Hempstead & Hanford Inc., Chicago; Standard Oil of California, thru BBDO, San Francisco; Groveton Paper Co. (Vanity Fair Tissues, Blue Ribbon Napkins), thru John C. Dowd Inc., Boston; McGowan Educator Co. (Crax), thru John C. Dowd Inc., Boston; Cain's Mayonnaise, thru Chambers & Wilswell, Boston; Dohrmann Products (Dohrma-Seal weather proofer, etc.), thru Vick Knight Inc., Los Angeles; Scudder Food Products, Los Angeles div. of Wilson & Co., thru Davis & Co., Los Angeles; Castle Films (home movies), thru Monroe Greenthal Co.; American Chicle Co. (Crawford Cough Gum), thru Dancer-Fitzgerald-Sample.

Gillette-Mutual offer to all TV networks to telecast World Series on pooled-facilities, no-pay basis was accepted by NBC, CBS, ABC—but DuMont declined. NBC-TV was offered exclusive rights for \$200,000, but declined. It's reported network affiliates, who were forced to carry last year's series gratis, will receive token payments of one-hour daytime rate for each of first 4 days from networks.

Condon Committee's recommendation that more vhf, rather than uhf, be assigned to TV if possible (Annex C of report on color, Vol. 6:30), is carried in full in September *Electronics*. Editorially, magazine says: "Now, of all times, we must be sure that these important frequencies [vhf] are used, actually and fully, not squatted upon." Engineers familiar with govt. allocations claim those frequencies are by no means "untouchable." But FCC has continuously squelched hopes of getting them.

TV as media for retailers will be discussed from angles of retailers, telecasters and ad agencies at National Retail Dry Goods Assn's Radio-TV Workshop in New York's Hotel Statler, Sept. 28-29.

MARTIN CODEL'S

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September 9, 1950

NEXT STEP TOWARD ENDING FREEZE: Good guess is that Oct. 2 general issues hearing -- the next step, after color, toward ending 2-year-old TV freeze -- will take at least 20 hearing days. Thus, if Commission (en banc) sits 5 days a week, testimony about vhf-uhf propagation, transmission standards, stratovision, polycasting, educational TV, etc. will certainly run through October. If FCC sits only 2 or 3 days a week, much more likely in view of log-jam created by its long color deliberations, it will be much longer before industry goes into final rounds -- hearings on particular channel assignments. Last phase could take 60 hearing days or more.

So actual end of freeze by next May, taking into account time required for final FCC decisions, is still not too far fetched. Before then, we should know whether war procurement will interfere with availability of telecast equipment.

FCC order calling Oct. 2 hearing, with list of witnesses and gists of comments already filed, is published this week as Supplement No. 70, and sent herewith to all full-service subscribers. Any possibility hearings may be shortened rests on hope some of the 58 appearances, 86 oppositions will choose to stand on written comments and oppositions. Witness list was closed last April 7 (Vol. 6:14).

COLOR EDICT HAS INDUSTRY IN DITHER: Flabbergasted manufacturers and telecasters, after week of study, say they simply don't know yet what they're going to do about FCC's color report (Vol. 6:35).

FCC's harsh alternative -- make the kind of sets we want, or else -- hasn't yet been accepted by any set maker. And telecasters, utterly without leadership, have finally taken their noses out of their monitors and found something extremely disturbing staring them smack in the face.

We've contacted at least a score of manufacturers, and they had plenty to say -- in shocked and sometimes bitter language. As things stand now:

(1) All are exploring feasibility and costs of building "bracket standards" sets -- FCC's technique for making CBS's incompatible system compatible with sets to come (see "What Would 'Bracket Standards' Cost?" on p. 4-5).

(2) Pooling of ideas comes at RTMA's TV Committee meeting Sept. 14 in New York's Hotel Roosevelt. Whole board will then mull problem at Sept. 18-20 meeting.

(3) All ears are cocked to RCA. Since it is both a proponent of a compatible system and one of the 3 largest set manufacturers, it may sway whole industry.

* * * *

Commission apparently has industry over a barrel, manufacturers and telecasters alike. Thorough exploration of FCC report and its genesis leaves firm impression that it means neither more nor less than it says -- despite speculation (1) that FCC is merely "mousetrapping" manufacturers, and intends to adopt CBS system willy nilly, or (2) that FCC expects CBS's incompatible system may be killed off during next 3 months by the emergence of something better -- or by the exigencies of defense mobilization.

FCC attitude amounts simply to this: Color is an imperative, must be authorized right away regardless of any other considerations. CBS system is best in sight "on the record". If any compatible system has developed more promise since record closed, FCC is willing to be shown. But manufacturers meanwhile must "buy" time for

CBS standards while FCC looks over new techniques. Time may be "bought" through construction of bracket standards sets compatible with CBS system.

Nobody seems to be pleased, except CBS and the hard core of FCC personnel which has openly plumped for CBS system from the start. Telecasters and merchandisers are particularly disturbed, fearful lest edict put brake on progress of the flourishing "circulation" that is currently making TV, with only 106 stations covering 61 areas, one of the aces of the American economy.

* * * *

Off-the-record and on-the-record reactions of manufacturers run gamut -- but one strain is consistent: They don't like FCC edict, not only because it would upset production lines and raise prices but because it would virtually force them to market something they don't believe in. Few want to be quoted as yet, for the same fear of FCC that pervades broadcasters is beginning to permeate manufacturers -- over whom, by indirection, FCC is extending its power of life and death.

Lawyers are probing appeal possibilities, but FCC is an administrative agency -- and appeal prospects, except to public opinion, are admittedly slim.

"It's screwy," said one of the most important manufacturers. "But we must assume FCC intends to make it stick. So I'm having my laboratories thoroughly explore the problems." That same idea was expressed by others, but following quotes may be symptomatic:

"I'm certainly not going to make any such sets. Let them adopt CBS system. Who the hell are they to tell me what to make? They pushed FM; where did it get?"

"I'm shocked beyond words, but you can be sure we'll come up fighting. If we accept the report word by word, it poses an impossible job. The FCC has overlooked the 7-8 million sets in the field. It was the duty of the Commission to consider the military situation, which has been clearly indicated -- even if big orders haven't actually been placed with us yet."

Said William Mara, Bendix: "It is simply not practical, particularly at this time, for manufacturers to undertake the installation of additional complex devices into TV sets...Frankly, the FCC's decision caught us and, I believe, most of the industry, flat-footed. While we did not endorse any of the various systems...we felt that solely on the basis of compatibility the RCA system would be adopted."

A few makers issued milder statements, tending to accept FCC verdict.

Said Leonard Ashbach, Wilcox-Gay-Majestic: "We will abide by any decision laid down by the FCC on color TV, right or wrong, and will be willing to manufacture color TV receivers after the FCC has rendered its final decision...Color TV will be more expensive to buy, but if the public wants it, they will pay for it."

John Meck: "We have full confidence that the FCC's decision is based on its judgment of what will be best for the future of TV and good for the nation. We must await clarification of the ruling before we can predict what effect it will have on our own manufacturing operations."

As for RCA, it's maintaining utter silence, but must state attitude soon.

* * * *

Sale of sets over nation as whole seems to have been little affected. None except a few telecasters reported drastic dropoffs. No manufacturer-distributor complaints about sales were heard. Even in Washington, right next to all the noise, sales are continuing at hot clip as powerhouse of fall program fare is turned on, with new premieres weekly.

There are those who think nothing can really stop sales, or even slow them down much -- not until existing sets can't receive anything. There's also admitted fact that most of today's sets are in hands of low-income families; so that forcing them to add adapter (at a cost) will work hardship on many. Nobody places much faith in converters, inevitably expensive, extremely awkward, and initial sales of color sets when they're ready are expected to be slow in view of their higher cost.

* * * *

The truly forgotten man, the telecaster, who wasn't represented as such at FCC hearings, is beginning to awaken -- though some are perfectly willing to let NBC

and CBS do their master-minding. None of them, of course, would permit his name to be used, though they spoke freely off-the-record.

One very rugged individualist said he's really scared, reported dealers and distributors "went crazy" as customers canceled orders or stayed out of stores immediately after Sept. 1 report. He guessed that adding color to his station could cost \$250,000 -- for new equipment, new props, expert manpower.

Another said: "It stopped the sale of sets cold. It's the worst thing that could have happened to TV. I expected to break even in January. I don't know whether I can afford to start from scratch again. I have canceled orders for \$55,000 worth of equipment, for if the FCC says sets must have bracket standards I guess I should insist my station equipment has to have it too. There's a contractor in my office now, with bills for the \$100,000 addition I've just put on my station. When the 40,000 set owners here find they've got to spend more money, their voices will be awfully loud."

"I'll probably lose my license if you quote me," said another. "I think manufacturers must say they'll build bracket standards to give compatibility another chance. I'm sure the RCA system will be chosen in the end. I wouldn't take the campaign to Congress or the public yet. The fuss would probably stop set purchases."

Still another: "It would take us 1½ years to get on the air with color; we haven't really made black-and-white work right yet."

Others don't seem too troubled:

"There hasn't been much public reaction here. War production will cut black-and-white sets, let alone color. Maybe I'm living in my own atomic shelter, but I'm not worried."

"We'll be right there on top with any system the FCC finally adopts. It's too early to judge. Public here hasn't been affected at all. The headlines read 'Color Decision Deferred'."

He may have hit on one reason for varied reactions. Way newspapers handled story probably had powerful effect on public.

Time Magazine (Sept. 11) characterized the report thus: "Like many FCC decisions, it proved an enigma wrapped in federalese and tied with red tape."

* * * *

Senator Johnson's reaction, inserted in Congressional Record, was that the report "reflects much credit" on FCC. He noted: "Decision was as good a one as could be made now under all the circumstances...Commission wisely has not closed the door to possible basic improvements in color TV now...If [new developments] are only half as good as some of the claims being made for them, the American people are going to have superb color TV."

Deliberations of FCC leading up to report, as we glean them, indicated that at one time multiple standards were in the works, but Condon Report (Vol. 6:28), otherwise ignored, had much to do with killing off that prospect.

Reason CBS wasn't picked finally now, as proposed by Jones and Hyde, was that Hennock, Sterling and Webster wouldn't take it without giving compatibility another -- and probably last -- chance.

Senator Johnson's "don't delay" letter (Vol. 6:32) is credited with knocking some hesitant members into color-in-a-hurry camp.

"Gimmick" to pressure set makers, by threat of adopting CBS color forthwith if they don't come across within month with promises to produce bracket standards sets, was inserted only last 3 days before report was issued. Chairman Coy and counsel Plotkin were germinators of that idea. Up to 3 days before report, decision aimed simply at picking CBS.

Limitation on CBS picture size worried Coy as much as anyone. He's anxious to see CBS work with tri-color tube. Report, of course, is non-committal about quality of RCA's tube, but promises to "give CBS every assistance possible in securing the use of tubes..." (paragraph 155).

Paramount is lending CBS its Lawrence tri-color tube (Vol. 6:30-32). Para-

mount's Paul Raibourn told us, "CBS asked us if we'd cooperate and we told them of course." Paramount this week was to get delivery from Machlett of third model, and several more are due soon. Raibourn says each gets better, revealed 2 manufacturers have asked for rights to make them.

Incidentally, CBS patents are casually dismissed by number of big manufacturers, who insist they won't pay another royalty -- and they term as "poppycock" newspaper reports of "\$150,000,000 prize" in future royalties involved in color case. Engineers of number of companies say there are many ways of getting around CBS patents, which probably presages lengthy litigation on that score.

A tactical error on RCA's part was placing its cumbersome dichroic-mirror sets in homes of commissioners. Some never really worked. Even Comr. Sterling, an engineer, is said to have complained that he couldn't get his to work and that his wife threatened to throw him out along with the set since it took up so much room. RCA's latest sets, with tri-color tubes, might have done RCA a lot of good -- a few months ago.

* * * *

FCC report poses chain of serious questions troubling entire industry:

Is it move by FCC to regulate manufacturing, as it does broadcasting? Does its squeeze-play technique herald an era of bad feeling between Govt. and industry, with public the inevitable loser? Will FCC attempt to "order" uhf adaptation and conversion, for example?

Will FCC try to use big stick, too, to "force" suppression of oscillator radiation, admittedly a real and, unlike color, an immediate and critical problem?

Will FCC force telecasters to put on CBS color? During its deliberations, that wasn't dwelt on much. It's altogether conceivable Commission will require specified amount of colorcasting as condition of license, and it's certain that it will exact promises of color schedules from post-freeze applicants.

It's bruited that Comr. Jones' next campaign will be FM -- possibly effort to "force" public and industry to FM by decreeing an end to AM at a certain time.

Almost contemptuous attitude towards industry's executives and scientists is obvious among some commissioners and staff members. "They have to be whipped into line," is way one commissioner bluntly puts it.

WHAT WOULD 'BRACKET STANDARDS' COST? TV receiver manufacturers aren't yet saying whether they will make FCC-demanded "bracket standards" sets, but they're nevertheless feverishly figuring how and when they could produce them -- and at what cost. They're also contemplating effect upon buying public, let alone some 10,000,000 set owners who would have to adapt their sets just to get black-and-white as and when CBS-standard colorcasts are on the air.

Early estimates put extra cost to consumer at \$30 to \$100 per set. Most common figures are \$50-\$75. And estimates of time for conversion of production lines to new sets range from 60 days to 6 months. Here are some of problems involved:

(1) Figures on adaptation introduced during FCC hearing are no longer directly applicable, since FCC is asking for something more than a set which merely receives 2 specific standards (525 lines, 60 fields and 405 lines, 144 fields). It wants sets capable of handling whole gamut of combinations possible within line frequencies 15,000-32,000 and field frequency 50-150. Manufacturers say this is far more difficult and expensive trick than former.

(2) Early receivers, such as those FCC and CBS adapted, had wide tolerances and reserve power. Today's models generally have little leeway from present standards. They may take extensive redesign and procurement of new line of components, such as yokes, tubes, etc. For example, bracket standards with 70-degree deflection picture tubes appear tougher to achieve than with 50-degree.

(3) Protection of existing set owners is extremely important to every set maker with a brand name to maintain. Adapters for outstanding sets could run into such costs that customers may vent spleen on everyone in sight -- manufacturers and dealers as well as FCC.

For dual-standard adaptation, of kind considered during hearing, here are

figures (retail level) introduced into record, some qualified as only "guesses":

Internal (built in at factory): RCA, \$7-\$10 (manual switch), \$20-\$24 (automatic); Crosley, \$15; Tele-tone, \$15-\$20; Air King, \$20-\$25; Philco, \$25-\$30.

External (for existing sets): FCC Labs, parts cost ranging from \$4.61 to \$12.01, latter for RCA 630TS with automatic switch; Tele-tone, \$32-\$38; Air King, \$35-\$40; Jerrold, \$40 plus \$2.50 service charge; Webster-Chicago, \$20-\$25 to rewire set, \$40-\$50 for external unit; DuMont, \$100-\$125; Philco, \$75-\$100.

FCC quoted from these estimates in its report (paragraph 105), said Philco and DuMont figures "appear to be unreasonably high in the light of the cost of the parts required for adaptation, and seem to have been based on the replacement of major parts rather than on the minimum necessary charges." Says one manufacturer, not involved in hearing: "It goes to show just how naive the FCC is in matters of production."

Tele-tone had testified it could be producing external adapters within 90 days, achieve rate of 500,000 yearly. This week, however, president S. W. Gross says costs would certainly be higher; he couldn't estimate how much. He now questions whether bracket standards are "logical," and wondered "whether they could mean greater expense to public without any guarantee of usefulness."

Webster-Chicago now estimates costs one-third higher than during hearing, but v.p. Charles P. Cushway announced company is prepared to produce adapters and color converters as well (it produced both for CBS during hearing).

Mr. Cushway figures it would take 60 days to get into adapter production, 3-4 months for converters. Latter involves working up supply lines of new kinds of components -- color filters, motors, etc. Once components are available, he sees no trouble in achieving rate of 1000 converters daily. Cushway says some types of sets -- consoles, those with doors, recessed tubes, etc. -- may be better converted through addition of whole new cabinet.

FCC's Chapin-Roberts automatic switch (Vol. 5:46-49), built for dual standards rather than bracket standards, is being studied by manufacturers. FCC has had 2 inquiries so far, is getting together data for those who want it.

The FCC device hasn't yet been patented. Inventors assigned rights to FCC for \$1 and Justice Dept. is handling patent application. Though FCC has declared no policy concerning royalties on adapter, Govt. has policy of making no charge for use of any patent it holds.

Some manufacturers have asked CBS for specifications on adaptation, conversion, etc., although CBS's Adrian Murphy says "they know their sets better than we do." He points out that CBS introduced everything it knew into record, that CBS gave RTMA some 5000 drawings to distribute to members.

* * * *

That 7,000,000 sets-in-use figure in FCC report's paragraphs 122-125, which so lightly pass over compatibility, is really misleading. That's number in use as of Aug. 1. Some 700,000 per month are being added at current rate. Total should reach 10,000,000 by year's end -- unless production and sales are slowed down drastically by shortages, war procurement and impact of color report.

Nobody in industry, possibly not even FCC, expects manufacturers could be tooled up for inclusion of adapters much before year's end. Manufacturers are given until Sept. 29 to "state their intentions." Even if FCC imposed bracket standards on stations immediately thereafter, ruling isn't in force legally for 30 days.

FCC hasn't talked about policing industry if bracket standards are adopted. Actually, it's expected Commission would be liberal in recognizing that it takes time to revamp production lines -- should the manufacturers capitulate.

It would easily take until end of year to change production. By that time, war orders may well occupy good share of productive and manpower capacity of most if not all manufacturers. Though no one yet knows what impact of war orders will be, we've heard it said industry will be fortunate to be able to turn out 3,000,000 sets next year -- as against the 6,000,000-plus this year.

Telecasting Notes: Can telecasting be profitable? One of first to prove it can be (Vol. 5:48), *St. Louis Post-Dispatch's* KSD-TV, through its enthusiastic director George M. Burbach, tells us: "KSD 1950 net profit from radio and TV combined will be more than double any previous record year's earnings. Net profit from TV will be 1½ times more than our highest net earnings from radio" . . . Actual figures, naturally, aren't anybody else's business, so neither Burbach nor any other TV operator now in the black (and that's most of them now; Vol. 6:32) will give them out—but there's little question now about basic trend . . . WJZ-TV, New York, Sept. 15 raises base rate from \$2000 to \$2200, hikes B time from \$1500 to \$1650, C time from \$750 to \$825; also raised are Class A 1-min. announcements from \$360 to \$500, 20-sec. from \$300 to \$425, 8-sec. from \$150 to \$212.50 . . . WPIX, New York, keeps base rate at \$1200 but revises time classifications, raises Class B hour from \$720 to \$900, Class C from \$480 to \$600; ups Class A 1-min. rate from \$200 to \$225, 20-sec. from \$150 to \$185; 8-sec. from \$90 to \$110 . . . New York's WJZ-TV goes to 7-day week Sept. 11, reinstating Mon. & Tue.; also will start TV day at 11 or 11:30 a.m. daily except Sun. . . . Big moth gummed up works Thursday at WAAM, Baltimore, causing short and forcing station off air for an hour . . . NBC contract with Bob Hope stipulates his TV appearances must not compete with first runs of his Paramount pictures . . . CBS signs with Gene Autry for his Flying A Pictures Inc. to produce 26 TV movies . . . DuMont's 3 stations—WABD, WTTG, WDTV—have signed union shop contracts with IATSE.

Personal Notes: Edward D. Madden, asst. to NBC president Joseph H. McConnell, who joined network last Feb. 1 after serving as executive v.p. of ANPA and v.p. of McCann-Erickson, promoted to v.p. and assigned to TV Dept., reporting to v.p. Pat Weaver; reporting to Madden are George Frey, sales director, and Carleton Smith, operations director . . . Edwin W. Buckalew, San Francisco mgr. of CBS Radio Sales, new gen. sales mgr. of KNX and CBS Pacific Network, succeeding Wayne R. Steffner, who goes to program firm of Oxarart-Steffner Inc. . . . Carl E. George promoted to v.p. & gen. mgr. of WGAR, Cleveland, succeeding John F. Patt, now heading all Richards stations . . . Peirce L. Romaine, ex-Raymer, joins Avery-Knodel rep firm . . . Leroy Passman, ex-WABD, named asst. production mgr. in NBC-TV Program Dept. . . . David E. Partridge new TV gen. sales mgr. for Crosley stations WLWT, WLWC, WLWD, succeeded as sales promotion mgr. by Edward E. Feintheil . . . Richard A. Schlegel now asst. operations mgr., WCAU-TV, Philadelphia.

States can't censor films on TV. U. S. Court of Appeals in Philadelphia Sept. 5 upheld Federal District Court decision that Pennsylvania State Board of Censors cannot require TV stations to submit films to it for review (Vol. 5:44, 50). However, Pennsylvania censors can appeal to U. S. Supreme Court—and telecasters are hoping they do, so that point can be resolved once and for all. Latest decision emphasized fact Congress authorized FCC to regulate broadcasting, therefore "occupied fully the field of TV regulation."

We printed text of *FCC Report on Color Television Issues* last week (as Special Television Report of Sept. 2), but for lack of sufficient printing facilities on Labor Day weekend had to omit Comr. Jones' 80-page Annex to his "dissent in part." Annex was published this week by RTMA and distributed to its membership. Comr. Jones calls it "a study of the disgraceful treatment of the field sequential system by the industry from 1940 to date." Write RTMA for copy: 1317 F St. NW, Washington, D. C.

Network Accounts: Carnation Co. will sponsor *Burns & Allen* comedy team on CBS-TV on alternate weeks, half-hour period not yet designated except that it starts in Oct. . . . Schlitz Brewing Co. Oct. 6 starts *Pulitzer Prize Playhouse* on ABC-TV, Fri. 9-10, dramatizations built around works of Pulitzer winners . . . Arnold Bakers Inc. Oct. 4 assumes sponsorship of *Life Begins at 80* on 5 ABC-TV eastern stations, Wed. 8-8:30 . . . C&W Enterprises (towels) Sept. 11 starts sponsorship of feature films on ABC-TV, Mon. 11-midnight . . . When Frigidaire's next *Star Spangled Revue* with Bob Hope goes on NBC-TV Sept. 14, Thu. 8-9, it will require cancellation of *Camel's Believe It or Not* and the *Hawkins Falls* programs for that day only . . . Arthur Murray Dance Studios Oct. 15 starts *Arthur Murray's Party Time* on DuMont, Sun. 9-10; program formerly was on ABC-TV . . . Pabst will sponsor Joe Louis-Ezzard Charles championship fight Sept. 27 on CBS-TV and radio, starting 10 p.m.; reported to have paid \$125,000 to promoters for TV-radio rights.

Station Accounts: New York's big Chase National Bank buys one-minute spots featuring banking services on WCBS-TV, WJZ-TV, WABD; Norman Brokenshire is commentator, and agency is Hewitt, Ogilvy, Benson & Mathers Inc. . . . Peerless Radio Distributors, Jamaica, buys WOR-TV test patterns as means of reaching servicemen while actually on jobs . . . Cudahy Packing Co. buys spots in *Martha's Kitchen* on WOW-TV, Omaha, also will sponsor U of Nebraska games on WOW & WOW-TV . . . Ziv Television Programs Inc., syndicating Grant-Realm's *Story Theater*, half-hour films, reports sponsorships by Harvard Beer on WNAC-TV; Ohio Fuel Gas Co. on WSPD-TV; Brown Shoe Co. on WHAM-TV; Kann's Dept. Store on WMAL-TV; GE Supply Corp. & Rosenbaum Dept. Store on WDTV; also Detroit Edison Co., Cincinnati Gas & Electric Co. and Red Top Beer (Columbus) on stations to be announced . . . Among sponsors reported using or planning TV (all agencies N. Y. unless otherwise indicated): Hamilton Ross Industries (sewing machines), thru Bobley Co. (WJZ-TV); Milrose Products Co. (Rad cleaner & polish), thru Frederick-Clinton Co. (WABD, WPIX, WATV); American Floor Covering Co., thru Strauss & Davies, Philadelphia (WFIL-TV); Wise Potato Chip Co., thru Lynn-Fieldhouse, Wilkes-Barre, Pa. (WFIL-TV); Worth's Inc. (women's wear chain), thru Harold Kirsch Co., St. Louis; American Television Inc. (TV sets), thru Turner Adv. Agency, Chicago; Vaisey-Bristol Shoe Co., thru Storm Adv. Agency, Rochester, N. Y.; Petri Wine Co., thru Young & Rubicam; Asher Brothers Inc. (Scotty Pops confection), thru Manhattan Adv. Agency (WPIX); Ronzoni Macaroni Co., thru Emil Mogul Co. (WPIX); Gospel Broadcasting Assn., thru R. H. Alber & Co., Los Angeles (KECA-TV & WJZ-TV).

Atlanta Newspapers Inc. (WSB-TV & WCON-TV) told FCC Sept. 8 it wanted to use WCON-TV's Channel 2, but would require 6 months before antenna is operating properly on 1000-ft tower. Information was in answer to Commission's ultimatum last month to make up mind which TV station *Atlanta Journal-Constitution* group wanted to keep (Vol. 6:33). FCC had said if WCON-TV was chosen, it had to start program tests by Oct. 10.

Sept. 1 sets-in-use, reported since NBC Research's "census" of Aug. 1 (Vol. 6:33): St. Louis 165,000, up 12,000; Washington 160,575, up 10,575; Memphis 49,278, up 4978; Dallas 39,606, up 3206; Fort Worth 31,353, up 2152; Utica 22,100, up 2300; Greensboro 19,500, up 4000; Des Moines 14,285, up 1985; Kansas City 50,542, up 8442; Davenport-Rock Island 18,373, up 2173.

MARTIN CODEL'S

AUTHORITATIVE NEWS SERVICE
OF THE
VISUAL BROADCASTING
ARTS AND INDUSTRY

Television Digest

WITH **AM** **FM** REPORTS

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September 16, 1950

FIRST CONTROLS ON RAW MATERIALS: Regulation No. 1 of Maj. Gen. Wm. H. Harrison's National Production Authority, effective Sept. 18, lists 31 raw materials in short supply -- and these are the ones essential to electronics placed on critical list: aluminum, copper, lumber, nickel, soda ash, steel, tin, tungsten. Copper is considered most critical, tin also serious.

Regulation asks manufacturers to keep supplies to "practicable minimum working inventory," calls for voluntary cooperation, but prescribes stiff penalties. The order is aimed at hoarding, though it doesn't spell out exactly what constitutes base supplies. It's believed most controls will be made mandatory sooner or later -- after November elections. Amounts used by electronics industry as whole, TV-radio in particular, are hard to determine for neither Govt. nor RTMA has any estimates.

The 1947 Census of Manufacturers showed 97,382 tons of steel, 27,440,000 lbs. copper (not counting that used in circuit wiring), and 9,922,000 lbs. aluminum used by radio industry, which that year made 17,517,107 radios, only 178,571 TVs. Last November, speaking before American Institute of Banking, then estimating 1950 TV production at 3,100,000 sets (it should go to 6,000,000), RCA's Joseph B. Elliott said TV sets alone would require 100,000 tons of steel, 47,500,000 lbs. copper, 40,000,000 lbs. aluminum, 83,000,000 lbs. glass, 103,000,000 board-ft. wood (Vol.5:47).

Text of NPA Regulation No. 1 on Inventory Control (NPA 7004) may be obtained from Dept. of Commerce, Washington, or its branch offices.

'BRACKETS' DEADLINE CAN'T BE MET: "Bracket standards" sets will not be made by FCC's zero hour, which is Nov. 10 or few days thereafter.

Manufacturers can't physically do it, whether they want to or not -- and most don't, judging from answers to questions put to set makers representing great preponderance of production.

Does that mean CBS color system will be authorized forthwith, as threatened in FCC report? Or will Commission take production factors, along with shortages and military procurement, into account -- now?

Those factors were known when FCC issued its Sept. 1 ultimatum (Vol. 6:35-36), so it's questionable whether they'll mean anything to Commission on Sept. 29, when manufacturers' answers are due.

Nov. 10 deadline date, unless FCC relents, is arrived at thus: Commission stated (Public Notice No. 50-1065) manufacturers must promise by Sept. 29 to "build all their TV receivers" with bracket standards 30 days after publication of order in Federal Register. Presumably, FCC would adopt order without much delay after Sept. 29. It usually takes about 10 days more for publication.

Hell bent for color-in-a-hurry, FCC may be surprised at manufacturers' responses. Commission seemed sure set makers would try to buy time to give compatibility another chance. Simple facts of production, cited by manufacturers, even the few inclined towards CBS, were unknown or ignored by the Commission.

* * * *

Another thing quite clear now, too: RTMA will recommend nothing to its members, except that they make up own minds, individually. Association has no intention of giving slightest grounds for anti-trust action.

Sept. 14 meeting of RTMA Television Committee in New York's Hotel Roosevelt

amounted to nothing more than lengthy expressions of legal opinions whether group should even discuss FCC's proposals. Very good guess is that RTMA board, after Sept. 20 meeting, will simply tell members and FCC it couldn't discuss matter.

Actually, only a fraction of TV production was represented at meeting. Biggest producers, as well as most small outfits, simply stayed away -- most notably RCA, Philco and Admiral (latter a non-member). Only about 10 or 15 companies were represented at meeting, many with their lawyers.

Anti-trust or no anti-trust, manufacturers can't help saying FCC's November deadline is out of question.

Besides passive "we can't do that" attitude of some set makers, there are those who indicate they will fight FCC's color dictate with everything they have. They aren't admitting FCC authority, direct or indirect. Listen to these:

* * * *

"We're not going to take this lying down. We'll go to the courts and the public, if necessary. We're not going to crawl. The decision was brutal, unjust, unfair, nowhere in the public interest. Its major aspect, to our mind, seems to be a determination to deteriorate television, and if you read Comr. Jones' statement he gives the manufacturers no credit whatsoever for developing this industry to such a high plane in these few postwar years."

"The Commission is moving in not only on the telecaster but on the manufacturer. It doesn't dare tell telecasters they must cut off black-and-white, and of course it has no authority over manufacturers."

"Bracket standards are a physical impossibility. We have no room for additional components in our sets. It would take longer to build such sets than it takes to design for a new line. The FCC studies this thing for years and expects us to change our plans in weeks. Such sets could be built eventually, sure, if you ignore costs. But they make the pictures no damn good!"

"If we put every resource into the design of bracket sets, even to taking our important men off vital govt. work, we couldn't possibly meet the Commission's schedule. A good majority of the sets now in the field can't be adapted without bringing them back to the factory, practically for rebuilding. Crating and shipping, alone, would be very costly. Some models can be adapted, some can't. But if you start servicemen fooling around with circuits, this thing can really become a mess."

"It would take a year just to get started, if we had to turn out bracket sets. It's a practical impossibility to turn them out in a month or two, even if we wanted to, which we don't. It's a crazy, amateurish idea."

"We'd go along with FCC if we could. We can assume it is doing what it considers best for the public. But with the shortage of components, it's impossible."

"This is a brass knuckles tactic. The FCC is trying to pull the rug out from under our industry. They can't get away with it, even though they may succeed in confusing the public to point where it might stop buying sets."

Even Zenith, often industry maverick, doesn't go along with bracket idea.

* * * *

Meeting FCC "half way" was suggested by one big manufacturer. He said he was considering, if it's practical, offering standard black-and-white sets so designed that an optional adapter could be purchased simultaneously or later and plugged in. But he agreed this neither complied with FCC proposal nor made it possible to adapt existing sets. "Anyway," he said, "all our engineering time is being spent on govt. contracts. All we could spare are production men."

Underwriters Laboratories approval of adapters for existing sets, without which they couldn't be sold in many cities, is considered unlikely by many manufacturers. UL engineers say they can't tell whether they'll approve or not until actual adapters are submitted.

Question of field testing, which FCC emphasized when considering color systems in its report, seems to have been forgotten in bracket standards proposal. Many manufacturers say they simply wouldn't sell such sets without normal field testing, which sometimes takes months.

Bracket standards are technically feasible -- there seems to be little question about that, given time for development and production. But, aside from costs, engineers seriously question whether FCC's objectives in proposing them are worthwhile. Commission's purpose, of course, is twofold:

(1) That long-persistent phosphors may some day come along, permit reduction of CBS field rate from 144, allow more horizontal resolution.

(2) That horizontal interlace may work out with CBS system, also allow more horizontal resolution. In that event, however, it would be desirable to balance picture by increasing vertical lines from 405.

Engineers say phosphors just don't behave that way without producing smear. Furthermore, transmission of lower field rate would immediately obsolete tubes in existing color sets; they'd flicker like mad. And horizontal interlace must yet be demonstrated on the air.

FCC has never seen a bracket standards set. Its own lab has neither built one, nor studied problems. There's good reason to believe this matter has some commissioners plenty worried, for while case is supposed to rest on record, bracket standards aren't in the record. Said one pro-CBS staffman: "If the manufacturers come up with a hard luck story, we'll have to see what we can do in the laboratory. It's true bracket standards aren't in the record."

* * * *

CBS meanwhile is laying plans. President Stanton has already said he'd be on air with color 20 hours weekly, 30 days after final FCC approval. On Sept. 18, its WCBS-TV starts 10-11 a.m. daily color test pattern "at the request of TV set manufacturers." CBS has written RCA to demand tri-color tube, and is testing Lawrence tri-color tube with its system (Vol. 6:36).

As for telecasting, CBS says industrial color equipment being made by Remington Rand (Vol. 6:33) can be used by stations without any trouble. Dr. Goldmark (made v.p. this week) went on radio Sept. 14 to make color pitch, emphasis being that FCC had given CBS system "unqualified approval." CBS says it has no plans for manufacturing either station equipment or receivers.

CBS has no qualms about patents. Told that manufacturers claim they can build field-sequential sets without touching CBS patents, v.p. Adrian Murphy said, "Tell them to look at the patents again." List of CBS licensees still totals the 3 dating from 1946-47, plus Remington Rand. Westinghouse and Bendix are licensed to make studio equipment and sets; Federal, studio equipment only.

* * * *

FCC members are relaxing, or making speeches, waiting for manufacturers' responses. At this writing, all Commission had received was letter from Philco's David Smith asking for clarification, and a sizzling missive from Sightmaster's Michael Kaplan, as president of Television Mfrs. Assn., group of small set makers.

Smith wanted to make sure FCC wants sets providing whole range between brackets, rather than sets capable of receiving 2 fixed standards -- present monochrome and monochrome from CBS color. He also said he wasn't sure what wave form is required, pointing out that CBS employs something different from that indicated in FCC report. Then he wondered whether FCC wants a change in hum tolerance, 5% in present standards, since CBS system is non-synchronous with power supply. He also asked: Does FCC intend there be "color indexing pulse" to permit automatic synchronization of color discs?

Kaplan wrote Chairman Coy: "A compatible, practical color system is possible if given time to develop. We believe [the] report will cause many misconceptions in the public's mind and the manufacturer will be made the whipping boy..."

"Are we expected to deliver with each color conversion a (1) TV engineer, (2) lawyer, (3) pair of magnifying glasses, (4) prayer? Or, if the customer should insist on a 16-in. or 19-in. color picture, must we tell the consumer to rent another room...or build another unit to his home to house such a rhubarb?"

Not many letters have been received from public, only 40-50, quite a few forwarded by Congressmen. We saw none favoring color report. Several start out:

"We just bought a set for [\$200-\$600] and you intend to make it obsolete..." Some obviously misunderstood report, expect present sets to become useless within month.

* * * *

Scientists of electronics industry, exasperated by FCC's technical conclusions, angered particularly by Comr. Jones' serious charges against them, haven't made public protests yet. But some of them are boiling.

With neither patent nor manufacturing stake in decision, one truly eminent engineer told us: "The report's preoccupation with that 1/11,000,000th of a second is one of the most ridiculous things I've ever read. It may sound impressive to a layman, but it is utterly without significance in television."

Another in similar position to be impartial: "Today's television operates beautifully with tolerances of 1/4,000,000th of a second. Surely, an increase of 3-to-1 shouldn't frighten anyone."

But RCA never had a look-in, states key FCC executive -- particularly in view of dichroic-mirror sets it placed in commissioners' homes. Nor is there any disposition to treat seriously RCA's claims for tri-color tube and improvements since initial sets were put together. RCA itself is still saying nothing, but it's good guess it will go to court to fight decision.

* * * *

Comr. Coy continued vacation all this week on Cape Cod. Since he's regarded as dominant figure on FCC and quite articulate (though Jones has taken leadership in color issue), lots of interest will attach to his Sept. 25 speech, probably on color, before National Electronics Conference in Edgewater Beach Hotel, Chicago.

Comr. Sterling spoke Sept. 15 before Pacific IRE convention, steered clear of controversy, but did say: "Expert testimony, to be valuable to the Commission, must not only be theory but backed by practical field testing."

Same day, Comr. Hennock spoke to National Assn. of Women Lawyers, declaimed on glories of color, but added: "As I stated in my separate views to the report, I sincerely believe that, if necessary, steps should be taken by the FCC to insure that present set owners will continue for a reasonable period to receive fine programs at all hours."

* * * *

What if CBS is adopted? Here are some industry speculations:

There's little question that CBS will be only one to telecast color for long while unless FCC forces stations into it. And although commissioners say they haven't considered force (color as requirement of license), they undoubtedly will.

Equipment will be slow in coming, even though Remington Rand is presumably in production. If (as usual) stations are afraid to contest FCC, they will undoubtedly plead for more time. Maybe FCC will try to pressure networks to put on color. In that case, color equipment would be necessary only at origination points. Of course, not all stations are on networks yet.

If CBS makes real effort to transmit color with good programs, during valuable hours, can its zeal outlast its pocketbook? Who would sponsor during long period of "circulation building"? Could CBS carry load itself?

Who will build color sets? Some manufacturers have already said they will. But there will be mere trickle for months, if not years, particularly because of war and shortages. Who'll buy them? Some people will, certainly. But how much more will people pay for a 7, 10 or 12½-in. color picture than they will for 16, 17 or 19-in. black-and-white?

Suppose adapters can be made for some sets, or bracket sets are finally built, to get black-and-white from CBS color. They'll produce some of the poorest pictures yet seen. Coaxial and kinescope degradation of present black-and-white is bad enough. What will 100-line monochrome look like?

Imagine reaction of public when it turns on present sets, during color transmissions, gets no picture at all. They're bound to protest.

FCC's equanimity in its report, wherein it ignored or dismissed these prospects, seems destined for rough going.

EXPANDING SPONSORSHIPS AND HOOKUPS: Adding up to fantastic progress -- far out of proportion to the mere 106 stations now operating in 61 markets -- are these vital facts about the current telecasting picture:

(a) Superb new fall-winter program schedules, already under way, assure top entertainment on regular basis -- with football and World Series lending spice to intense popular interest in TV. In lists of Network TV Sponsorships published as pages 7 & 8 herewith, you will find 186 sponsors using more than 100 hours per week of regularly scheduled programs -- not including oddments such as football, other sports. CBS list has 69 sponsors using approximately 32 regularly scheduled hours, NBC 65 sponsors buying about 38, ABC 40 buying about 21, DuMont 15 buying about 14. These are bookings as of Sept. 15 -- with more to come as season progresses.

That means heavy options on station time for network (usually best) programs; problem facing networks isn't one of selling shows, or even producing good programs, but rather the clearance of time on limited number of stations. Compare foregoing total of network sponsorships with the 85 buyers of some 45 hours on the 4 networks in lists we published just about this same time last year (Vol. 5:38).

Sets-in-use total very close to 7,500,000 as of Sept. 1, 1950 -- an amazing growth since the 2,310,000 counted as of Sept. 1, 1949 (Vol. 5:39). Figure is practically certain to reach 10,000,000 by year's end. And networks and 106 stations (soon 107) are certain to do predicted \$75,000,000 gross volume, possibly closer to \$100,000,000 (Vol. 6:21) -- as against \$33,800,000 last year, and compared with radio broadcasting's probable 1950 repetition (via 4 networks and more than 2000 stations) of last year's record \$426,000,000.

(b) As of Sept. 15, Los Angeles-San Francisco microwave relay went into service, providing intercity service for first time, first segment of eventual Pacific Coast network -- though hookup into East-Midwest networks for transcontinental service is still several years off. On top of this --

Fourteen more TV cities will get network service as of end of this month -- Sept. 30 -- via coaxial and/or microwave relays added to the 33 markets already linked (Vol. 6:31). AT&T is hooking up Greensboro, Charlotte, Jacksonville, Atlanta, Birmingham, Davenport-Rock Island, Des Moines (Ames), Omaha, Kansas City, Minneapolis-St. Paul, Indianapolis, Louisville. In addition, private relays will link Nashville via Louisville, Bloomington, Ind. via Cincinnati.

New York-Washington connection gets added microwave circuits Sept. 18, one in each direction -- making 5 southbound, 2 northbound. As of Sept. 30, present single Washington-Richmond coaxial circuit will get 2 more southbound.

Personal Notes: Dr. Peter C. Goldmark, CBS color inventor and laboratory director, promoted to v.p. in charge of engineering research & development . . . Dr. Vladimir K. Zworykin, RCA scientist and developer of the iconoscope, awarded 1951 IRE Medal of Honor . . . Dr. E. W. Engstrom and Dr. George Brown, of RCA Princeton Laboratories, due back from Europe next week . . . John W. Elwood, since 1942 mgr. of NBC's KNBC, San Francisco, retires from NBC as of Oct. 1 . . . Ole Morby, asst. gen. sales mgr. of CBS Pacific Network, promoted to San Francisco sales director . . . U. A. (Jake) Latham promoted from sales mgr. to gen. mgr. of WKRC-TV, Cincinnati, Hulbert Taft Jr. continuing as executive v.p.; Roderrick Mitchell, ex-WCBS-TV, New York, named program director, succeeding Richard Van Albrecht, who is joining WGN-TV, Chicago . . . Easton C. Woolley resigns as NBC station relations director as of Nov. 1 to become executive v.p. of Sidney Fox stations KDYL & KDYL-TV, Salt Lake City . . . Eldon Hazard new asst. sales mgr. of CBS network sales under John J. Karol . . . Edward G. Murray, ex-Monogram Pictures, named film buyer for WPTZ, Philadelphia . . . Melvin E. Drake, ex-mgr. of WDGY, Minneapolis, named NAB director of station relations, succeeding late B. Walter Huffington.

Zenith's Phonevision tests are still scheduled for Oct. 1 start, but no announcement has yet been made about promised first-run feature films. This week, FCC gave Zenith permission to use 5 kw in Chicago experiment, though it had previously limited power to 1 kw (Vol. 6:13). Last week, installations of Phonevision receivers were completed in more than 150 of the 300 test homes. John Howland, Zenith president McDonald's aide in developing and promoting pay-as-you-look system, has resigned.

DuMont has asked FCC to straighten out "cable" allocation for the 4 TV networks. In letter to Commission, DuMont Network points out impasse has been reached among networks (Vol. 6:34), asks FCC to tell AT&T what to do. Main bone of contention is DuMont's fear AT&T will favor networks with heavy commercial commitments, rather than treat all alike.

While the supply lasts, TELEVISION DIGEST'S 24-page printed copies of FCC's Sept. 1 *Report on Color Television Issues* are available to subscribers at \$2 each. Single copies were supplied all subscribers with Newsletter of Sept. 2 (Vol. 6:35).

Telecasting Notes: NBC raises basic rate of WNBT, New York, to \$2500 effective Oct. 1—move coming exactly 2 months after station's charges were upped to \$2200 from first of year's \$2000 and month after WCBS-TV's basic rates went up to \$2500 (Vol. 6:34). No change has been made in \$500 rate for 1-min. announcements. NBC also hikes rate of KNBH, Los Angeles, from \$900 to \$1200, spot base from \$125 to \$165. In NBC-TV network rate card (see *TV Directory No. 11*), WDSU-TV, New Orleans, is boosted from base of \$250 to \$300; WDAF-TV, Kansas City, from \$300 to \$400; KFMB-TV, San Diego, from \$300 to \$400; KPHO-TV, Phoenix, from \$150 to \$200 . . . When AT&T inaugurated 378-mi., \$6,000,000 Los Angeles-San Francisco microwave relay Sept. 15, marking first Pacific Coast interconnection (except for San Diego pickups off air from Los Angeles), KTTV & KNBH in Los Angeles were due to exchange programs with KRON-TV and KPIX—with Gov. Earl Warren, FCC Comr. George Sterling and other notables participating . . . WOR-TV, New York, Oct. 10 starts daytime schedule from 10 a.m. Mon. thru Fri. . . . KGO-TV and KPIX, San Francisco, this week began 7-day week schedules, and on Sept. 23 KRON-TV also begins daily programming . . . With auditorium 75x60 ft., seating 200 persons, Salt Lake City's KSL-TV claims one of largest and best equipped setups in country; official opening Sept. 15 launched 7-day week operation . . . Hollywood-type "sneak preview" of film made for TV, Bret Harte's *Miggles*, scheduled for December showing on Procter & Gamble's *Fireside Theater* on NBC-TV, will be screened Sept. 20 in Trans-Lux Theater on 52nd St., New York, as part of theater's regular program, and audience will be asked to fill out reaction cards . . . Ziv Television Programs Inc., syndicator of TV films to stations for individual sponsorships, has taken 5-year lease on The California Studios, Hollywood, formerly Enterprise lot, taking possession Oct. 15, starting production Nov. 1; deal involved \$100,000 cash and other considerations . . . Financial Public Relations Assn. meeting in Boston's Statler Sept. 18-21 will have 2 clinics on TV advertising by banks, conducted by George J. Watts, of Philadelphia's Corn Exchange Bank (sponsor on WPTZ).

Network Accounts: Frigidaire has taken every fourth Sun. 8-9 on NBC-TV, starting Oct. 1, alternating Bob Hope & Bobby Clark every other month; *Colgate Comedy Hour*, starring Eddie Cantor, Dean Martin & Jerry Lewis, Fred Allen in rotation, occupies other 3 successive Sundays . . . Pontiac Oct. 3 starts *Game of the Week*, film version of preceding Saturday's top college grid game, on ABC-TV, Tue. 8-8:30 . . . Allen B. DuMont Laboratories (TV sets) Oct. 7 starts *Saturday Night at the Garden* on DuMont, Sat. 8:30-11 . . . Coca-Cola Co. leads off series

Plenty of football telecasting is in works, despite Big Ten Conference and other collegiate bans, and restrictions imposed by pro clubs. NBC-TV will feed Harvard and Princeton games, sponsored in East by Atlantic Refining Co., elsewhere cooperatively. CBS-TV will carry Army, Navy, Columbia home games sponsored by Esso. DuMont will offer 5 Notre Dame home games, sponsored by Chevrolet. Army-Navy game is set for NBC-TV, Gillette sponsoring. ABC-TV will carry 7 Pennsylvania games, for which it's still seeking sponsor.

Sun Oil Co. will sponsor 15 National Professional League games on ABC-TV, starting Sept. 16. Station lineups are complicated by sponsors' limited markets, plus League's prohibition of telecasts within 75-mi. radius of game, plus some teams' previous commitments. In Washington, for example, Amoco retains rights to Redskins games (WMAL-TV); in Cleveland, Carling's Ale will sponsor 5 Browns' out-of-town games (WXEL). Illustrat-

of special telecasts, as yet unscheduled, with 30-min. Edgar Bergen-Charlie McCarthy show Thanksgiving Day afternoon on CBS-TV . . . Trade reports say General Foods plans thrice weekly daytime variety show with Bert Parks on as yet unselected network, packaged by Louis Cowan and costing upwards of \$1,000,000 . . . Quaker Oats Oct. 1 starts *Zoo Parade* on NBC-TV, Sun. 4:30-5

Station Accounts: Three new 52-week spot contracts announced this week by WABD, New York: Manufacturers Trust Co., Bristol Myers Inc. (Ipana), Elgin Watch Co. Among other spot sales, WABD reports United Fruit, thru BBDO; Croton Watch Co., thru B. D. Iola Co.; Savarin Coffee, thru Lawrence C. Gumbinner Adv.; Bayuk Cigars, thru Neal D. Ivey Co. . . . WPTZ, Philadelphia, reports Fidelity-Philadelphia Trust Co. as its fourth big banker-sponsor; *Great Music* is program, Sun. 10:30-11, with recordings and pianist-commentator . . . Weekly on KPIX is 15-min. *TV Real Estate Bureau*, sponsored by San Francisco Real Estate Co. . . . Among other sponsors currently using or planning to use TV (all agencies N. Y. unless otherwise stated): United Airlines, thru N. W. Ayer; Waring Products Co. (mixers), thru Grant Adv.; American Floor Covering Co., thru Strauss & Davies, Philadelphia (WFIL-TV); Ideal Mfg. Co., Hammonton, N. J. (dresses), thru Gresh & Kramer, Philadelphia (WPTZ); Habitant Soup Co., Chambers & Wiswell, Boston.

Unusually sensitive because of anti-trust angle in bracket standards issue (see p. 1), RTMA got upset by story of meeting as reported by *Washington Post* and AP. Sept. 15 *Post* headline read: "TV Committee Adopts Color Video Report." AP said: "A cautious and somewhat bewildered group of television set makers adopted recommendations to fellow manufacturers on color video today [Sept. 14], but kept them a well-guarded secret." Next day, *Post* ran correction saying RTMA informed it that neither statement is true. RTMA said that all it told press was that committee would make recommendations to board.

GE's color system (Vol. 6:30,34), because of strike, would be hard put to meet FCC's Dec. 5 deadline for Washington demonstrations of new systems (Vol. 6:35), says electronics chief Dr. W. R. G. Baker. He believes he'd have met October demonstration date he promised FCC, had it not been for 2-week strike.

"Economic Outlook in Radio and Television" titles talk by James D. Shouse, chairman of Crosley Broadcasting Corp., scheduled for meeting of Newspaper Controllers and Finance Officers in Cleveland, Oct. 17.

G. A. C. Half, banker, oilman and owner of WOAI & WOAI-TV, San Antonio, died Sept. 11 at age of 70. His son Hugh operates stations.

ing complications is Cleveland club's veto of home-game telecasts to Toledo, even though it's beyond 75-mi., because of big pitch Cleveland makes for Toledo patronage.

Balaban & Katz's WBKB, Chicago, will feed live telecasts of 5 Illinois games to 2 of its downtown theatres; WWJ-TV, Detroit, will do same with Michigan games—but neither will be on air due to Big Ten ban. Most Big Ten TV areas will have film versions of games Sundays, some sponsored. In Dallas, KRLD-TV won't telecast films of SMU games until Tue. nights.

On Pacific Coast, Hoffman Radio will sponsor 30 college games on various stations, and Admiral will sponsor all 15 games of Los Angeles Rams (Vol. 6:33). Among other grid sponsorships are: Oklahoma home games, Ford Dealers on WKY-TV; Nebraska games, Cudahy Packing Co. on WOW-TV; local scholastic games, Joske's dept. store with Hoffman-Frigidaire distributor on KEYL, San Antonio.

NETWORK TV SPONSORSHIPS

Under Contract as of Sept. 15, 1950

All times are p.m. New York Time. Figure in parentheses is number of stations taking show live (kinescope recordings also indicated).

NBC-TV Sponsorships

Admiral Corp., *Lights Out*, Mon. 9-9:30, thru Kudner (35 plus 18 kinc).

Also Inc. (storm windows), *Through Wendy's Window*, Sat. 5:45-6, thru Dubin (15 plus 19 kine).

Anchor Hocking Glass Corp., *Broadway Open House*, Mon.-Fri. 11-12, thru Wm. H. Weintraub (29 plus 6 kine).

Armstrong Cork Co., *Armstrong Circle Theater*, Tue. 9:30-10, thru BBDO (35 plus 5 kine).

Armour & Co., *Stars Over Hollywood*, Wed. 10:30-11, thru Foote, Cone & Belding (12).

Atlantic Refining Co., *College Football*, Sat. 1:15-3:15, thru N. W. Ayer (12).

P. Ballantine & Sons (beer), *Believe-It-Or-Not*, Thu. 8:30-9, thru J. Walter Thompson (20 plus 11 kine).

Behrus Watch Co. Inc., *Show of Shows*, Sat. 9:30-9:40, thru J. D. Tarcher (35).

Bonafide Mills Inc., *Bonny Maid Versatile Varieties*, Fri. 9-9:30, thru Gibraltar (25 plus 11 kine).

Bristol-Meyers Co. (Ipana & Mum), *Break-the-Bank*, Wed. 10-10:30, thru Doherty, Clifford & Shenfield (24 plus 20 kine).

Brown Shoe Co. Inc., *Smilin' Ed McConnell*, Sat. 6:30-7, thru Leo Burnett (6 plus 7 kine).

Camel Cigarettes, *Camel News Caravan*, Mon.-Fri. 7:45-8, thru Wm. Esty (36).

Campbell Soup Co., *Jack Carter Show*, Sat. 8-8:30, thru Ward Wheelock (27 plus 14 kine).

Chesebrough Mfg. Co. (Vaseline), *Greatest Fights of the Century*, Fri. 10:30-10:45, thru Gayton (32).

Colgate-Palmolive-Peet Co., *Colgate Comedy Hour*, Sun. (3 out of 4 weeks) 8-9, thru Ted Bates and Sherman & Marquette (38 plus 20 kine).

Colgate-Palmolive-Peet Co., *Howdy Doody*, Mon. 5:30-5:45; Tue. & Thu. 5:45-6, thru Ted Bates (28 plus 3 kine).

Congoleum-Nairn Inc., *Garroway-At-Large*, Sun. 10-10:30, thru McCann-Erickson (32 plus 15 kine).

Crosley (Avco Mfg. Co.), *Show of Shows*, Sat. 10-10:30, thru Benton & Bowles (32 plus 14 kinc).

DeSoto (Chrysler Corp.), *Groucho Marx Show*, Thu. 8-8:30, thru BBDO (31 plus 25 kine).

Emerson Radio & Phonograph Corp., *The Clock*, Fri. (alternate weeks) 9:30-10, thru Foote, Cone & Belding (20 plus 11 kine).

Firestone Tire & Rubber Co., *Voice of Firestone*, Mon. 8:30-9, thru Sweeney & James (34).

Ford Dealers, *Ford Star Revue*, Thu. 9-10, thru J. Walter Thompson (36 plus 9 kine).

Ford Dealers, *Kukla, Fran & Ollie*, Wed. 7-7:30, thru J. Walter Thompson (36 plus 19 kine).

Frigidaire (General Motors), Bob Hope alternating with Bobby Clark, every fourth Sun. 8-9, thru Foote, Cone & Belding. Starts Oct. 1.

General Foods Corp., *Hopalong Cassidy*, Sun. 6-7, thru Young & Rubicam (10 plus 15 kine).

General Foods Corp. (Jell-O), *Aldrich Family*, Sun. 7:30-8, thru Young & Rubicam (29).

Gillette Safety Razor Co., *Cavalcade of Sports*, Fri. 10-10:30, thru Maxon (40 plus 14 kine).

Gulf Oil Corp., *We The People*, Fri. 8:30-9, thru Young & Rubicam (33 plus 11 kine).

S. C. Johnson & Sons Inc. (wax), *Jack Carter Show*, Sat. 8:50-9, thru Needham, Louis & Brorby (30).

Kellogg Co., *Howdy Doody*, Tue. & Thu. 5:30-5:45, thru Leo Burnett (27 plus 4 kine).

Kraft Foods, *Kraft Television Theater*, Wed. 9-10, thru J. Walter Thompson (32 plus 16 kine).

Lionel Corp., *Joe DiMaggio Show*, Sat. 5:30-5:45, thru Buchanan & Co. (30 plus 5 kine).

Lucky Strike Cigarettes, *Robert Montgomery Presents Your Lucky Strike Theater*, Mon. (alternate weeks) 9:30-10:30, thru BBDO (29).

Lucky Strike Cigarettes, *Your Hit Parade*, Sat. 10:30-11, thru BBDO (20).

Manhattan Soap Co. Inc., *One Man's Family*, Sat. 7:30-8, thru Duane Jones (23 plus 10 kine).

Mars Inc. (candy), *Howdy Doody*, Mon. 5:45-6; Wed. & Fri. 5:30-5:45, thru Leo Burnett (27 plus 14 kine).

Miles Laboratories Inc., *Quiz Kids*, Fri. 8-8:30, thru Wade Adv. (26 plus 2 kine).

Minute Maid Corp., *Kate Smith Show*, Thu. 4:30-4:45, thru Ted Bates (47). Starts Sept. 25.

Motorola Inc., *Variety Show*, Wed. (every 3 weeks) 8-9, thru Gourfain-Cobb. Starts Oct. 4.

Minnesota Mining & Mfg. Co. (Scotch Tape), *Show of Shows*, Sat. 9:40-9:50, thru BBDO (35).

Mohawk Carpet Mills Inc., *Mohawk Showroom*, Mon.-Wed.-Fri. 7:30-7:45, thru George R. Nelson (22 plus 19 kine).

Nestle Co. (Nescafe & Nestea), *Take a Chance*, Sun. 10:30-11, thru Doherty, Clifford & Shenfield (7 plus 6 kine).

Old Gold Cigarettes, *Amateur Hour*, Tue. 10-11, thru Lennen & Mitchell (32 plus 24 kine).

Pall Mall Cigarettes, *Big Story*, Fri. (alternate weeks) 9:30-10, thru Sullivan, Stauffer, Colwell & Bayles (36 plus 13 kine).

Peter Paul Inc. (candy), *Hank McCune Show*, Sat. 7-7:30, thru Maxon (13 plus 18 kine).

Philco Corp., *Television Playhouse*, Sun. 9-10, thru Hutchins (31 plus 29 kine).

Poll Parrot Shoes (International Shoe Co.), *Howdy Doody*, Wed. 5:45-6, thru Henri, Hurst & McDonald (36 plus 9 kine).

Procter & Gamble, *Fireside Theater*, Tue. 9-9:30, thru Compton (31).

Procter & Gamble, *Shubert Musicals*, Mon. (alternate weeks) 9:20-10:30, thru Pedlar & Ryan (29).

Quaker Oats Co., *Americana*, Sun. 5-5:30, thru Sherman & Marquette (24 plus 8 kine).

Quaker Oats Co., *Zoo Parade*, Sun. 4:30-5, thru Ruthrauff & Ryan. Starts Oct. 1.

RCA Victor, *Kukla, Fran & Ollie*, Mon. & Fri. 7-7:30, thru J. Walter Thompson (36 plus 19 kine).

Regent Cigarettes, *Leave It to the Girls*, Sun. 7-7:30, thru Brooke, Smith, French & Dorrance (8 plus 1 kine).

Revere Copper & Brass Inc., *Meet the Press*, Sun. 4-4:30, thru St. Georges & Keyes (8 plus 10 kine). Starts Oct. 8.

Sealtest Inc. (National Dairy Products Corp.), *Kukla, Fran & Ollie*, Tue. & Thu. 7-7:30, thru N. W. Ayer (33 plus 9 kine).

Snow Crop Marketers Inc. (juice concentrates), *Show of Shows*, Sat. 9-9:30, thru Maxon (36 plus 11 kine).

S.O.S. Co. (cleanser), *Show of Shows*, Sat. 9:50-10, thru McCann-Erickson (35).

Speidel Co. (watchbands), *Speidel Show*, Mon. 8-8:30, thru Sullivan, Stauffer, Colwell & Bayles (27 plus 15 kine).

Standard Oil Co. of Indiana, *Wayne King Program*, Thu. 10:30-11, thru McCann-Erickson (7 plus 6 kine).

Stokely-Van Camp Inc. (canned foods), *The Little Show*, Tue. & Thu. 7:30-7:45, thru Calkins & Holden, Carlock, McClinton & Smith (19 plus 9 kine).

Texas Co., *Texaco Star Theater*, Tue. 8-9, thru Kudner (20 plus 17 kine).

U. S. Tobacco Co., *Martin Kane, Private Eye*, Thu. 10-10:30, thru Kudner (38 plus 7 kine).

Wander Co. (Ovaltine), *Howdy Doody*, Fri. 5:45-6, thru Grant (30 plus 16 kine).

Stephen F. Whitman & Sons Inc. (candy), *Show of Shows*, Sat. 8:30-8:40, thru Ward Wheelock (30).

Wildroot Co. Inc., *Show of Shows*, Sat. 8:40-8:50, thru BBDO (30).

CBS-TV Sponsorships*

Aluminum Cooking Utensil Co. (Wear-Ever), *Homemakers Exchange*, Mon. 4-4:30, thru Fuller & Smith & Ross (18).

American Home Products Corp. (Geo. Washington Coffee), *Homemakers Exchange*, Wed. 4-4:30, thru Ted Bates (18).

American Home Products Corp. (Duff's Cake Mix), *Homemakers Exchange*, Thu. 4-4:30, thru Ted Bates (18).

American Safety Razor Co., *The Show Goes On*, Thu. 8-8:30, thru McCann-Erickson (23). Starts Sept. 28.

Anheuser-Busch Inc., *Ken Murray Show*, Sat. 8-9, thru D'Arcy (52). Resumes Oct. 7.

Arnold Bakers Inc., *Robert Q. Lewis*, Sun. 11-11:15, thru Benton & Bowles (5). Starts Sept. 24.

Block Drug Co. (Amm-I-Dent), *Mystery Playhouse*, Tue. 10-10:30, thru Cecil & Presbrey (14). Starts Sept. 19.

Bristol-Myers Co. (Ipana), *Lucky Pup*, Thu. 6:30-6:45, thru Doherty, Clifford & Shenfield (11).

Bulck (General Motors), *show to be determined*, Wed. 9-10, thru Kudner. Starts Jan. 3.

Bymart Inc. (Tintair), *Conflict*, Wed. 9-9:30, thru Cecil & Presbrey (60). Starts Oct. 18.

California Walnut Growers Assn., *Homemakers Exchange*, Fri. 4-4:30, thru McCann-Erickson (18).

California Prune & Apricot Growers Assn. (Sunsweet Prunes), *Homemakers Exchange*, Thu. 4-4:30, thru McCann-Erickson (18).

Camel Cigarettes, *Vaughn Monroe Show*, Tue. 9-9:30, thru Wm. Esty (33). Starts Oct. 10.

Camel Cigarettes, *Man Against Crime*, Fri. 8:30-9, thru Wm. Esty (45). Resumes Oct. 6.

Carter Products Inc. (Arrld), *Sing It Again* (simulcast), Sat. 10-10:15, thru Sullivan, Stauffer, Colwell & Bayles (13).

Chesterfield Cigarettes, *Arthur Godfrey & His Friends*, Wed. 8:30-9, thru Cunningham & Walsh (57). Resumes Sept. 27.

Chesterfield Cigarettes, *Perry Como*, Mon.-Wed.-Fri. 7:45-8, thru Cunningham & Walsh (60).

Columbia Records Inc., *Show Goes On*, Thu. 8:30-9, thru McCann-Erickson (44). Resumes Sept. 28.

Electric Auto-Lite Co., *Suspense*, Tue. 9:30-10, thru Cecil & Presbrey (19).

Embassy Cigarettes, *The Web*, Wed. 9:30-10, thru Geyer, Newell & Gangor (21).

Esso Standard Oil Co., *Alan Young Show*, Thu. 9-9:30, thru Marchschalk & Pratt (22).

Esso Standard Oil Co., *Football Games*, Sat. 1:30-conclusion, thru McCann-Erickson (22). Starts Sept. 30.

Ford Motor Co., *Ford Theater*, Fri. (alternate weeks) 9-10, thru Kenyon & Eckhardt (44).

General Electric Co., *Fred Waring Show*, Sun. 9-10, thru Young & Rubicam (44). Resumes Sept. 24.

General Foods Corp. (Sanka), *The Goldbergs*, Mon. 9:30-10, thru Young & Rubicam (27). Resumes Sept. 25.

General Foods Corp. (Maxwell House), *Mama*, Fri. 8-8:30, thru Benton & Bowles (22).

B. F. Goodrich Co., *Celebrity Time*, Sun. 10-10:30, thru BBDO (32). Resumes Oct. 1.

Household Finance Corp., *Peoples Platform*, Sun. 5:30-6, thru LeVally (15).

(Continued on next page)

CBS-TV Sponsorships*—(Continued)

International Latex Corp., *Look Your Best*, Mon. & Fri. 3:30-4, thru Foote, Cone & Belding (25). Starts Sept. 18.

Kellogg Co., *Tom Ranger, Space Cadet*, Mon.-Wed.-Fri. 6:45-7, thru Kenyon & Eckhardt (12).

Knox Gelatine Co. Inc., *Homemakers Exchange*, Wed. 4-4:30, thru Charles W. Hoyt (18).

Kroger Co., *Alan Young Show*, Thu. 9-9:30, thru Ralph H. Jones (18).

Corliss Lamont & Co. (Nestle's Chocolate), *Mr. I. Magination*, Sun. 6:30-7, thru Cecil & Presbrey (17). Starts Sept. 24.

Lever Bros. Co., *Big Town*, Thu. 9:30-10, thru Ruthrauff & Ryan (29). Starts Oct. 5.

Lever Bros. Co., *Lux TV Theater*, Mon. 8-8:30, thru J. Walter Thompson (29). Starts Oct. 2.

Lewyt Corp. (vacuum cleaners), *Homemakers Exchange*, Mon. 4-4:30, thru Hicks & Grelst (18).

Lincoln-Mercury Dealers, *Toast of the Town*, Sun. 8-9, thru Kenyon & Eckhardt (35).

Thomas J. Lipton Inc. (tea), *Arthur Godfrey's Talent Scouts*, Mon. 8:30-9, thru Young & Rubicam (22).

Lucky Strike Cigarettes, *This Is Show Business*, Sun. 7:30-8, thru BBDO (53).

Luden's Inc., *Sing It Again* (simulcast), Sat. 10:15-10:30, thru J. M. Mathes (13). Starts Oct. 7.

Magnavox Co., *Magnavox Theater*, Fri. (alternate weeks) 9-10, thru Maxon (17).

Malden Form Brassiere Co., *Vanity Fair*, Mon.-Wed.-Fri. 4:30-5, thru Wm. H. Weintraub.

C. H. Masland & Sons (rugs), *At Home Show*, Mon. 11-11:15, thru Anderson, Davis & Platte (35).

Jules Montener Inc. (Stopette Spray), *What's My Line*, Sun. 10:30-11, thru Earl Ludgin (32). Starts Oct. 8.

Nash-Kelvinator Corp. (Nash cars), *Nash Airflyte Theater*, Thu. 10:30-11, thru Geyer, Newell & Ganger (60). Starts Sept. 21.

Nash-Kelvinator Corp. (Kelvinator), *Star of the Family*, Fri. 10-10:30, thru Geyer, Newell & Ganger (60). Starts Sept. 22.

Nash-Kelvinator Corp. (Kelvinator), *Homemakers Exchange*, Mon.-Fri. 4-4:30, thru Geyer, Newell & Ganger (18).

Oldsmobile (General Motors), *CBS-TV News*, Mon.-Wed.-Fri. 7:30-7:45, thru D. P. Brothier (11). Beginning Sept. 26, program runs Mon.-Fri.

Olney & Carpenter Inc. (Frozen French Fried Onions), *Homemakers Exchange*, Fri. 4-4:30, thru Fuller & Smith & Ross (18). Ceases Sept. 22.

Owens-Corning Fiberglas Corp. (Fiberglas curtains), *Vanity Fair*, Tue. 4:30-5, thru Fuller & Smith & Ross (3).

Pabst Sales Co. (beer), *Boxing*, Wed. 10-11, thru Warwick & Legler (60). Starts Sept. 27.

Pepsi-Cola Co., *Faye Emerson*, Tue.-Thu.-Sat. 7:45-8, thru Blow (43). Starts Sept. 26.

Philip Morris Cigarettes, *Candid Camera*, Mon. 9-9:30, thru Blow (35). Replaced by Horace Heidt Oct. 2.

Philip Morris Cigarettes, *Truth or Consequences*, Thu. 10-10:30, thru Blow (46).

Pillsbury Mills Inc., *Arthur Godfrey & His Friends*, Wed. 8:15-8:30, thru Leo Burnett (50). Starts Sept. 27.

Prudential Insurance Co., *dramatic show*, Tue. (alternate weeks) 8-9, thru Calkins & Holden, Carlock, McClinton & Smith (44). Starts Oct. 10.

Pure-Pak Ice Cream (Excello Corp.), *Homemakers Exchange*, Tue. 4-4:30, thru Fred M. Randall (18).

Renuzit Home Products Co. Inc. (cleaner), *Homemakers Exchange*, Tue. 4-4:30, thru McKee & Albright (18).

S.O.S. Co. (cleanser), *Homemakers Exchange*, Mon. 4-4:30, thru McCann-Erickson (18).

Sterling Drugs Inc., *Sing It Again* (simulcast), Sat. 10:30-11, thru Dancer-Fitzgerald-Sample (13). Starts Oct. 7.

Sundial Shoes (International Shoe Co.), *Lucky Pup*, Fri. 6:30-6:45, thru Hoag & Provandle (9).

Swift & Co. (peanut butter), *Homemakers Exchange*, Fri. 4-4:30, thru J. Walter Thompson (18).

Sylvania Electric Products Inc., *Beat the Clock*, Fri. 10:30-11, thru Cecil & Presbrey (20). Starts Sept. 29.

Toni Co. (Gillette Safety Razor Co.), *Arthur Godfrey & His Friends*, Wed. (alternate weeks) 8-8:15, thru Foote, Cone & Belding (45).

United Fruit Co., *Homemakers Exchange*, Wed. 4-4:30, thru BBDO (18).

Westinghouse, *Studio One*, Mon. 10-11, thru McCann-Erickson (45).

Willbur-Suchard Chocolate Co. Inc., *Homemakers Exchange*, Tue. & Thu. 4-4:30, thru Foltz-Wessinger (18).

Wrigley Gum, *Gene Autry*, Sun. 7-7:30, thru Ruthrauff & Ryan (6).

* Breakdown of stations as between live and kine not available.

ABC-TV Sponsorships

Acrobat Shoe Co. (General Shoe Corp.), *Acrobat Ranch*, Sat. 11:30-Noon, thru Ruthrauff & Ryan (22 plus 18 kine).

Admiral Corp., *Stop The Music*, Thu. 8-8:30, thru Kudner (29).

American Bakeries Co., *Lone Ranger*, Thu. 7:30-8, thru Tucker Wayne (7 kine).

American Dairy Assn., *Paul Whiteman TV Teen Club*, Sat. 8-8:30, thru Campbell-Mithun (9).

American Safety Razor Corp., *The Sugar Bowl*, Mon. (alternate weeks) 9-9:30, thru Ruthrauff & Ryan (11 plus 12 kine). Starts Oct. 9.

Arnold Bakers Inc., *Life Begins at 80*, Wed. 8-8:30, thru Benton & Bowles (8 live). Starts Oct. 4.

Bendix Home Appliances Inc., *Chance of a Lifetime*, Wed. 7:30-8, thru Tatham-Laird (27 plus 6 kine).

Best Foods Inc., *Penthouse Party*, Fri. 10-10:30, thru Earle Ludgin (31 live plus 25 kine). Starts Sept. 15.

Blatz Brewing Co., *Roller Derby*, Thu. 10:30-conclusion, thru Kastor, Farrell, Chesley & Clifford (11 plus 3 kine).

Canada Dry Ginger Ale Inc., *Super Circus*, Sun. 5-5:20, thru J. M. Mathes (16 plus 9 kine).

Chrysler (Chrysler Corp.), *Treasury Men In Action*, Mon. 8-8:30, thru McCann-Erickson (31 plus 31 kine).

C&W Enterprises ("magic" towels), feature film, Mon. 11-midnight, thru Mail Order Network (7).

Dodge (Chrysler Corp.), *Showtime USA*, Sun. 7:30-8, thru Ruthrauff & Ryan (21 plus 4 kine). Starts Oct. 1.

Exquisite Form Brassiere Inc., *The Robbins' Nest*, Fri. 11-11:15, thru Brandford (7).

Florsheim Shoe Co., *Red Grange Predicts*, Thu. 11-11:15, thru Gordon Best (9).

General Mills Corp., (Bisquick & Cheerios), *Lone Ranger*, Thu. 7:30-8, thru Dancer-Fitzgerald-Sample (12 plus 24 kine).

General Mills Corp., (Gold Medal Flour, Wheaties), *Life with the Erwins*, Sat. 7:30-8, thru Dancer-Fitzgerald-Sample (39 plus 16 kine). Starts Oct. 21.

Goodyear Tire & Rubber Co., *Paul Whiteman Goodyear Revue*, Sun. 7-7:30, thru Young & Rubicam (18 plus 23 kine).

Gospel Broadcasting Assn., *Old Fashioned Revival Hour*, Sun. 10-10:30, thru R. H. Alber (32 plus 7 kine). Starts Oct. 8.

Green Giant Co., *Art Linkletter's Houseparty*, Fri. 7:30-8, thru Leo Burnett (14 plus 4 kine). Starts Oct. 6.

Gruen Watch Co., *Blind Date*, Thu. 9:30-10, thru Stockton, West, Burkhardt (15 plus 11 kine). Starts Sept. 28.

Homecraft Publishing Co., *Wrestling Interviews*, Wed., 5 min. after wrestling, thru Huber Hoge & Sons (13).

Hudson Motor Car Co., *Billy Rose's Playbill*, Tue. 9-9:30, thru Brooke, Smith, French & Dorrance (31 plus 28 kine). Starts Oct. 3.

Ironrite Ironers Corp., *Hollywood Screen Test*, Mon. 7:30-8, thru Brooke, Smith, French & Dorrance (10). Starts Oct. 2.

Mason, Au & Magenheimer Confectionery Mfg. Co. (Mason Peaks candy), *Chester the Pup*, Sat. Noon-12:15, thru Turner, Leach (12). Starts Oct. 7.

M & M Ltd., *Super Circus*, Sun. (alternate weeks) 5:30-6, thru Wm. Esty (13 plus 5 kine).

Old Gold Cigarettes, *Stop the Music*, Thu. 8:30-9, thru Lennen & Mitchell (29 plus 23 kine).

Packard Motors Inc., *Holiday Hotel*, Thu. 9-9:30, thru Young & Rubicam (24 plus 22 kine).

Peters Shocs (International Shoe Co.), *Super Circus*, Sun. (alternate weeks) 5:30-6, thru Henri, Hurst & McDonald (13).

Pharma-Craft Corp., *The Sugar Bowl*, Mon. (alternate weeks) 9-9:30, thru Ruthrauff & Ryan (13 plus 10 kine). Starts Oct. 2.

Phileo Corp., *Don McNeill TV Club*, Wed. 9-10, thru Hutchins (12 plus 27 kine).

Pontiac (General Motors), *Game of the Week* (football), Tue. 8-8:30, thru MacManus, John & Adams. Starts Oct. 3.

Procter & Gamble Co., *Beulah*, Tue. 7:30-8, thru Dancer-Fitzgerald-Sample (31 plus 29 kine). Starts Oct. 3.

Ronson Art Metal Works Inc., *Twenty Questions*, Fri. 8-8:30, thru Grey (7 plus 4 kine).

Schlitz Brewing Co., *Pulitzer Prize Playhouse*, Fri. 9-10, thru Young & Rubicam (35 plus 1 kine). Starts Oct. 6.

Seeman Bros Inc., *I Cover Times Square*, Thu. 10-10:30, thru Wm. H. Weintraub (12 plus 3 kine). Starts Oct. 5.

Sun Oil Co., *Professional Football Highlights*, Fri. 8:30-9, thru Hewitt, Ogilvy, Benson & Mather (14).

Sun Oil Co., *National Football League Championship Games*, thru Hewitt, Ogilvy, Benson & Mather. Station line-up varied.

Wine Corp. of America, *Can You Top This*, Tue. 9:30-10, thru Weiss & Geller (18 plus 5 kine). Starts Oct. 3.

Young People's Church of the Air, *Youth On the March*, Sun. 10:30-11, thru John M. Camp (18 plus 7 kine).

DuMont Sponsorships

Bond Stores Inc. (clothing), *Hands of Mystery*, Fri. 9-9:30, thru Grey (5 plus 6 kine).

Chevrolet (General Motors), *Notre Dame football games*, Sat. 3-conclusion, thru Campbell-Ewald (43).

Colgate-Palmolive-Peet Co., *Colgate Scoreboard*, Sat. 10 min. conclusion of football game, thru Sherman & Marquette (35).

Consolidated Cigar Corp., *Plainclothesman*, Wed. 9:30-10, thru Erwin, Wasey (8 plus 6 kine).

Allen B. DuMont Laboratories Inc. (TV sets), *Saturday Night at the Garden*, Sat. 8:30-11, thru Campbell-Ewald. Starts Oct. 7.

Drug Store Television Productions, *Cavalcade of Bands*, Tue. 9-10, thru Product Adv. (10 plus 8 kine).

Drug Store Television Productions, *Cavalcade of Stars*, Fri. 10-11, thru Product Adv. (14 plus 5 kine).

Esquire Boot Polish (Knemark Mfg. Co.), *Hold That Camera*, Fri. 8:30-9, thru Emil Mogul (9 plus 11 kine).

Food Store Programs Corp., *Star Time*, Tue. 10-11, thru Franklin Bruck (10 plus 20 kine).

Walter H. Johnson Candy Co., *Captain Video*, Tue. & Thu. 7-7:30, thru Franklin Bruck (16).

Kaiser-Frazier Corp., *Ellery Queen*, Thu. 9-9:30, thru Wm. H. Weintraub (9 plus 1 kine). Starts Oct. 19.

Arthur Murray Studios, *Arthur Murray's Party Time*, Sun. 9-10, thru Darland (15 plus 25 kine). Starts Oct. 15.

Rosefield Packing Co. (Sippy Peanut Butter), *Captain Video*, Wed. 7-7:30, thru Guild, Bascom & Bonfigli (16).

Sterling Products (Sterling Drug Inc.), *Okay Mother*, Mon.-Fri. 1-1:30, thru Dancer-Fitzgerald-Sample (4).

Tidewater Associated Oil Co., *Broadway to Hollywood*, Wed. 10-10:30, thru Lennen & Mitchell (2).

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Television Digest

WITH AM FM REPORTS

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September 23, 1950

10% EXCISE TAX UPS TV PRICES NOV. 1: Nov. 1 is effective date of manufacturers' 10% excise tax on TVs -- and retail prices should go up estimated 6-10% after that date. As with radios, long taxed 10% at factory, tax will be included in suggested list price.

Congress failed to get tax bill to President Truman before Sept. 21 deadline date, which would have made TV tax effective Oct. 1, so industry and public won month's "reprieve" -- and considerable saving in light of probable 700,000 or more sets expected to be produced in October. Home freezer units, too, are similarly taxed -- these and TVs being only new excises in bill that retains all old ones.

Tax is imposed only on and after Nov. 1, does not affect sets in transit or in distributor-dealer hands at that time. Bill passed by House and Senate Sept. 22 actually simply adds TV to present 10% levies on radios, phonographs, records, musical instruments, and their components. Industry efforts to get wording simplified were unavailing.

Note: TV-freezer excises are only small items in \$4.5 million Revenue Act of 1950 (H.R. 8920), which has vital provisions affecting your business and you: boosts corporate income taxes; increases personal income taxes; requires withholding taxes; allows 5-year accelerated depreciation for war plants and facilities; plugs loopholes in present laws.

FCC TOLD BRACKET SETS LONG WAY OFF: Manufacturers have wrestled with bracket standards another week -- and still none has said he can meet FCC's deadline (estimated around Nov. 10) for conversion of TV production to the new type of sets.

Thus, it appears likely that manufacturers will respond "no can do" by next Friday, Sept. 29, when answers are due.

Such a negative response, said FCC in its color report (Vol. 6:35), means CBS system will be adopted immediately. Presumably, that would be followed by either compulsive or permissive requirements to telecast color. Such actions very likely would mean court appeals and resultant delays.

Delays into next year probably mean (1) more sets-in-use than the estimated 10,000,000 will have to be adapted if and when CBS system goes into actual effect; (2) war orders will catch up with TV-radio production, meaning fewer monochrome sets and probably mere trickle of polychrome.

It's apparent FCC hasn't been much impressed by "war orders" argument, with concomitant manpower drain and probable materials shortages. It's equally clear industry is hoping against hope it can maintain high civilian output along with military -- whose orders are due very soon, now that initial defense appropriations have been made, with some \$2.3 billion earmarked for electronics for rest of 1950 and all fiscal 1951.

Meanwhile, FCC and industry may soon be faced with this question from buying public: "Shall we buy TV sets now, or wait for bracket standards and/or color?" Question is palpably loaded with economic and political dynamite.

* * * *

Whether Commission will change its mind, is anyone's guess. But it intends to consider set makers' responses immediately upon receipt -- one reason why it

postponed to Oct. 16 the opening of "end-of-freeze" hearings (see story on p. 4).

No formal responses had been received by FCC by end of week. But late Friday, Commission and staff met in Chairman Coy's office with Motorola president Paul Galvin, who was flanked by consumer products v.p. E. H. Wavering and communications and research v.p. Daniel E. Noble. Galvin was first manufacturer to contact Commission direct, though some companies' engineers have consulted with Commission engineers on technical data. And Coy is due to confer with other Chicago set makers while in that city to make several speeches next week.

Motorola is fourth largest TV producer, and Mr. Galvin was several times president of old RMA. Speaking for own company, he said it would take 6½ months to start production of sets containing merely 2-position adapter, i.e., to get standard black-and-white and CBS color in monochrome. He couldn't estimate how long it would take to start as-yet-undesigned bracket sets.

He didn't go into costs, but gave reporters "horseback opinion" of \$35 to incorporate 2-position circuits. Purpose of asking for meeting, he said, was to help him decide how to respond next week.

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Manufacturers seemed somewhat calmer this week than indicated by their initial reactions (Vol. 6:35-37). Most have assigned their engineers to study problem. Large and small set makers still say FCC deadline date is "impossible."

"The more you study the problem of making these brackets," said one, "the more complicated it becomes. We don't know how to build such sets. Actually, it's not merely a production job -- it's basic research and development."

Even CBS admits it was taken off guard by brackets proposal. Spokesmen point out that it is FCC's idea, not theirs; that idea was never explored during hearing; that CBS hasn't built a bracket set; that it realizes there are bound to be production problems.

There should be quite a few replies by Sept. 29, some quite detailed, though many of the 100-odd set makers will doubtless remain silent and "let George do it." Manufacturers individually, and through the National Television System Committee, are weighing economic as well as technical factors. Cost and impact upon their trade will probably be stressed.

Some manufacturers seemed confused, as late as this week, about what FCC wanted in bracket standards. Some still thought it merely wants 2-position sets (15,750 line repetition & 60 fields, plus CBS's 29,160 lines & 144 fields). In reply to inquiry by Philco's David Smith (Vol. 6:37), FCC made it clear it wants sets capable of handling any combination of lines and fields falling within brackets specified in its color report (Vol. 6:35). As for Smith's specific questions about CBS color standards, FCC pointed out that it hasn't actually proposed any yet.

Cost estimates continue to range all over the place (Vol. 6:36). One big set maker comes up with these, probably exaggerated -- but high even if halved: (1) Built in at factory, \$50 manual, \$60 automatic. (2) Separate external adapter, \$100 manual, \$115 automatic -- impractical for some makes of sets, particularly table models. Other ranged from \$30 to \$130, but some were thinking first of simpler 2-position circuits, as did Mr. Galvin.

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As expected, RTMA board was careful to keep its skirts clean of monopoly charges. In jig time, at Sept. 20 meeting in New York, it voted to send letter to FCC, stating: "The Association has never attempted to, and cannot, require its members to build, or refrain from building, particular sets or sets of particular capabilities." It said, however, that panels of NTSC will supply technical data.

Board burned over charges that manufacturers have been selfishly holding back developments such as color. It appointed committee "to investigate the feasibility of having a comprehensive study prepared on the technical contributions of the industry in the development of television and frequency allocation plans." Obviously, intention is to document a refutation of blasts at industry, such as those

made by Comr. Jones and Sen. Johnson. Committee comprises GE's Dr. W. R. G. Baker, chairman; Dr. Allen B. DuMont, RTMA president Robert Sprague.

Attendance at meeting was considered good -- 31 out of 41. Notably absent, however, were RCA and Philco members, as they were from TV committee meeting week before (Vol. 6:37) -- undoubtedly because of anti-trust fears and presumably because they're preparing to fight FCC edict in their own ways. With non-RTMA member Admiral, they produce close to half industry's TV volume. Among those absent, also, were GE's Dr. Baker ((probably due to strike) and Motorola's Mr. Galvin, though both were at previous TV committee meeting.

* * * *

FCC still feels much the same as it indicated in its report, particularly regarding immediate desirability of color and superiority of CBS images. That's clear from conversations with members and from their public utterances.

Comr. Sterling hewed strictly to line of color report while answering barrage of questions after speech last week-end at Pacific IRE convention. Color-now is more important to him than compatibility, he noted. How about degraded monochrome picture with CBS system? "You'd be surprised," said Sterling, "to find that color more than offsets the disadvantages of reductions in the number of lines." He was sure the tri-color tube would prove out, but "so far, I like the disc."

Sterling did say "door is still ajar" for compatible systems, and he pointed out that "no one argued more for compatibility than I during the hearings. Nothing would please me more than to see CBS come up with a compatible system." He was dubious about GE system (Vol. 6:30,34,37): "Any system which uses a sub-oscillator is vulnerable to interference, and the GE system, as I understand it, has two sub-oscillators."

Chairman Coy will have similar approach, undoubtedly, during 3 speeches in Chicago Sept. 25-26. He addresses Assn. of National Advertisers (Drake Hotel) and National Electronics Conference (Edgewater Beach) first day, Chicago TV Council (Palmer House) second day.

* * * *

CBS has had color test pattern on 10-11 a.m. daily in New York, but number of set makers using it is unknown. Paramount has tested Lawrence tri-color tube (Vol. 6:18-36) with it, planned to try improved model next. Fifty more tubes have been ordered from Machlett, but production has been plagued by shortages (metal cones, face-plates, etc.). Paramount says it plans no public demonstrations until "we can show something we're completely satisfied with."

DuMont, too, has put CBS-type picture on air, using uhf (612 mc), 8:30 a.m.-5 p.m. daily, with slides as well as test pattern. Transmissions are 1 kw, from Passaic, receivable up to estimated 10 miles. Says DuMont's Dr. T. T. Goldsmith: "Manufacturers need more than CBS's one hour a day, if they really want to experiment with the system."

RCA-NBC experimental color adjunct to WNBW, Washington, was granted STA extension by FCC to continue testing RCA color system from Sept. 20 to Oct. 13.

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Novel gadget for CBS system is reportedly being developed by Celomat Corp., maker of magnifiers, which has made CBS-type color converter (Vol. 6:11). It's a color disc, slightly larger than 45rpm record, run by small motor, and designed to sell for less than \$10. When monochrome set is adapted to CBS scanning speed, disc can be held in front of screen, bringing in color after a fashion.

If CBS has infused color zeal into any affiliates, other than those in which it has ownership, none are saying so, and some are vigorously opposed to incompatible system. But one takes situation rather calmly:

"We'll broadcast whatever color system the FCC adopts," he said. "It would certainly be painful if we were compelled to put CBS color on during good sponsored time. If color broadcasts are permissive, we might be able to work it up gradually without too much disruption. It all depends on the public. I thought FM would sweep the country; I was wrong. Whether color will bear same relation to monochrome

that FM did to AM, I just don't know. Black-and-white developed on a permissive basis, starting with no audience. But it's true that it brought forth vision for the first time. Only time will tell how much more color will mean to the public.'

* * * *

Noteworthy reaction to color report is that of editor Reginald Clough in Sept. 15 Tide Magazine. First, he deplores FCC's lack of finality, saying: "It is up to the FCC to let buyers know at once whether they can or cannot actually expect color sets soon -- or whether they can look forward only to new color hearings."

Then, he advises: "It is not too soon for advertisers and agencies to start preparing for color TV....It is noteworthy that in the few major media where there is no extra charge for color -- e.g., outdoor and car card advertising -- the great majority of advertising is in color. Add to that the tremendous strides color has made in the national magazines and, more recently, in the newspapers, and your best bet would seem to be that TV will be predominantly a color medium. Significantly, too, color will add nothing to the production, transmission or other costs of TV broadcasting. There will be no justification, therefore, for extra advertising costs for color TV."

Other commentators were inclined to eye FCC action askance, notably New York Times' Jack Gould and New York Herald Tribune columnist John Crosby, who took dim view of immediate prospects for color receivers. AP's Wayne Oliver noted extra cost to public "may run from \$7 to \$20 a set, or \$42,000,000 to \$120,000,000 more a year just for black and white sets....Some industry observers [estimate] \$40 to \$60 a set, or \$280,000,000 to \$420,000,000 if everyone had his set adapted. But CBS [estimates] only \$15 to \$25 a set...."

Trade press mostly was inclined to take middle courses but Tele-Tech editor Dr. O. H. Caldwell, member of original Federal Radio Commission, lit into FCC:

"It is possible that 3,000,000 TV sets would be manufactured before the final FCC decision. This would mean \$90,000,000 of customers' money thrown away on a useless addition to their receivers if a better, compatible system is eventually chosen...Here is a clear example of where faith in the future, possessed by the scientific researcher, the dreamer, pointed out the way to success. It is unfortunate that there is no such guiding personality on the Commission nor is there a single experienced TV researcher on the FCC engineering staff. The important matter of future color standards is an engineering problem...[FCC] has shown what Bureaucracy can do to Industry. Millions of TV users may be saddled with an inferior system when Bureaucracy attempts the difficult technical problem of TV transmission standards. This problem should be assigned to Industry engineers."

Famed inventor Lee deForest, who described his own mechanical color system to FCC during hearing but didn't recommend it, was amazed by FCC report. Aged scientist, frequently called "Father of Radio" (his recent book has that title), writes from Los Angeles: "I doubt if a more unjust and 'goofy' decision can be found anywhere in the annals of American bureaucracy."

END-OF-FREEZE HEARING NOW OCT. 16: Reasons FCC has postponed next phase of end-of-freeze hearing, from Oct. 2 to Oct. 16, are simply these: (1) Commissioners and key staffmen, probably for week or more after Sept. 29 deadline, will be considering manufacturers' answers to FCC request for bracket standards in future receivers [see story above]. (2) Many witnesses wanted more time to revise and bring up-to-date their comments and oppositions. FCC spokesmen say Oct. 16 is definite; there will be no further delay.

En banc hearing on general issues (such as vhf-uhf propagation, transmission standards, stratovision, polycasting, educational TV) is still expected to require 20 hearing days -- and thereafter must come hearings on particular allocations that should take 60 hearings days or more. That would indicate, with time needed for final decisions, end of freeze no earlier than next May (Vol. 6:36).

To list of witnesses scheduled for general issues hearing (see Supplement No. 70), FCC this week added RCA (with evidence on uhf propagation from its Bridgeport experimental station) and KSJB, Jamestown, N.D. More may be added.

Station Accounts: Brooklyn Union Gas Co., sharing costs with participating manufacturers of gas appliances, sponsoring Tex & Jinx McCrary in *New York Closeup*, 5-a-week interviews on WNBTV . . . Philadelphia Frozen Food Exchange Sept. 27 starts *Cold Cash*, quiz-variety show on WCAU-TV, Wed. 7-7:30, with these participating sponsors: Downy Flake Frozen Waffles, Icelandic Frosted Filets, Milady Frozen Blintzes, Temple Chinese Frosted Foods . . . New sponsors of Ziv-produced *Yesterday's Newsreels* are Southern Biscuit Co., on WMAL-TV, WTVR, WBTB; Manor House Coffee, WBKB; Dayton Power & Light Co., WHIO-TV; H. G. Hill Stores, WDSU-TV; Oil Institute, WMAR-TV . . . WNAC-TV, Boston, signs local Boston College games sponsored by Atlantic Refining Co., in addition to 3 Notre Dame games for Chevrolet via DuMont and Army and Navy games for Esso via CBS-TV . . . Franklin, Bertin & Tragerman Inc., New York (Norman Gladney, account executive) signs to handle special TV promotions for Hecht Bros. Dept. Store, Baltimore; May-Stern Co., Pittsburgh; L. Fish Furniture Chain, Chicago . . . Among sponsors currently reported using or planning to use TV (all agencies New York unless otherwise specified): Cortley Frosted Foods Inc., thru Fairfax Agency (WNBTV); Celanese Corp. of America, thru Ellington & Co.; Sherwin-Williams Co. (Super Kem-Tone paints), thru Fuller & Smith & Ross, Cleveland; Paul F. Reich Co. (Whiz candy bar), thru Biddle Co., Bloomington, Ill.; Felt & Tarrant Mfg. Co. (Comptometer training schools), thru Fitzmorris & Miller, Chicago; Tasty Toothpaste Co., thru Victor Van Der Linde (WCBS-TV); E. L. Bruce Co. (Bruce Cleaning Wax), thru Christensen Adv. Agency, Chicago; Croton Watch Co. (Croton Acquamatic Watches), thru B. D. Iola Co. Inc. (WCBS-TV); Chock Full O' Nuts (restaurants), thru H. W. Fairfax Adv. (WABD); Grace Downs Hollywood Model School, New York, thru Wm. Wilbur Adv. Inc.; Old Dutch Coffee Inc., thru Peek Adv.

Network Accounts: Carnation Co. Oct. 12 starts *Burns & Allen* on CBS-TV, Thu. (alternate weeks) 8-8:30 . . . Wander Co. (Ovaltine) Sept. 25 starts *Sandy Strong*, marionette show, on ABC-TV, Mon. thru Fri. 6:15-6:30 . . . A. C. Gilbert Co. (toys) Oct. 28 starts *Boys' Railroad Club* on CBS-TV, Sat. 7:30-7:45 . . . Shulton Inc. (All Spice shaving cream & lotion) Sept. 30 starts Curt Gowdy's 15-min. pre-game football chatter on CBS-TV, Sat. 1:15 . . . Amm-i-Dent's *Mystery Playhouse* on CBS-TV, Tue. 10-10:30, changed name to *Danger* as of Sept. 20 . . . Preceding Chevrolet-sponsored Notre Dame games on DuMont Network, Allen B. DuMont Laboratories starting Sept. 30 will sponsor 20-min. films depicting college life and interviews with college presidents.

August network TV billings (excluding DuMont) totaled \$1,855,361 to bring first 8 months of 1950 to \$17,357,058; comparative 1949 figures were \$629,787 and \$5,506,292. Network radio (AM) for August also was up from August 1949, though slightly, but for 8-month was running behind corresponding 1949 period. Figures were compiled by Publishers Information Bureau as follows:

NETWORK TELEVISION				
	August 1950	August 1949	8 Months 1950	8 Months 1949
ABC	\$ 257,111	\$115,002	\$ 2,394,592	\$ 585,315
CBS	349,554	164,471	5,271,291	1,337,780
DuMont	*	66,154	*	552,641
NBC	1,243,696	284,160	9,691,175	3,030,556
Total	\$1,855,361	\$629,787	\$17,357,058	\$5,506,292
NETWORK RADIO				
	August 1950	August 1949	8 Months 1950	8 Months 1949
ABC	\$ 2,264,563	\$ 2,544,096	\$ 24,054,708	\$ 23,797,408
CBS	4,629,623	3,973,058	45,217,118	41,304,312
MBS	1,093,024	1,119,364	10,643,868	12,531,953
NBC	4,566,293	4,523,117	41,931,767	42,396,507
Total	\$12,553,503	\$12,159,635	\$121,847,461	\$125,030,180

* Not available.

Personal Notes: John E. McCoy, chief, TV Branch, FCC Broadcast Law Bureau, has resigned to head legal dept. of Fort Industry Co. (Storer stations), with headquarters in Detroit; Joseph N. Nelson has been named acting chief . . . Maurice B. Mitchell, who quit BAB to join NBC as sales executive month ago, moves to Muzak Corp.'s Associated Program Service as gen. mgr., with APS's Richard Testut transferred to administrative division . . . Howard Hausman, ex-CBS v.p., joins William Morris Agency in administrative capacity . . . Jack Lescoulie appointed asst. program director of WCBS-TV . . . Phyllis Duskin, ex-v.p. of Shop-By-Television Inc., named radio-TV director, Ray-Hirsch Co. . . Donald A. Getz named sales service representative, Charles A. Wilson sales promotion mgr., WGN & WGN-TV, Chicago . . .

AT&T will have final TV "cable" allocations Sept. 25—and they probably will not meet requirements of all 4 networks. But, it's said to be best that can be done, and will probably stand—unless someone formally asks FCC to intervene. FCC Sept. 20 turned down DuMont's invitation to take over (Vol. 6:37) on grounds it "would be premature and inappropriate . . . at this time." Other DuMont suggestion, that FCC limit TV stations to not more than 2 hours of network programs from any one network during 8-11 p.m., is "receiving consideration," Commission said. It was undoubtedly referring to possible revision of network regulations, which FCC has said was under consideration in view of changed picture of broadcasting today (TV, more stations, etc.).

Theatre TV operators got rights to show 2 football classics even while TOA's Gael Sullivan was humping to get ban lifted on showing World Series in theatres. Notre Dame home games will be shown in Fabian's Fox, Brooklyn, and Palace, Albany; Century's Marine, Brooklyn, and Queens, Queens Village L.I.; American's Pilgrim, Boston. Games will be carried on DuMont Network, sponsored by Chevrolet. Army-Navy game Dec. 2 will also be shown in theatres in those interconnected cities with large-screen TV equipment. Financial arrangements were not divulged.

Whither TV—New York or Hollywood? "To Hollywood," insists movie producer Samuel Goldwyn in Sept. 17 *Chicago Tribune*. "Hollywood has been rehearsing for TV for the past 50 years," he says. Where else will TV producers find "master craftsmen" in all phases of visual entertainment? he asks. To critic George Seldes, however, such a shift would invite "disaster". In article in October *Atlantic Monthly*, excerpted from his forthcoming book, *The Great Audience*, ex-CBS-TV executive Seldes voices conviction TV must develop own technique. He says if it takes cue from Hollywood, TV "will not only be distorted, it will be stunted."

Shift in newspaper sales from one edition to another is worst result of TV popularity, Matthew G. Sullivan, circulation director of Gannett chain told N. Y. State Publishers Assn. at Lake Placid, N. Y. Sept. 19. "Morning and Sunday newspapers, with editions on sale in the early evening before publication date, have experienced a drop in sales of those early editions," he said, "[but] much, if not all or more, of those sales have been regained on editions sold in the morning hours." He cited Audit Bureau of Circulation figures showing increases in circulation in TV cities—evening newspapers up 217,000 copies, morning 103,000. Mr. Sullivan also observed TV whets public's appetite for details of news.

TV Authority, overall TV performers union (Vol. 6:16), reported to have dropped request to NLRB to represent film actors as well as live TV performers. Such action would remove only dispute with Screen Actors Guild, which has petition before NLRB to represent film performers on TV.

Count of TV Sets-in-Use by Cities

As of September 1, 1950

TV sets-in-use reached 7,529,700 as of Sept. 1, according to NBC's monthly "census" report estimating TV receivers within 40-mi. service areas (.5 Mv). Counting 750,000-900,000 sets in pipelines or sold during September (August production exceeded 700,000; Vol. 6:37), October 1 should see between 8,250,000 and 8,400,000 sets-in-use. Sales should be stronger than ever in 15 markets with 21 stations and 506,600 set owners as of Sept. 1, which will have joined interconnected networks by Oct. 1. [For list of such cities, see footnote.] NBC no longer publishes family figures, but those here listed are best available estimates of 1948 families within 40-mi. radius of city; note, however, that there are some overlaps, so that family figures are sometimes higher than actually served. Sept. 1 total is 587,700 increase over Aug. 1 count (Vol. 6:33).

Interconnected Cities

Area	No. Stations	No. Families	No. Sets
Baltimore	3	732,000*	208,000
Boston	2	1,175,000*	490,000
Buffalo	1	323,000*	120,000
Chicago	4	1,438,000	595,000
Cincinnati	3	384,000*	157,000
Cleveland	3	695,000	237,000
Columbus	3	225,000*	84,000
Dayton	2	291,000*	84,000
Detroit	3	839,000*	306,000
Erle	1	112,000*	28,300
Grand Rapids	1	182,000*	33,500
Johnstown	1	250,000*	33,900
Kalamazoo	1	143,000*	14,300
Lancaster	1	85,000*	58,900
Lansing	1	168,000*	19,000
Memphis	1	177,000	49,300
Milwaukee	1	327,000	146,000
New Haven	1	557,000	95,500
New York	7	3,597,000*	1,555,000
Norfolk	1	196,000	27,900
Philadelphia	3	1,184,000*	565,000
Pittsburgh	1	742,000*	133,000
Providence	1	1,011,000*	79,000
Richmond	1	130,000*	39,900
Rochester	1	208,000*	48,600
Schenectady	1	258,000*	99,500
St. Louis	1	474,000	166,000
Syracuse	2	199,000*	63,300
Toledo	1	241,000*	53,000
Utica	1	127,000*	22,100
Washington	4	691,000*	161,000
Wilmington	1	183,000*	40,800
Total Interconnected	59		5,863,800

Non-Interconnected Cities

Albuquerque	1	22,000	4,600
Ames (Des Moines)	1	126,000	14,300
Atlanta	2	233,000	57,600
Binghamton	1	131,000*	19,000
Birmingham	2	196,000	18,400
Bloomington	1	104,000*	8,000
Charlotte	1	171,000	22,200
Dallas	2	277,000*	39,600
Fort Worth	1	269,000*	31,400
Davenport-Rock Island	2	133,000	18,400
Greensboro	1	165,000	19,500
Houston	1	217,000	37,200
Huntington	1	132,000	20,100
Indianapolis	1	281,000*	63,300
Jacksonville	1	94,000	15,000
Kansas City	1	275,000	50,500
Los Angeles	7	1,372,000	638,000
Louisville	2	188,000	46,500
Miami	1	117,000	33,900
Minneapolis-St. Paul	2	333,000	121,000
Nashville	—(a)	151,000	2,000
New Orleans	1	225,000	34,300
Oklahoma City	1	138,000	42,300
Omaha	2	132,000	29,800
Phoenix	1	49,000	16,100
Salt Lake City	2	93,000	25,300
San Antonio	2	130,000	25,200
San Diego	1	113,000	55,000
San Francisco	3	825,000	85,300
Seattle	1	307,000	37,800
Tulsa	1	125,000	34,300
Total Non-Interconnected	47		1,665,900
Total Interconnected and Non-Interconnected	106		7,529,700

(a) WSM-TV, Nashville, is due to begin regular commercial operation Sept. 30.

* Family figures are based on estimates of 1948 population. Note

Telecasting Notes: Last of the pre-freeze CP holders to go on air, Nashville's WSM-TV definitely starts scheduled operation Sept. 30 but is postponing formal opening until later; management reports it expects 8500 sets-in-use by Sept. 30 . . . KOAM, Pittsburg, Kan. filed application this week for Channel 7 (for details, see TV Addenda 11-K herewith) . . . Havana's Union Radio (Vol. 6:30, 32) begins regular transmissions Oct. 1, and on Oct. 6 will telecast Havana baseball games; it's Cuba's first TV outlet, but Goar Mestre's Circuito CMQ (Vol. 6:17, 28, 29) has started closed-circuit tests of RCA transmitter now going into new building under construction. It will be represented in New York by Irving Later, Warwick Hotel. Union Radio director Gasper Pumarejo flew 14 staffers to New York this week for inspections of TV operations, and they were tendered luncheon at Savoy Plaza by RCA International . . . According to *Havana Diario de la Marina*, Radio Havana Cuba (CMCY) will have its TV station on air by January, and Radio Progreso (CMBC) is negotiating for TV . . . Recent TV rate increases (Vol. 6:34, et seq) have played such hob with his ad budget that Lorillard ad manager Alden James in Sept. 15 *Tide Magazine* states he will need 30% more in 1951 budget to keep same network shows he now has on air: *Old Gold Amateur Hour*, NBC-TV; *Old Gold Stop the Music*, ABC-TV; *Embassy Cigarettes The Web*, CBS-TV . . . Tulsa's KOTV, operating 6-10:30 p.m. daily, starts telecast day at 2:30 from Oct. 2, stays on until 12:30 midnight . . . TV station WTVJ, Miami, operating noon-to-midnight, and daytime AM station WRD, Ft. Lauderdale, on air sunrise to sunset, have reciprocal-plug deal whereby former runs slide cards and audio copy just before sign-off to remind viewers to tune to WRD for early-morning radio, and WRD plugs nightly TV lineups at 5:15 and just before early-evening sign-off . . . CBS-TV has taken 5-year lease on Loew's Lincoln Square Theatre, Broadway between 66th & 67th, fourth such acquisition in last 3 months; seating 750, it will be known as CBS-TV Studio 60 . . . *Voice of Firestone* simulcast will have distinction of being first show from New York's 3000-seat Center Theater Sept. 25 when it's dedicated as an NBC-TV studio . . . KTTV's Nassour Studios in Hollywood (Vol. 6:10, 20, 29) now being used for regular motion picture production as well as TV films, with Melvin Bassett named to handle movie business . . . More rate increases: KEYL, San Antonio, from \$250 to \$312.50 per hour, from \$35 to \$45 per 1-min. announcement; WHBF-TV, Rock Island, \$200 to \$250 and \$20 to \$35; WHIO-TV, Dayton, \$300 to \$400 and \$40 to \$50 . . . In obvious reprisal for labor difficulties that began last April, KSTP & KSTP-TV, St. Paul, would have its licenses revoked if bill (H. J. Res. 543) introduced Sept. 19 by Congressman Roy W. Wier, Minnesota Farmer-Laborite, is taken seriously.

Among 36 new NAB members picked up during past few weeks, 4 are TV stations: KING-TV, Seattle; WNAC-TV, Boston; WOR-TV, New York; KPIX, San Francisco. This brings to 39 association's TV members. Among major radio stations affiliating with NAB recently are 50-kw KABC, San Antonio, and WFAA, Dallas.

Do's and dont's for political candidates in forthcoming elections are listed in 18-p. *How to Use Radio & Television* distributed by Democratic National Committee.

that following coverages (hence total families) overlap: Bloomington-Indianapolis; Grand Rapids-Lansing-Kalamazoo; Detroit-Lansing; Detroit-Toledo; Syracuse-Rochester-Utica-Binghamton; Binghamton-Utica; Philadelphia-Wilmington; Rochester-Syracuse-Schenectady-Utica; Pittsburgh-Johnstown; New York-Philadelphia; Boston-Providence; Buffalo-Rochester; Cincinnati-Columbus-Dayton; Washington-Baltimore; Lancaster-Baltimore; Dallas-Fort Worth.

Note: Huntington joined interconnected networks Sept. 3. Following cities will be interconnected Sept. 30: Ames (Des Moines), Atlanta, Birmingham, Bloomington, Charlotte, Davenport-Rock Island, Greensboro, Indianapolis, Jacksonville, Kansas City, Louisville, Minneapolis-St. Paul, Nashville, Omaha.

MARTIN CODEL'S

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Television Digest

WITH AM FM REPORTS

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September 30, 1950

With This Issue: (1) Special Digest of Replies on 'Bracket Standards'.
(2) Special Report on Coy Speech Relating to Color.

TELECASTING SPREADS ITS SCOPE: Progress notes on the current TV week:

(1) Sept. 30 finds 14 more cities added to the 33 already linked for inter-city network service, leaving only 15 still non-interconnected; we've already given you all details in Vol. 6:31 & 37.

(2) Sept. 30 sees Nashville's WSM-TV begin daily 3-11 p.m. service as nation's 107th and last pre-freeze-authorized station to take the air; it starts with network service (ABC, CBS, NBC) via own microwave relay from Louisville. "Official opening" is Sunday, Oct. 8. New market already claims 8500 receivers.

(3) Oct. 1 sees Havana's Union Radio, first in Cuba, begin scheduled operation (Vol. 6:30,32) -- first of number of projected Havana TV outlets (Vol. 6:38). And some time during month, Tupi-TV, Rio de Janeiro, companion to station already operating in Sao Paulo, is due to go into regular operation (Vol. 6:19,30,33,35).

* * * *

World Series next week will be seen in all interconnected cities, Gillette-sponsored, and this week's Joe Louis-Ezzard Charles fight was carried on 31 CBS-TV outlets live, 29 more via kine recordings (for further details, see p. 7). Though Western Conference and some pro grid games are shut off TV, there appear to be plenty of football telecasts scheduled by networks and local stations (Vol. 6:37).

BRACKETS OUT—COLOR UP TO FCC AGAIN: Unanimously, the set manufacturers told FCC this week that they cannot make bracket standards receivers by estimated mid-November deadline. Many said a lot more -- so we've summarized all their responses in Special Digest herewith.

Critical question is now wholly in hands of Commission:

Will CBS color be adopted immediately? If so, will FCC seek to implement decision with formal requirement that color be telecast by networks and stations?

FCC said it would adopt CBS system, in clear terms, in its Sept. 1 report (Vol. 6:35). Chairman Coy reiterated that intention in his Chicago speeches this week (see Special Report herewith).

It's sheerest guesswork to speculate whether manufacturers' mass of arguments against bracket proposal, and against selection of incompatible CBS system, will change majority of commissioners' minds as they meet next week (after Monday) to consider the replies and weigh tremendous implications of their next step.

Signs are not lacking that Commission is worried over reaction to report, particularly the virtually solid rejection of suddenly-sprung bracket standards idea. If it adopts CBS system, requiring 2-position switch only for reception of CBS color in black and white, it will rely on competitive factors for introduction of "adapters" (internal & external) and of color receivers.

But what to say to present and prospective set owners poses problem for both FCC and CBS -- economic and political. Particularly what to tell present 8,000,000 set owners about adaptation, prospective new set buyers about "waiting for color."

Unless FCC forces it, there's little inclination among telecasters volun-

tarily to embark upon colorcasting now -- except for CBS's own New York outlet and perhaps one or 2 others.

There was talk that Commission might postpone decision, agree to give time asked by some for development and field testing of bracket standards. But no one really knew -- not even the commissioners.

CBS stock climbed to high of 35 at end of week, but it was noteworthy also that most TV-radio manufacturing shares also rose -- RCA up to 19%.

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By Friday night deadline, responses had arrived from 17 set makers: Admiral, Andrea, Arvin, Belmont (Raytheon), Conrac, Crosley, DuMont, Garod (Majestic), GE, Hallicrafters, Hoffman, Meck, Packard-Bell, Pilot, RCA, Stromberg-Carlson, Westinghouse. Not set manufacturers, but also responding: CBS, Communications Measurement Labs, Conn. Dept. of Education, National Television System Committee, WTVR Richmond.

Notably absent were: Air King, Capehart-Farnsworth, Emerson, Magnavox, Motorola, Olympic, Sylvania, Philco, Tele-tone, Zenith, among the majors. These and more may come Monday, since FCC will accept any answers postmarked Sept. 29.

RCA's reply was the one most anxiously awaited at FCC. Document released Sept. 28 ran 67 printed pages, plus complete copy of Condon Report (Vol. 6:28) -- by far most comprehensive of all replies. In all-out attack on FCC's whole color-and-brackets proposal and defense of own system, RCA obviously laid groundwork for court contest. Main points of RCA response:

(1) Proposed multiple color standards -- i.e., allow both CBS and RCA color for a "reasonable" time. "We await the verdict of the public with confidence," RCA said. (2) Called decision "illegal" and "scientifically incorrect" and submitted detailed analysis of errors it found. (3) Said bracket standards would take 6 months or more to achieve, and are "unnecessary, costly and contrary to public interest."

RCA also complained: "Never before has an administrative body of the United States undertaken to coerce the freedom of American manufacturers in what they may build and sell under threat that if they do not obey, drastic consequences to the public will follow." It is admitted, at FCC, that its whole color-brackets proposal is first time in history that Commission has advanced major idea not initiated by large segment of industry.

[Copies of RCA reply are available from its Information Dept., 30 Rockefeller Plaza, New York.]

Here's prediction of a pro-CBS Commission staffman, for what it's worth: (1) FCC will adopt CBS system. (2) RCA will take FCC to court -- and lose. (3) "Manufacturers ranks will break" and competition will implement CBS system.

He rejects any idea that RCA system will "catch up" in interim, sell itself on compatibility feature -- even though Senator Johnson (who left for Europe Sept. 28) reportedly assured Motorola's Paul Galvin that Commission will give manufacturers more time. Johnson's idea of FCC's Report is said to be that it merely spurs development of color and keeps industry from holding it back; that "door is still open" if industry cooperates in development of bracket standards.

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Zenith has many guessing. No manufacturers can visualize how Zenith, any more than they, could possibly meet FCC's deadline. But its president E. F. McDonald took pains to write each commissioner earlier this week, terming a "mis-statement" our report that "even Zenith...doesn't go along with bracket idea" (Vol. 6:37).

"Zenith had made no decision whatsoever on the subject," he wrote. The sources of our information were excellent, remain so.

Chairman Coy saw McDonald in Chicago this week. He also saw top Philco executives while there. Noteworthy visit, too, was that of Motorola's Paul Galvin and his engineers with FCC in Washington last week (Vol. 6:38). And Zenith's top engineers G. E. Gustafson and J. E. Brown saw FCC chief engineer Curt Plummer.

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All the replies are worth reading; hurried eleventh hour digests hardly do some of them justice. Most described problems in detail. Some vigorously castigated

choice of CBS. One (Westinghouse) told FCC, specifically, how it would go about complying with brackets if they're adopted. Another (GE) said it would "definitely" make bracket sets but wouldn't promise them before June or commit any specific portion of its production to brackets.

Some got testy -- notably little Conrac, which flatly said it "will NOT".

Estimates of time needed for brackets development and field testing centered around 6-8 months, extra costs \$50-\$75; some respondents obviously were still thinking merely of 2-position switch rather than true brackets.

CBS liked objectives of brackets, but said "excessive cost could nevertheless preclude their utilization" and admitted it didn't yet know whether brackets would cost more than 2-position switch. In any event, said CBS, adoption of its system would encourage manufacture of 2-position switch sets, and brackets could come along later when their feasibility has been proved.

CBS was also a bit worried lest FCC bracket proposal might preclude adapters which would reduce monochrome pictures, on big tubes, sufficiently to allow use of color disc.

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Crosley brought up new argument against brackets: Since external adapters (\$40-\$60) don't cost much more than internal adapters (\$25 or more), why charge "premium" on all sets if there's possibility CBS system won't be chosen? If CBS is finally chosen, external adapters can then be built for only slightly more than internal. Drastic disruption of production lines, inevitable with conversion to internal brackets now, will have been avoided. And, meanwhile, research into compatible systems will have been encouraged.

Westinghouse outlined "2-phase" bracket program it would pursue if brackets were adopted: (1) It would start making sets with a switch and a plug receptacle. One position of switch would give present monochrome standards, but would have simple "screw driver" adjustment that would allow "other monochrome standards within a reasonable range of the present standards." (2) When exact CBS color standards are adopted, plug-in unit will be built to operate on second position of switch, give monochrome pictures. If, in the future, FCC adopts new set of CBS-type standards (with different number of lines and fields), new plug-in units will be built to give monochrome from those standards.

DuMont hinted at illegality of FCC's Report, same as RCA. It also said: "No apparent consideration has been given to the fact that the utilization of long persistence phosphors...would greatly increase flicker as viewed on existing tubes in black-and-white sets and require replacement of nearly 10,000,000 tubes." Bitter tone of DuMont's response may mean that it, too, is preparing for court fight.

Nearly all referred to components' shortages, "wastefulness" of brackets in light of military demands, dangers of unemployment, disruption of whole industry, inflationary effects of increased costs, FCC's technical naivete.

Unexpected response was that of F. E. Engleman, Commissioner of Connecticut State Dept. of Education. After asking that channels be reserved for schools, he urged FCC to extend time for color research "until such time as an electronic system of color transmission has been suitably demonstrated by CBS."

SIRAGUSA SPEECH LASHES FCC ON COLOR: First manufacturer to "go to public" with case against FCC's color requirements is Admiral's Ross Siragusa, who at 43 heads \$200,000,000 company that started with \$3000 capital and garage for factory just 16 years ago. Admiral ranks with RCA and Philco as one of industry's Big 3, currently is producing 5000 TV sets per day, up from 100 per day when it started making them in January 1948. Admiral is not member of RTMA, is rated as one of toughest competitors in the industry, is spending \$15,000,000 on advertising this year, has its share of intra-industry "feuds", always tends to play lone hand.

Dynamic Ross Siragusa's speech before big, powerful National Assn. of Furniture Manufacturers in Chicago Friday probably will signal more public onslaughts by industry figures -- all the way down to dealer level -- expressing openly what they

have been saying privately (and bitterly) ever since FCC's Color Report, with its bracket standards edict, was issued month ago (Vol. 6:35, et seq).

If FCC continues to demand bracket standards, or alternatively adopts CBS system outright and immediately, it's apparent that an era of bad feeling between manufacturers and FCC will ensue -- with telecasters (still unorganized and inarticulate, but mostly on side of compatibility) ranged alongside the set makers. What this means to TV audience and TV trade can only be conjectured. Said Siragusa:

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"With all the subtlety of an order from the Kremlin, the Commission asked TV manufacturers to agree to modify their sets so that they would be compatible with the CBS system. The time allotted was 30 days. If the manufacturers failed to do this, then the Commission said it would adopt the CBS system as standard.

"I might point out here that at the time of that ruling, no set which would meet the Commission's request for bracket standards had been made. To my knowledge, none has been made in the last few weeks. I know that our industry is a past master at pulling rabbits out of a hat. But this time we're starting without even a hat.

"Looking ahead, I can speak only for Admiral. We notified the Commission this week, that while we are doing everything possible to conform to their findings, it will be several months before we can design and properly field test a set which will be compatible with CBS color. While this unavoidable research is going on, millions more receivers will be sold, and we estimate that there will be at least 10 million sets in American homes which will not receive even black and white from a Columbia telecast in color.

"Chairman Coy seems to think that it will be a simple matter to make these sets, which represent a public investment of \$3 billion, compatible. In an address this week he said, 'Since existing receivers can be adapted to receive black-and-white pictures from CBS color transmissions at a reasonable price, the Commission felt that it was not fair to deprive 40,000,000 American families of the opportunity to have color simply because the owners of 7,000,000 or 8,000,000 sets might have to spend some money in adapting their present receivers.'

"In reality, the Commission is saying to potential future purchasers of TV that, regardless of the fact that they may only want or can only afford a receiver capable of receiving black-and-white telecasting, they must pay a substantial premium to continue to receive black and white from a color telecast. In effect, the Commission is saying to future viewers, you'll have to pay for color whether you want it or not.

"If only 10,000,000 purchasers, let us say, want black and white, and if the required modifications cost an extra \$50 per set, then the public will be paying a half billion dollars for something it didn't want in the first place. This is like saying to a person who wants to buy a Chevrolet, you must now pay a special premium on this car, otherwise we cannot build Cadillacs for those who want them.

"Actually, the job the Commissioner is passing off so lightly in his simple statement is just about as complicated and impractical as trying to convert the gasoline engines in 10,000,000 automobiles now in service to charcoal burners. In a laboratory, with laboratory technicians, it is possible to make present TV sets compatible with CBS. To do it in the field, with present service facilities, would not only be impractical from the standpoint of operating results, but would be utterly prohibitive from the standpoint of cost.

"Speaking for Admiral, which is very much interested in protecting the investments made by our present set owners, there is one thing we will not do. We will not permit the pressure of time or competition to force us into offering the public some quickly conceived makeshift which will neither do the job, nor meet possible future requirements.

"It is my opinion that of the 10,000,000 sets which will be in service by the end of the year, not 5% will ever be made compatible with the Columbia system. It will be better and cheaper for these initial supporters of the television industry to content themselves with black-and-white programs broadcast under present

standards, or if they want color, junk their present sets and make heavy investments all over again. There is no such thing as invention by decree."

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Besides color and the freeze, only war can slacken TV, Siragusa observed, adding: Public this year will spend \$2 billion for sets alone. Today's 7,500,000 sets represent only 30% of homes within 40-mi. radius of stations now telecasting, but within 10 years virtually all families in areas with service will own receivers -- "if war does not become total." Within 5 years, 27 to 30-in. rectangular tubes will be standard, with cabinets not much larger than ones now needed for 19-in. circular tubes. Govt. requirements will utilize about quarter of electronic industry's capacity; this means that industry will have available capacity for more than 5,000,000 receivers next year.

RADIO RATES (TV, TOO) SLAPPED AT ANA: Still hanging over heads of broadcasters is advertisers' push to get radio rates down in TV cities (Vol. 6:29-31). They continue to publicize new findings and surveys to pound home their principal point: In TV cities, night listening is down.

Any idea sponsors have accepted radio's position that there's nothing to talk over, that radio rates are above questioning, should be dispelled by attitude of advertisers and agency men at Chicago convention of Assn. of National Advertisers this week.

TV rate rises also came in for criticism, BBDO's Ben Duffy calling it "rate squeeze" and declaring TV rates "way out of line." He said FCC freeze permitted telecasters to maintain a monopoly which puts them in the "comfortable position of being able to pick and choose."

Radio took brunt of attacks, however. Lipton's ad chief Wm. B. Smith, chairman of ANA's radio-TV steering committee, said broadcasters have confused the issue, but haven't refuted the facts. Said he, "The networks would have you believe that there are more people listening to radio and watching TV than there are people." He cited recent Young & Rubicam survey to bolster ANA findings that listening is down in TV cities:

(1) In TV homes, radio is turned on 30 minutes nightly; in non-TV homes, 2.6 hours nightly. (2) In TV homes, 61% said they didn't listen to radio at all at night; in non-TV homes, only 8% said that. (3) TV owner views average of 3.5 hours nightly; neighbors and friends come in for average 1.9 hours weekly. (4) Amount of viewing by TV families having sets 16 months or more is about same as those with sets only 1-3 months -- refuting argument that viewing goes down after "novelty" effect wears off.

Much the same tack was taken by John P. Cunningham, Cunningham & Walsh, which publishes Videotown surveys (Vol. 6:26). "When American families who have owned TV sets for 2 years still sit and stare at that little square screen every night for almost 4 hours -- something's got to give," he asserted. In generalized observations on TV based on Videotown and other surveys, he stated flatly, "Radio listening [is] practically non-existent in TV homes at night except individual members of the family still may pop off to another room to hear a favorite program or get the baseball scores."

Sitting pretty with resurgence of business due to increased listening (Korea) and rate increases by other media (newspapers and magazines, particularly), radio seems willing to let ANA talk. Neither networks nor stations will admit validity of ANA's position. They have thus far ignored it, haven't suffered any loss of business thereby. Broadcasting Magazine editorial Sept. 25, however, claimed ANA case has gone "aglimmering", noted: "Radio is at an all-time peak. TV is destined, for the foreseeable future, to remain at 100-odd stations in 60-odd markets." But the radio broadcasters' spokesman calls on radio not to let things ride but to plan now for post-emergency period.

Advertisers don't say radio isn't good buy. Even Smith acknowledged that listening had gone up recently. But primarily in morning and afternoon hours in July, he asserted. Afternoon and evening listening slipped back in August, he said,

but "you don't hear anything about that." Cunningham, too, had good word for radio: "Don't write off radio yet -- by any means. It still has the coverage. It's much cheaper per listener by far." He called attention to estimate of 18,000,000 TV sets in 1954, admonished there would still be 24,000,000 non-TV homes then.

There's no thought of organizing ANA members to fight radio rates, through boycotts or the like. What ANA has done in gathering facts, advising members, calling attention of broadcasters to studies and conclusions, is perfectly legal. So ANA was advised by its counsel. Consensus was that individual advertisers would use data to make best buys for themselves.

TV & MOVIES EYE PHONEVISION TESTS: Zenith's Phonevision tests are due to start Oct. 1 in Chicago, with TV and movie industries watching closely. Through Friday, however, there was no announcement yet of titles, source or number of promised first-run films. Film spokesmen continued to maintain none of major producers has offered films for test. Chicago Journal of Commerce's Wm. Cahill stated Sept. 29, "Most of the fare offered will be products of the smaller independent companies." Tests are supposed to run 90 days in 300 homes, with different picture each night.

While theatre groups were discounting pay-as-you-look TV, notably big Allied States Assn., it got boost from FCC chairman Wayne Coy, speaking before Assn. of National Advertisers in Chicago Sept. 25. In answer to question, Coy broadly endorsed Phonevision "or any other boxoffice approach to TV" on grounds he favored any experiment "which looks toward the development of a method of keeping everything that is good in America on TV [entertainment and culture]." Emphasizing he spoke only for himself, not FCC, he went on to say he would "give just as much encouragement to a union of advertisers...paying the cost of these events through entrepreneurial arrangement."

Coy predicated position on theory advertisers won't be able to support TV, referred to \$800,000 Gillette is paying for World Series (Vol. 6:34), with only 8,000,000 sets in use. How in the world, he asked, can enough dollars come from selling Gillette blades "to pay what Happy Chandler is going to ask for the TV rights" when there are 40-50,000,000 TVs? "The pockets of you gentlemen sitting here in this room are not deep enough to pay the cost which promoters of some of these events are going to demand." [In speech before Chicago Television Council, he estimated World Series might eventually cost \$4,000,000.]

Zenith's key argument is that advertisers won't be able to support TV (though most stations are now reported in black). Coy's remarks brought rash of headlines in Chicago and trade press.

Zenith's Comdr. McDonald was still "selling" Phonevision to telecasters and film folk, meanwhile, using two-sided approach such as he did in writing newspaper publishers and CBS president Stanton last June (Vol. 6:24). In Sept. 21 letter to all telecasters, he encloses Sept. 4 Advertising Age editorial that advertisers may be pricing themselves out of TV, leaving it to theatre TV to pick up what may become multi-million dollar tab for major and special events. "This is not an academic debate," he states, referring to theatre TV showings of TV-banned Big Ten grid games (Vol. 6:32,37). He warns that if theatre TV takes hold, it will take people out of their homes so there won't be any audience for broadcast TV.

But in Sept. 22 letter to Leonard Goldenson, United Paramount Theatres president, he states: "I have many times stated that burgeoning TV -- not Phonevision -- is the deadly competitor of the theatre and that Phonevision will prove to be a friend, not the enemy of the theatres. Not only will the producers need the additional income from Phonevision, but the theatres will need the protection from 'free' TV that Phonevision offers."

Goldenson had sent McDonald copy of Sept. 22 letter he (Goldenson) wrote to 20th Century-Fox's Spyros Skouras, taking issue with pay-as-you-look idea, criticizing its promotional tactics particularly, but ending with hope that "enough motion pictures will be made available for this test so that all who are interested ...will have results for proper appraisal and evaluation."

TV is blamed for small gate (22,357 persons, \$205,370) at Wednesday night's Louis-Charles fight, but TV-radio rights brought \$140,000, of which Louis got 35%, Charles 20%. CBS-TV reports 60 stations (31 live, 29 kine) carried Pabst-sponsored event. Hooperating was 68.4. *New York Times* estimated 25,000,000 TV viewers on basis of 65% of 7,000,000 sets. Al Laney, in *Herald Tribune*, compared attendance with 80,000 who watched Louis-Schmeling fight, said: "Everywhere the talk was of television . . . title fights would soon be fought in studios." Also in Sept. 28 *Herald Tribune*: "The bald truth was that the beer sponsors who bought the TV rights had thoroughly convinced the fight public that going to the fight was a waste of time and money when barside and living room were so much more inviting." *Washington Post's* Shirley Povich: "The television set stayed home . . ." CBS announced fight was seen by 73% of all TV set owners.

Call for educators to get into TV is made by *New York Herald Tribune* critic John Crosby in October *McCall's Magazine*. He lauds Comr. Hennock's activity in behalf of educational TV, quotes from speech she made last April before U of Pennsylvania teacher group (Vol. 6:16): "Education must make itself heard now or risk forever having to hold its peace." Surprising is sneery tone Crosby uses in talking about present commercial TV. Commercial interests, he says, "will dominate it, cheapen it, neglect it, eventually destroy it." He even cites decline and fall of Roman Empire "with its gladiator contests, obscene plays, orgies" to warn that "perennial, irresistible, inescapable outpouring of mediocrity from TV will . . . weaken our intellectual fibre to the point where we can no longer function effectively as a democracy."

TV's stature in advertising is theme of 20-p. *Tide Magazine* "cover story," Oct. 2. Article paints general outline of TV's status in number of stations, sets, details myriad facets of its commercial business. "Television right now, at the start of its third commercial season, is in every sense a major, mature advertising medium," article states. Otherwise excellent article is marred by a few indefinite and erroneous statistics.

United Nations has installed own 2-camera chain and is making video service available 11 a.m. to 6 p.m. five days weekly. CBS-TV next week starts TV coverage Mon. thru Fri. 11 a.m. to 1 p.m. and 5:15 to 6 p.m.

While European TV now comprises only a few stations in Britain, France and possibly Russia, recent international committee meetings (Vol. 6:25, 32) are credited with sparking plans for stations in Stockholm, Netherlands and Switzerland.

End of freeze between April 1 and July 1, 1951, was predicted by FCC chairman Wayne Coy during speeches in Chicago this week. But he ruefully admitted his fallibility on previous predictions. Estimate includes 60 days for filing of new applications after actual final decision, he said. In cities where applicants outnumber channels available, however, new CPs probably won't be issued "until the end of 1951, at the earliest, and many will run into 1952," he added. In response to other questions, Coy stated:

(1) Govt. has absolutely no intention of taking over operation of any station in event of war. "I give you my word," he said, "I have never heard the faintest suggestion from anybody in the Govt. of the United States that they take over broadcasting . . . If at any time it becomes necessary for the radio or TV frequencies to be used by the military, it will be at a time when the invaders are so close that none of us will give a damn anyway."

Latest findings on how TV affects family social life were given in Young & Rubicam survey reported at ANA convention in Chicago, Sept. 25-27: (1) TV families average 1.5 nights out weekly. Non-TV families average 2.4 nights out weekly. (2) 32% of TV families attend movies during week. 45% of non-TV families go to movies during week. (3) Magazine and newspaper habits are about same in TV and non-TV families. John P. Cunningham, Cunningham & Walsh, told ANA members only 2.6% of TV owners went to movies night before survey, while 5% of non-TV owners went. He also stated sports attendance goes down first 2 years of TV set ownership, but interest engendered by TV "ultimately delivers them back to the ball park or stadium to a greater degree than ever."

Further assurance TV doesn't hurt eyesight comes from poll of eye doctors in 8 midwest states conducted by Ohio U's Institute for Research in Vision. Conclusion, based on 556 replies, was that only 3.14% of patients blamed eyestrain on TV. Most of these were new-set owners, whose complaints tended to drop off with continued viewing, and patients over 60 using multi-focus glasses or who previously suffered from eyestrain. Interestingly, Institute reported 30% of doctors were prescribing tinted glasses for complaining televiewers.

More on TV and eyes: First detrimental effect, to any degree, is reported by Dr. John C. Neill, of Pennsylvania State College of Optometry. Year's study, he said, shows that night vision can be temporarily impaired by watching TV. "Visual purple" in eye, needed in night vision, is used up rapidly. But he said that increased vitamin A intake can reconstitute it, also, that new tubes (presumably "black") are much easier on eyes. One beneficial effect he found was that TV can help children with crossed eyes. Covering good eye while poor one concentrates on screen strengthens latter.

Newsweek Magazine reports Schenley liquor ads, rejected by U. S. networks and stations last year, are being carried on one Hawaiian and 6 Alaskan stations; notes that "distillers long have licked their chops over the sales inherent in radio and TV plugging." Schenley, incidentally, bought closed DuMont circuit Sept. 29 for conference of its distributors in 18 cities, discussing sales plans.

TBA got 3 new members, reported at TBA board meeting Sept. 25: KEYL, San Antonio; WKY-TV, Oklahoma City; WBEN-TV, Buffalo. Board also set Dec. 8 for TV clinic for members, approved revisions of by-laws to base membership dues on percent of rate cards and permit multiple owner to take out membership for as many stations as he owns.

(2) FCC doesn't want to become an "Anthony Comstock" to keep obscenity and poor taste off TV. Industry should police itself. There's also a question of interpretation of Federal laws: "Is sign language on TV, or simple exposure, prohibited by the Criminal Code in the same manner as the written word?"

(3) FCC's goal is to bring TV to everyone in the country. "The only feasible way that has been advanced that offers full geographic coverage is the use of something like Stratovision, as has been developed by Westinghouse. However, those stations that are possible [under conventional telecasting]—and I believe that the stations will be applied for and granted within the succeeding 5 years—will offer us coverage in excess of 90% of the population, which, by the way, is a comparable figure to the coverage of the aural broadcasting system today."

Telecasting Notes: Perking interest in long-moribund TV station-application file indicated in recent weeks, with filing this week for Channel 13 by Lewis College of Science & Technology, Chicago—station to be financed by Catholic churches of Chicago (for details, see TV Addenda 11-L) . . . That makes 354 applications pending; 350 were listed in our *TV Directory No. 11* of July 15, the remainder reported in Addenda 11-A to 11-L . . . With 595,000 TV sets-in-use as of Sept. 1 (Vol. 6:38), Chicago Electric Assn. president Axel H. Kahn confidently predicts Chicago area will have 1,000,000 by Jan. 1; during August, gain was 40,000 . . . WTMJ-TV, Milwaukee, has moved up schedule to begin with 1 p.m. sign-on Mon. thru Fri.; 9:30 a.m. Sat.; noon Sun., and Sun. morning telecasts to start shortly. Of more than 80 hours per week, 49.5 hours are network (all 4) . . . Chicago's WBKB is now operating on 10 a.m. to 2 a.m. schedule nightly except Sunday, offering feature films between midnight and 2 a.m. . . . More rate increases scheduled Oct. 1: KLAC-TV, Los Angeles, from \$600 to \$750 per hour, from \$90 to \$125 per 1-min. announcements; WBAL-TV, Baltimore, \$450 to \$550 and \$80 to \$100; WATV, Newark, \$600 to \$800 and \$125 to \$165; WMCT, Memphis, \$250 to \$300 and \$50 to \$60 . . . On Dec. 1, KOB-TV, Albuquerque, goes from \$150 to \$195 and from \$12 to \$20 . . . On Sept. 15, WHAS-TV, Louisville, went from \$250 to \$300 and from \$40 to \$50 . . . On Sept. 17, WEWS, Cleveland, went from \$600 to \$750 and from \$100 to \$140.

Personal Notes: RCA Victor information v.p. John K. West definitely slated to succeed Sidney N. Strotz as NBC Hollywood v.p., subject to RCA board ratification Oct. 3; Strotz resigned to devote more time to his other interests . . . Charles M. Underhill, program chief, appointed CBS-TV operations mgr. in New York, succeeded by Harry G. Ommerle, promoted from program sales mgr. . . . George F. Foley, TV director, Cecil & Presbrey, resigns to head newly formed Foley & Brockway Co., TV-radio management consultants, 521 Fifth Ave., New York; partner is Robert E. Brockway, movie producer and president of Pathe Corp. . . . Lee Cooley quits as TV director, McCann-Erickson, to become producer-director of Perry Como TV show for Chesterfield . . . Gerry Martin, ex-Wm. Esty Co. and NBC, now director of TV, Duane Jones Co. . . . Peter M. Robeck promoted to asst. sales mgr., KTTV, Los Angeles . . . His hometown Stroudsburg, Pa. will celebrate "Robert E. Kintner Day" Oct. 17 in honor of ABC's president, with governor, mayor, other celebrities participating . . . Bernard C. Barth, program coordinator for 3 Crosley TV stations, now asst. to John T. Murphy, Crosley director of TV operations . . . Joseph N. Nelson named chief, TV Branch, FCC Broadcast Law Bureau, succeeding John E. McCoy who has joined Fort Industry Co. (Storer stations) as counsel.

Lewis Allen Weiss is retiring from chairmanship of Don Lee Broadcasting System after 20 years, has requested public administrator Dan Brown and attorneys for Thomas S. Lee estate to take action on his July 19 letter of resignation. All bids on \$9,000,000 properties are due Oct. 6. Weiss and associated interests have withdrawn offer, but CBS, Edwin S. Pauley, Liberty Broadcasting System and others are understood to have submitted bids.

Call for TV standards was sounded by John P. Cunningham, Cunningham & Walsh agency, at ANA convention in Chicago Sept. 25-27. He urged advertisers, agencies, telecasters to get up creed or code of standards, warning, "Are we going to push an actress' neckline down 2 points to raise our Hooperating one point?" As far as children are concerned, Cunningham noted, telecasters can't "give the public what it wants." Children, under 18, he said, spend 27 hours a week watching TV—as much time as they spend in school.

Network Accounts: Motorola will sponsor first 3 performances of *4 Star Revue* (renamed from *Laugh Time*) starting Oct. 4 on NBC-TV, Wed. 8-9, with Ed Wynn and Edith Piaf first stars, then Danny Thomas, Jimmy Durante, Jack Carson in rotation; show will be staged in big Center Theater, will later have different sponsors every third week, Motorola being only one of 3 signed thus far . . . Jack Benny's long-awaited TV show will be sponsored on CBS-TV by Lucky Strike, will start Oct. 29, will run one hour once every 8 weeks—but time not yet set . . . Campana Sales Co. (toiletries) will sponsor one-hour British films (new) on ABC-TV, with *First Nighter* probable title; time not yet set . . . Procter & Gamble reported readying 5-a-week 2:30-2:45 daytime dramatic serial on CBS-TV, starting Dec. 1 and titled *The First Hundred Years* . . . Bymart Inc. (Tintair) will substitute series of Somerset Maugham short stories (*Teller of Tales*) for dramatic show *Conflict* scheduled for Wed. 9-9:30 starting Oct. 18 on CBS-TV . . .

Station Accounts: Cincinnati's big Shillito's dept. store has fallen in line with trend to TV advertising, starting Sept. 28 daily 11-noon show on WLWT . . . Standard Brands, for Chase & Sanborn Coffee, is third sponsor signed by WPIX for its 120 Madison Square Garden events starting Oct. 15, taking 30 of them while Chevrolet Dealers Assn. takes 60 and co-sponsors 30 with Webster Cigars . . . Among new participating sponsors on WNBT, New York, are: Borden Co. (Starlac) and Drackett Co. (Windex), both thru Young & Rubicam; Hazel Bishop Inc. (lipstick), thru Raymond Spector Co. . . . International Harvester sponsoring INS-Telenews films on WSM-TV, Nashville; WTVN, Columbus; WOI-TV, Ames, Ia. . . . Seven competing TV-radio-appliance distributors join to underwrite telecasts of all U of Miami games in Orange Bowl on WTVJ . . . Among other sponsors currently reported using or planning to use TV [all agencies N. Y. unless otherwise specified]: A. S. Harrison Co. (Preen floor wax), thru J. M. Mathes Inc.; Perfect Foods Inc., thru J. Cunningham Cox, Philadelphia; Gibbs & Co. (food products), Van Sant, Dugdale & Co., Baltimore; Elgin Watch, thru J. Walter Thompson; Otation Inc. (hearing aids), thru Reincke, Meyer & Finn, Chicago; Joseph Parmet Co., Catasaqua, Pa., new product, thru Victor A. Bennett Co.; Trans-World Air Lines, thru BBDO; Topps Chewing Gum Inc., thru Cecil & Presbrey.

Apportionment of intercity TV circuits is being investigated by FCC, following official complaints this week by ABC and DuMont that AT&T coaxial-microwave allocations for October-December are inequitable. ABC asked for a clear ruling on meaning of AT&T's tariff. DuMont asked that FCC force phone company to revise assignments to make each network equal. AT&T assigned 379 hours between 8-11 p.m. weekly as follows: NBC, 167 hours; CBS, 121½; ABC, 53½; DuMont 37. It's understood AT&T queried stations on preferences before issuing allocations. Greatest difficulties were encountered in assigning time on newly opened western and southern circuits (Vol. 6:31, 37) as well as New York-Boston-Providence, New York-Syracuse, Cleveland-Rochester, Washington-Richmond-Norfolk.

Increased TV expenditures in 1951 are planned by 32 companies, ANA v.p. M. L. McElroy reported in Chicago Sept. 25. None of the 150 companies who answered questionnaire for "Analysis of Today's Conditions" planned to cut TV budgets. Companies planning increasing TV use said they'd curtail network radio and car card advertising, although some advertisers plan to expand spot radio, magazines, outdoor and newspaper budgets. Almost third of all advertisers said they'd change use of media, with most of them giving "impact and growth of TV" as reason. Seven out of 10 of these are in consumer package goods field.

Full Text of

FCC Report on Color Television Issues

Adopted Sept. 1, 1950, and Released as FCC Public Notice No. 50-1064

Including Separate Opinions by Commissioners Hennock, Hyde and Jones

(Omitting only Appendices listing hearing witnesses and exhibits and Annex to Comr. Jones' "dissent in part")

Including full text of

Notice to Manufacturers for Further Proposed Rule-Making Regarding 'Bracket Standards'

(FCC Public Notice No. 50-1065—See Page 24)

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In the Matters of Amendment of Section 3.606 of the Commission's Rules and Regulations. } Docket Nos. 8736 and 8975

Amendment of the Commission's Rules, Regulations and Engineering Standards concerning the Television Broadcast Service. } Docket No. 9175

Utilization of Frequencies in the Band 470 to 890 Mcs. for Television Broadcasting. } Docket No. 8976

FIRST REPORT OF COMMISSION (Color Television Issues)

I. INTRODUCTORY

THIS Report deals with the issues relating to color television raised in the above-entitled proceedings. The hearings with respect to these issues were held before the Commission *en banc*, commencing on Sept. 26, 1949 and closing on May 26, 1950. Pursuant to the Commission's Notice of May 10, 1950, the parties were permitted to file Proposed Findings and Conclusions on or before June 26, 1950, and replies thereto by July 10, 1950. Proposed Findings and Conclusions, and Replies were filed by Color Television, Incorporated (CTI), the Columbia Broadcasting System, Inc. (CBS), and the Radio Corporation of America (RCA). Paramount Television Productions, Inc. and Chromatic Television Laboratories, Inc., jointly filed Proposed Findings and Conclusions and a Reply as *amicus* pursuant to the Commission's letter of May 31, 1950.

A. General Description of Proceedings

1. These proceedings include not only the issues relating to color television but comprehend a general study and review of the existing commercial television service which occupies 12 channels in the frequency band 54 Mcs. to 216 Mcs. (the Very High Frequency Band, or VHF) and a review of the status of television experimentation and development in the experimental frequency band 470 to 890 Mcs. (the Ultra High Frequency Band, or UHF) with a view to opening this portion of the spectrum for regular television operations. The existing television service is based on rules and regulations, engineering standards, and a table of channel allocations adopted by the Commission in 1945. Since that time the commercial television service

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has expanded rapidly from 6 stations on the air in 4 cities, to 106 stations rendering television program service in 65 cities. Since that time, also, over 30 experimental operations have been conducted in the UHF band.

2. The current hearings had their inception in two proceedings instituted by the Commission on May 5, 1948. The first proceeding (Dockets 8736 and 8975) was initiated by the Commission's Notice of Proposed Rule Making of May 5, 1948 (FCC 48-1569).¹ This Notice related to the 12 VHF channels and proposed an amendment of the television allocation table to provide a redistribution of the 12 VHF television channels to the various cities and communities throughout the United States. In general, the 1945 allocation table provided assignments for the 140 metropolitan districts; the Notice of Proposed Rule Making proposed to make additional assignments in some of these metropolitan districts and to provide assignments for some communities not previously covered. During the hearings held in this matter in June and July, 1948, evidence was adduced concerning tropospheric and other types of interference which made it appear probable that the mileage separations provided between co-channel and adjacent channel stations in the existing allocation table and in the Commission's proposed amendments, were not sufficient to permit stations in many areas to provide interference-free service to a reasonably large area. As a result, the Commission, after a public conference on Sept. 13 and 14, 1948 on the subject, adopted its so-called freeze order of Sept. 29, 1948 (FCC 48-2182) under which television applications were placed in the pending file to await the outcome of the current hearings. This was done in order to give the Commission the flexibility required to carry into effect the lessons to be learned from the forthcoming proceedings. It would obviously have served no useful purpose to have conducted these proceedings if the Commission in the meantime had continued to license television stations in accordance with the old standards, for any change in allocations which would be indicated by the proceedings could be carried out only at the price of excessive dislocation to existing operations.

3. The second proceeding instituted by the Commission on May 5, 1948 (Docket 8976) was intended primarily to obtain the fullest information available in the present state of the television art upon the development of transmitting and receiving equipment for use in the UHF band (470 to 890 Mcs.), for either monochrome or color television, and to consider any proposals for the utilization of this band for commercial television broadcasting.² The initial hearing on this phase of the proceedings was held Sept. 20 to 23, 1948. It was the consensus of those industry experts who testified at this hearing that color television was not yet ready for commercialization.

4. The scope of the proceedings as set forth in the Notice of Proposed Rule Making and the Order, adopted May 5, 1948, was enlarged by a Notice of Further Proposed Rule Making (FCC 48-2256), adopted Oct. 14, 1948, entitled "Amendment of the Commission's Rules, Regulations and Engineering Standards Concerning the Television and Frequency Modulation Broadcasting Services" (Docket 9175). This notice set up a series of engineering conferences for the purpose of undertaking a general review of the rules, regulations and engineering standards in the VHF television service.

5. On Nov. 30 to Dec. 3, 1948, the Commission's staff conducted the informal engineering conferences referred to in the preceding paragraph. At this conference, an *Ad Hoc* Committee was appointed composed of engineering experts from the Commission, other government agencies, and the industry, for the purpose of studying VHF propagation

¹ Docket 8736 was instituted by Notice of Proposed Rule Making issued January 20, 1948 (FCC 48-126) proposing to amend the television allocation table to carry out a tentative agreement with Canada with respect to border allocations. Docket 8736 was consolidated with Docket 8975 on May 5, 1948.

² Docket 8976 was instituted by the Commission's order of May 5, 1948 (FCC 48-1570) which dealt with the frequency band 475 to 890 Mcs. However, the Commission's order of May 25, 1949 (FCC 49-729) added Issue 5 with respect to whether the band 470-500 Mcs. should be allocated to multi-channel broad band common carrier mobile radio operation, and revised the caption of the proceedings to include 470 to 890 Mcs.

factors. This Committee, after six months of study, submitted a report to the Commission shortly before June 8, 1949. The data and conclusions in the *Ad Hoc* Committee's Report were utilized by the Commission in instituting the present phase of the television hearings by the issuance on July 11, 1949 of a Notice of Further Proposed Rule Making (FCC 49-948) in which the Commission proposed a substantial revision of the VHF allocation table, as well as other matters discussed in the following paragraph.

6. On July 11, 1949, the Commission issued a comprehensive Notice of Further Proposed Rule Making (FCC 49-948) based upon a study of the previous proceedings to date. In this notice, the Commission proposed an extensive revision of its Rules and Regulations and Standards of Good Engineering Practice relating to separation of stations, service areas of stations and allocation principles. In particular, an extensive revision of the allocation table was proposed, based upon the utilization of the 12 VHF channels and also 42 UHF channels; the Notice proposed that the same standards be utilized on these UHF channels as on the VHF channels. Interested persons were also invited to submit comments concerning the utilization of color television under certain prescribed conditions. Finally, interested persons were given an opportunity to offer comments or evidence on such matters as allocation of frequencies in the band 470-500 Mcs. for multi-channel broad band common carrier mobile radio operation; "polycasting"; "stratovision"; and provision for non-commercial educational television broadcast stations in the UHF. As has previously been indicated this Report deals only with the color phase of these proceedings. Subsequent reports will cover the other phases of these proceedings.

B. Prior Consideration of Color Television by the Commission

7. Before proceeding to a discussion of the color phase of the instant proceedings, a brief history of prior action by the Commission in this field is included as useful background. The question of color television has been before the Commission on several occasions, although it was not until 1946 that a formal proposal for the adoption of standards for commercial operation of a color television system was presented to the Commission. Color television systems were first considered by the Commission in a public hearing on Jan. 27, 1941 when the Commission received evidence concerning the Interim Report of the National Television System Committee (NTSC) covering television standardization in the VHF band (Docket 5806). Panel 1 of the NTSC analyzed five American color television systems, all of which were intended to operate in a 6-megacycle channel.³ Of particular interest to these proceedings is the CBS System No. 3 which was demonstrated in August, 1940, and utilized 343 lines, 60 frames and 120 fields, with mechanical filter discs or drums at the transmitter and receiver. Panel 1 noted that other color television systems were in existence, but were not analyzed because they were broad band and would not work in a 6-megacycle channel. Of particular interest in this category is the RCA System G which was described as a "three-channel, three color additive system consisting essentially of an independent chain of equipment (RMA standards) for each of the three colors, including a separate kinescope of proper screen color for each, with optical combination of the three images." RCA had demonstrated its system to the Commission in February, 1940.

8. On Feb. 27, 1941, the Commission issued a public notice setting forth alternative standards for both monochrome and color television. The hearing on this proposal was held March 20-24, 1941 (Docket 5806). The Report of the NTSC submitted to the Commission in that hearing stated as to color television:

The NTSC believes that, although color television is not at this time ready for commercial standardization, the potential importance of color to the television art requires that—

(a) A full test of color be permitted and encouraged, and that

³ Four of these systems were variations of the CBS system, with differences in lines, frames and type of interlace principally; the fifth was a General Electric 2-color system, using dichromatic filter discs, with the odd lines always in one color, and the even lines always in another color.

(b) After successful field test, the early admission of color transmissions on a commercial basis co-existent with monochromatic television be permitted employing the same standards as are herewith submitted except as to lines and frame and field frequencies. The presently favored values for lines, and for frame and field frequencies for such a color system, are, respectively, 375, 60, and 120 * * *.

On May 3, 1941 the Commission issued its "Report on March 20, 1941 Television Hearing" (Mimeo. 49851). On the same day it released its Order, dated April 30, 1941, in which the first commercial television rules and regulations, and television standards, were adopted. As to color television, the Commission's Report stated:

The three-color television demonstrated by the Columbia Broadcasting System during the past few months has lifted television broadcasting into a new realm in entertainment possibilities. Color television has been known for years but additional research and development was necessary to bring it out of the laboratory for field tests. The three-color system demonstrated insures a place for some scheme of color transmissions in the development of television broadcasting.

The NTSC proposals provide that color television be given a six-month field test before standardization and commercialization. The Commission finds this requirement necessary. However, immediate experimental color program transmissions are encouraged.

The standards proposed by the NTSC provide for most of the improvements held out as readily possible a year ago for monochrome transmissions (black and white pictures). These standards fix the line and frame frequencies at 525 and 30, respectively. The 525 lines provide for greater detail in the pictures transmitted than the 441 lines advocated a year ago. They give substantially equal resolution and more fully exploit the possibilities of the frequency bands allocated for television. Different line and frame frequencies will likely be required for color transmissions. This, however, is a matter for future consideration after color transmissions have been adequately field tested. * * *

The Commission is requesting the industry to provide the necessary test data as to both color transmissions and synchronizing signals within the six-month period following the beginning of commercial operation.

9. The Commission's Order adopted transmission standards for monochrome—525 lines, 30 frames, and 60 fields—with the following footnote:

The presently favored values for lines and for frame and field frequencies for experimentally field testing color transmissions are, respectively, 375, 60 and 120;

and further provided that "on or before Jan. 1, 1942, the licensees of television broadcast stations shall submit to the Commission complete comparative test data on color transmissions, with recommendations as to standards that may be adopted by the Commission for color television."

10. At a public hearing before the Commission, held on April 9, 1942 (Docket 5806), NTSC testified that it had submitted a report on color television to the Commission; and that it was felt that the demands of the national emergency had prevented the industry's proceeding with color television experimentation to the extent that would have been possible in normal times and as a result definitive conclusions could not be presented.

11. Testimony on color television was again presented to the Commission in the 1944-1945 general allocation proceeding (Docket 6651). In that hearing, which was held from Sept. 28 to Nov. 2, 1944, the Radio Technical Planning Board (RTPB) recommended to the Commission that "adequate standards for color television for a six-megacycle channel cannot be established at this time" but stated that, "this action was taken without prejudice to the continuation of experimentation in color television in such channels." It further recommended that:

Provision should be made at this time for higher frequency channels in which experimentation and development may be conducted looking toward an improved service which may include color, higher definition and any other improvements which may occur. It is recommended that the channels be twenty megacycles wide, but that no other standards be established for them at this time.

12. In the 1944-1945 hearing, witnesses for CBS discussed the utilization of the UHF band for high definition monochrome and color television, and stated that their experimentation looked toward widening of the present 4-megacycle video band to 10 megacycles, requiring a total channel width of 16 megacycles, to be utilized for 735-line

¹ The Report of the NTSC recommended for commercial monochrome standards 525 lines, 30 frames, 60 fields, and a 6-megacycle channel.

monochrome transmissions and 525-line color transmissions. An RCA witness took the position that "the primary purpose of going to higher frequencies and wider bands should be to obtain adequate color television with at least as much detail as now obtained in black and white."

13. The Proposed Report of the Commission, issued Jan. 15, 1945, and the Final Report of the Commission, issued May 25, 1945 in Docket 6651, in general, reaffirmed the standards for monochrome in the VHF band. The UHF band was allocated to television experimentation for the purpose of developing color television and high definition monochrome television. The Final Report contained the following statement concerning the UHF band:

As was pointed out in the proposed report, the Commission is still of the opinion that there is insufficient spectrum space available below 300 megacycles to make possible a truly nation-wide and competitive television system. Such a system, if it is to be developed, must find its lodging higher up in the spectrum where more space exists and where color pictures and superior monochrome pictures can be developed through the use of wider channels. In order to make possible this development of television, the Commission has made available the space between 480 and 920 megacycles for experimental television. The time which may elapse before a system can be developed to operate on wider channels on these ultra-high frequencies is primarily dependent upon the resourcefulness of the industry in solving the technical problems that will be encountered. In this portion of the spectrum it is contemplated that the Commission will license the entire band between 480 and 920 megacycles for experimental television and will not designate any particular channels. Applicants desiring to operate in this portion of the spectrum should consult with the Chief Engineer as to the exact frequency band they should utilize.

The Commission repeats the hope expressed in its proposed report that all persons interested in the future of television will undertake comprehensive and adequate experimentation in the upper portion of the spectrum. The importance of an adequate program of experimentation in this portion of the spectrum cannot be over-emphasized, for it is obvious from the allocations which the Commission is making for television below 300 megacycles that in the present state of the art the development of the upper portion of the spectrum is necessary for the establishment of a truly nation-wide and competitive television system.

14. The Commission was requested for the first time to promulgate commercial standards for color television in a petition filed by CBS on Sept. 27, 1946. The CBS proposal requested the commercialization of color television in the UHF band, using a field sequential system with 525 lines and 144 fields, and utilizing wide band channels of 16 megacycles. The hearing on this proposal was held between Dec. 3, 1946 and Feb. 13, 1947. Demonstrations on the record of the CBS proposed system were held on Jan. 27 and 28, 1947.

15. Although the CBS system was the only one formally proposed to the Commission for adoption, RCA advanced for consideration a simultaneous system, disclosed to the public on Oct. 31, 1946. Testimony was taken concerning this system and a demonstration on the record of this system was held on Jan. 29, 1947. In the RCA simultaneous system each picture was scanned simultaneously in three colors, the three images were transmitted simultaneously on three video channels, and the images were combined optically at the receiver to produce a single color picture. Each of the three color pictures could have the same number of lines, frames and fields and the same standards as monochrome transmissions. As demonstrated, however, the system used a total channel of 14.5 megacycles, including 4-megacycle video bands for the green and red channels, and a 1.3 video bandwidth for the blue channel. Since the green signal was transmitted on the same standards as monochrome, except for the UHF carrier, the RCA color transmissions could be received on existing monochrome receivers in monochrome, provided a UHF converter was utilized. RCA mentioned the "mixed highs principle" as having "excellent promise of providing still further reduction in band width requirements."

16. As already indicated, RCA did not propose adoption of standards covering its system. Its purpose in disclosing the system was stated by Dr. C. B. Jolliffe, Executive Vice President in Charge of RCA Laboratories, as follows:

Again I wish to emphasize that the simultaneous color system is not disclosed at this time for the purpose of requesting adoption of standards for its operation. Under normal circumstances

It would not have been publicized until development had progressed to a more advanced stage.

It has become necessary, however, to describe this system in order to show that a superior system of color television is possible which is compatible with existing monochrome television and which can be adopted later without loss to the public and the broadcasters who have had enough faith in television to invest in the present excellent system.

The basic principles are established beyond question, although the engineering details are yet to be worked out. This will require some time, as Mr. Kell will explain, but the end result will be an excellent and practical system introduced without penalty to the existing service and without jeopardy to the investment of public and broadcasters in black-and-white television.

17. The CBS system was supported at the hearing by Zenith Radio Corporation and Cowles Broadcasting Company. Denial of the CBS petition was urged by RTPB Panel 6 (on Television), RMA, RCA, Philco, DuMont and Television Broadcasters Association.

18. The "Report of the Commission" (Mimeo. 5466), issued March 18, 1947, denied the CBS petition, saying, in part:

Before approving proposed standards, the Commission must be satisfied not only that the system proposed will work but also that the system is as good as can be expected within any reasonable time in the foreseeable future. In addition, the system should be capable of permitting incorporation of better performance characteristics without requiring a change in fundamental standards. Otherwise, the danger exists that the standards will be set before fundamental developments have been made with the result that the public would be saddled with an inferior service, if the new changes were not adopted, or if they were adopted, receivers already in the hands of the public would be rendered useless.

Judged by the foregoing test, the Commission is of the view that the standards for color television proposed by Columbia Broadcasting System should not be adopted. In the Commission's opinion the evidence does not show that they represent the optimum performance which may be expected of a color television system within a reasonable time. The Commission bases this conclusion on two grounds. In the first place, the Commission believes that there has not been adequate field testing of the system for the Commission to be able to proceed with confidence that the system will work adequately in practice. Secondly, the Commission is of the opinion that there may be other systems of transmitting color which offer the possibility of cheaper receivers and narrower band widths that have not yet been fully explored. Both grounds will be discussed in greater detail further on in the report.

19. In its Report, the Commission called for further experimentation in the color television field:

Two specific problems, in the Commission's opinion, should be carefully examined. In the first place, there should be further experimentation looking towards the development of low cost television receivers. A large portion of the radio spectrum has been allocated to television. The demand for space in the spectrum from other radio services is very keen and it is not possible to satisfy all requests. The objective of television heretofore mentioned of bringing news, education, culture and entertainment to large numbers of people cannot be carried out unless television receivers are manufactured and sold at a price which the average family can afford to pay.

Secondly, further experimentation should be conducted along the line of finding methods of transmitting color television over narrower channels. Under the Columbia proposals, each television channel would be 16 megacycles wide. That means that the band 480 to 920 megacycles would accommodate but 27 channels. It was the Commission's hope in allocating the band 480 to 920 megacycles for television that in this band it would be possible to provide for a truly nationwide competitive television system. The evidence before the Commission shows that 27 channels may not ultimately be enough to provide for a truly nation-wide competitive television system. Every effort must, therefore, be made to narrow the band width required for color television. It should be emphasized that narrowing the band width should not be at the expense of picture brightness, picture detail, color fidelity, or other features of television performance. The objective should be a narrower band width while retaining and even improving the quality of television performance.

At the hearing there was much testimony concerning the desirability of a system which would permit present television receivers, simply by adding a converter, to receive in monochrome, the broadcasts of stations broadcasting color programs in the 480 to 920 megacycle band. This so-called principle of compatibility, it is urged, will encourage manufacturers of black and white equipment to proceed at full pace, will enable the public to buy receivers with confidence that they will not be rendered obsolete, and will not impede the development of color television. The Commission is of the opinion that compatibility is an element to be considered, but that of greater importance, if a choice must be made, is the development of the best possible system, employing the narrowest possible band width, and which makes possible receivers capable of good performance at a reasonable price.

The Commission is of the opinion for the reasons which have been discussed that the petition of Columbia Broadcasting System

should be denied. In reaching this decision, the Commission does not desire to minimize in any way the advances that have been made in the development of color television. On the contrary, the Commission is of the opinion that Columbia Broadcasting System, Dr. Goldmark and the people who have worked under him are to be commended for their continuing interest in the field and for the great strides they have made in this field in so short a period. The Commission, however, cannot escape the conclusion that many of the fundamentals of a color television system have not been adequately field tested and that need exists for further experimentation along the lines noted above. It is hoped that all persons with a true interest in the future of color television will continue their experimentation in this field in the hope that a satisfactory system can be developed and demonstrated at the earliest possible date.

20. Color television was again explored by the Commission in the hearings held in these proceedings on Sept. 20 to 23, 1948, when the state of the television art in the UHF band was considered (Docket 8976). The Commission's order instituting this hearing contained the following issues:

3. To obtain full information concerning the state of development of transmitting and receiving equipment for either monochrome or color television broadcasting, or both, capable of operating in the band 475 to 890 Mc.

4. To obtain full information concerning any proposals for the utilization of the band 475 to 890 Mc., or any part thereof, for television broadcasting and the standards to be proposed therefor.

21. In the Sept. 20, 1948, UHF hearing, the Joint Technical Advisory Committee (JTAC), sponsored by the Radio Manufacturers Association and the Institute of Radio Engineers, presented a report on the "Utilization of Ultra-High Frequencies for Television" and submitted the following conclusion as to UHF color television:

Item 3 of the issues and questions before this hearing * * * states that information is requested on the use of ultra-high frequencies for color television. The JTAC reports that no proposals for standards for commercial operation of a color television system have been made to it. A letter from Mr. Adrian Murphy (Annex 16) outlines but does not propose two color television systems.⁵ The JTAC is of the opinion, based on evidence submitted to it by various subcommittees of the RMA and IRE, that it is impracticable to set up commercial standards for color television in the present state of the art.

The fact remains that even though the ultimate color service cannot be specified at this time, nothing should now be done that would prevent a later allocation of color channels. It is important, therefore, to consider the effect of an interim allocation of UHF channels to a 6-megacycle monochrome service on the eventual establishment of a color service.

If such interim 6-megacycle allocations are to be made, and if such channels are later to be converted to a color service, it is important to consider the bandwidth relationships of the two services.

* * * * *

In view of these facts (i.e., the difficulties in converting 6-megacycle uhf monochrome to wider band uhf color), the JTAC comes to the conclusion that it will be difficult, both in theory and practice, to provide for a conversion from uhf monochrome assignments to uhf color assignments. The JTAC believes, therefore, that any assignment of monochrome service to uhf channels would represent a permanent removal of the space so occupied from that available for any other service.

C. Color Phase of Instant Proceedings

22. As mentioned above, the color phase of the instant proceedings was instituted by the Commission's Notice of Further Proposed Rule Making (49-948), issued July 11, 1949. While in this notice the Commission did not propose specific amendments to its rules and standards looking toward the commercialization of color television, in Appendix A to the Notice the Commission described the conditions upon which it would consider proposals for a change in transmission standards on Channels 2 through 55 looking toward the establishment of color television. Paragraphs II-B and C of Appendix A stated in this connection:

B. The Commission will give consideration to proposals for a change in Transmission Standards on channels 2 through 55 looking toward color television or other television systems. Any such proposal shall:

1. Be specific as to any change or changes in the Transmission Standards proposed; and
2. Shall contain a showing as to the changes or modifications in existing receivers which would be required in order to enable them to receive programs transmitted in accordance with the new standards.

C. It is proposed to consider changes in Transmission Standards for Channels 2 through 55 only upon a showing in these proceedings that:

⁵ Mr. Murphy is a CBS vice-president.

1. Such system can operate in a 6-megacycle channel; and
2. Existing television receivers designed to receive television programs transmitted in accordance with present transmission standards will be able to receive television programs transmitted in accordance with the proposed new standards simply by making relatively minor modifications in such existing receivers.

23. Pursuant to the above notice, comments relating in whole or in part to color television were filed by the Joint Technical Advisory Committee (JTAC); the Radio Manufacturers Association;⁹ the Radio Corporation of America; the Columbia Broadcasting System, Inc.; Color Television, Incorporated; Charles Willard Geer; Leon Rubenstein; Philco Corporation; and Allen B. DuMont Laboratories, Inc. Webster-Chicago Corporation and American Television, Inc., also were made parties to the hearing upon their request. Celomat Corporation was permitted to testify in the hearing on its own behalf. CBS, CTI and RCA were the only parties who appeared as proponents of their own color television systems. The technical characteristics and performance of these three color television systems will be described hereafter.

24. The hearing on the color issues was held before the Commission *en banc* commencing Sept. 26, 1949 and ending May 26, 1950—a total of 62 hearing days, covering 9,717 pages of transcript. The hearing was held in two phases, the first of which ended on Nov. 22, 1949, at which time the hearing was continued to Feb. 6, 1950.⁷ The second phase commenced on Feb. 20, 1950 and ended on May 26, 1950. During the intervening period, the parties conducted field tests of color television systems pursuant to the Commission's "Notice Concerning Field Test Programs and Further Testimony," adopted Nov. 21, 1949 (FCC 49-1547). The hearings were held in Washington, D. C., except for the second comparative demonstrations of the CBS, RCA and CTI color television systems which were held on Feb. 23, 1950 at the Commission's Laboratories at Laurel, Maryland; the CBS demonstration of horizontal interlace held on April 26, 1950 at the CBS Laboratories in New York City; and the CTI demonstration held on May 17, 1950 at San Francisco, California. In all, 53 witnesses testified and 265 exhibits were offered. A list of the witnesses and a description of the exhibits are attached as Appendices A and B.

25. During the course of the hearing, the following demonstrations were conducted on the record of the proceedings:

(a) On Oct. 6 and 7, 1949, CBS demonstrated its color system at the Carlton Hotel, Washington, D. C.

(b) On Oct. 10, 1949, RCA demonstrated its color system at the Washington Hotel and the Wardman Park Hotel, Washington, D. C.

(c) On Nov. 21 and 22, 1949, a comparative demonstration was conducted at Temporary "E" Building, Washington, D. C., showing the operation of the CBS color system, the RCA color system, and conventional DuMont monochrome television receivers. At this demonstration, the Commission demonstrated a conventional Bendix television receiver equipped with the automatic adapter invented by members of the Commission's staff.

(d) On Feb. 20, 1950, CTI demonstrated its color system at the Statler Hotel, Washington, D. C.

(e) On Feb. 23, 1950, a second comparative demonstration was conducted showing the operation of the CBS color system, the RCA color system, and the CTI color system, at the Commission's Laboratories at Laurel, Maryland.

(f) On April 6, 1950, RCA demonstrated its trichromatic (three-color) receiving tubes at the Trans-Lux Building, Washington, D. C.

(g) On April 26, 1950, CBS demonstrated its horizontal interlace at the CBS Laboratories in New York City.

(h) On May 17, 1950, CTI demonstrated its color system at the St. Francis Hotel, San Francisco, California.

⁹ Radio Manufacturers Association has changed its name to Radio and Television Manufacturers Association.

⁷ On motion of certain parties, the CTI demonstration was extended from Feb. 6 to Feb. 20, 1950, and the second comparative demonstration was extended from Feb. 8 to Feb. 23, 1950 (See Commission's Order Extending Date of Second Comparative Demonstration, adopted Dec. 8, 1949, FCC 49-1622).

II. DESCRIPTION OF THE THREE SYSTEMS

A. General

26. In order better to understand the technical operation of the three color systems which have been proposed in these proceedings, it is useful to have a brief general description of how the present monochrome television system works and a discussion of some of the fundamental aspects of color television which are common to all three systems. It should be noted that many of the technical features of television systems are not capable of accurate description except in very technical terms or complicated formulae; these would not be intelligible to other than scientists or engineers. In order to make this Report as useful and understandable as possible to the public and interested persons with no specialized training, we have simplified the description considerably and have attempted to compare the operation of television systems to well-known techniques in the interest of understandability. This method, of course, does not have the precise accuracy of the more technical description but it will aid in understanding the technical problems involved. Those interested in the more technical aspects of the systems will find such material in the record.

27. A television picture originates in the television camera where an electron beam scans an image of the scene to be transmitted in a series of lines from left to right and top to bottom. The electron beam in the process of scanning generates signals which vary in amplitude in proportion to the relative lightness or darkness of the area in question. As the scanning beam reaches the right hand end of each line, it snaps back to the left hand of the scene and scans another line. This process is repeated until the scene has been scanned from top to bottom. At this point the scanning beam snaps back to the left hand top of the picture and starts the scanning process all over again.

28. From the above, it might appear that the lines are scanned consecutively; and, indeed, in the early experimental days of television this was done. However, it was soon discovered—and this was one of the fundamental developments in early television—that certain advantages could be gained at the expense of only relatively minor disadvantages by scanning alternate lines.⁸ Thus, the electron beam scans line 1, skips a line, scans line 3, skips another line, scans line 5, and so on to the bottom of the picture, scanning only the odd lines. The electron beam then snaps back to the top of the picture and scans all the even lines. This process is known as "line interlace" or "vertical interlace."

29. At the receiver the process set forth above is repeated. The signals which have been generated by the scanning beam at the camera are received on an antenna connected with the receiver. At the receiver there is also an electron beam which operates in the same fashion as and in step with the one in the camera. The light and dark portions of each line are reproduced on the face of the tube to correspond to the original scene by the action of the electron beam in varying the amount of light generated on the face of the tube in proportion to the amplitude of each signal as generated at the camera.

30. In the preceding paragraph, mention was made of the fact that the electron beam at the receiver is in step with the scanning beam at the camera; this is indispensable if a picture is to be achieved. This result is accomplished by means of synchronizing pulses which are generated at the station by means of a synchronizing generator and are transmitted along with the signals already referred to. For the purposes of this description there are horizontal synchronizing pulses and vertical synchronizing pulses. The horizontal synchronizing pulse comes at the beginning of each line. Its function is to make sure that the electron beam snaps back to the position on the left at the correct time. The vertical synchronizing pulse comes at the beginning of each field—i.e. each time the electron beam has scanned from the top of the scene to the bottom—and is designed to assure that the electron beam will

⁸ The explanation for this is set forth in Paragraph 32, below.

snap back to the position at the top of the picture at the appropriate time. During the time that the electron beam is in the process of being snapped back at the end of each line or field, appropriate blanking pulses are transmitted which are designed to black out the electron beam in order to obscure the retrace of the scanning beam.

31. Television reproduction is somewhat similar to the operation of motion pictures. In motion pictures a rapid succession of still pictures is projected on the screen. If the pictures are projected rapidly enough, the eye through the persistence of vision, sees the result as an uninterrupted image. In television, the process also makes use of the persistence of vision in a similar fashion except that the individual pictures are formed by a rapidly moving electron beam instead of the entire scene being shown at once.

32. There remains for discussion the ascertainment of the number of lines and number of fields per second in the present television system. A system should have a sufficient number of lines to portray the finer vertical detail in the picture. A sufficient number of fields per second is desirable for two reasons. In the first place, in order to have smoothness of motion portrayed, the fields must succeed each other at a rapid rate. If the rate is too slow, the motion will be jerky. In the second place, a high field rate is necessary in order to avoid flicker. If the field repetition rate is too low, annoying flicker is apparent unless the picture is very dim. By increasing the field rate, it is possible to have pictures of adequate brightness with no flicker.⁹

33. However, fundamental laws of physics must be reckoned with in establishing standards for lines and fields per second. A television station broadcasts on a channel 6 megacycles wide. Under our present standards about 4 megacycles of video information can be utilized for the picture. Within a 4 megacycle band must be accommodated adequate lines for vertical detail, horizontal detail (usually expressed in terms of lines also) and field repetition rate.¹⁰ Any number of combinations of these variables may be utilized within a 4-megacycle band but in choosing a combination, care must be used to make sure that the result is a balanced picture with adequate detail and a sufficient number of fields per second to make possible smoothness of motion and adequate brightness of pictures without objectionable flicker. The values which the Commission has adopted for black and white television are 525 lines per picture, 30 frames per second, and 60 fields per second. With this combination the horizontal resolution in terms of lines is 380.¹¹ To express the same result in another manner, the present standards provide for a horizontal synchronizing pulse rate—the number of times per second a horizontal synchronizing pulse is required to snap back the electron scanning beam—of 15,750 (525 x 30) and a vertical synchronizing pulse rate of 60. As has already been stated, any one of the above values can be changed but when this is done a change in one or more of the other values is automatically required if a 4-megacycle band is utilized.

34. Thus far, we have described generally the operation of monochrome television. So far as color television is concerned, in theory it is accomplished in the same way as monochrome television except that each picture is sent three times, once in each of the three primary colors utilized—red, green and blue. These primary components

may be transmitted simultaneously, as they are in color movies, or sequentially at a sufficiently rapid rate so that the persistence of vision causes the eye to blend them together. All of the systems proposed in this hearing are sequential systems; the major differences lie in the scanning patterns and the rate at which the primary colors are changed. The larger the area continuously sent in one primary the less rapidly will the color changes occur. The scanning pattern and the color switching rate determine the apparatus requirements and the success of maintaining the illusion of continuity. The Columbia system is a field sequential system, in which the colors are changed between each field 144 times per second, and color pictures are transmitted at a rate of 24 per second. The CTI system is a line sequential system, in which the colors are changed between each scanning line at a rate of 15,750 times per second, and color pictures are transmitted at a rate of 10 per second. The RCA system is a dot sequential system, which involves a color change between elemental picture areas along each scanning line, and a switching rate of about 11 million times per second. Color pictures are transmitted at a rate of 15 per second.

35. It would appear from the foregoing that a video channel three times the width of the monochrome channel would be required for color television. However, by means of certain band-saving devices or by a change in one or more of the factors set forth in Paragraph 33, or by a combination of both methods, each of the proponents has devised a system that is designed to work in a 6-megacycle channel. These processes are described in detail later on in this Report in connection with each of the systems.

B. The CTI System

36. It is difficult to make an adequate description of the CTI system because it was frequently changed during the course of the hearing, technical witnesses for CTI were not in complete agreement, and some of the more complicated points were never clearly expounded by CTI. We have, however, endeavored to make as complete and accurate a description as possible.

37. As has already been indicated, the CTI system is a line sequential system. In this system, scanning is at the same rate as in the monochrome system—15,750 lines and 60 fields per second. The system derives its name from the fact that as the scanning of each line is completed, the color is changed. Thus, line 1 is scanned in red, line 3 in green, line 5 in blue, line 7 in red, and so on to the bottom of the picture. This completes a field and the scanning beam snaps back to the top of the picture where the even lines are then scanned in the same fashion. Thus, at the end of the second field, all of the lines have been scanned once, but each line will have been scanned in but one color. In order for each line to be scanned in each color, it is necessary to change the initiation of the color scanning between fields. Otherwise, in field 3, line 1 would be scanned in red again, line 3 in green, line 5 in blue, and so on. It is thus necessary to provide, for example, that in field 3, line 1 be scanned in green and in field 5, in blue. This change in the initiation of the color scanning insures that each line is scanned in each of the three primary colors. As a result, it takes six complete fields within which all lines are scanned in all colors. Thus, in this particular system, 10 color pictures are completed each second.

38. If a uniform change in the initiation of color scanning—such as is described in the preceding paragraph—were utilized, a serious line crawl would be apparent across the image. Several sequences of non-uniform shifts were demonstrated by CTI in an effort to minimize line crawl. One of the earlier shifts was called the single shift and resulted in scanning each picture line in only two of the three primary colors. This shift was abandoned by CTI in favor of a double shift. Several variants of the double shift were described by CTI witnesses. The most recent form of double shift and the one presently urged by CTI was demonstrated in San Francisco on May 17, 1950. It is called the interlaced shift. In this system, the order of scanning is changed from the normal pattern where odd

⁹ The relation between the field repetition rate and flicker explains the importance of line interlace discussed in Paragraph 28. Experience has shown that so far as large area flicker is concerned, doubling the field rate with interlace is comparable to doubling the frame rate without interlace. Thus, for a given flicker threshold, line interlace requires only one-half of the scanning speed, and thus for a given amount of picture detail requires but one-half as much band width. This makes possible more effective channel utilization.

Flicker can also be reduced by the utilization of tubes with long persistence phosphors as explained in paragraphs 58-60.

¹⁰ In addition, the necessity of allowing time for vertical and horizontal blanking prevents the continuous use of the band width for transmission of picture detail.

¹¹ This is the approximate theoretical capacity of the system, ignoring blanking time. The present standards provide that 82 to 86 percent of the line scanning time may be used for horizontal blanking and 5 to 8 percent of the lines are lost during vertical blanking.

lines are first scanned and then even lines, so that the odd lines are scanned in three successive fields, then the even lines are scanned in three successive fields, and so on. The color sequence scanning is so arranged that adjacent lines are not scanned in the same color in successive fields and the progression of color from line to line is revised at intervals not in excess of three succeeding fields. Ten complete color pictures per second result from the interlaced shift. An additional synchronizing pulse is required during the vertical blanking period for the operation of the color-shift.

39. The apparatus with which CTI demonstrated its system may be briefly described as follows: At the transmitting end there is a single camera tube, upon the surface of which the optical system projects three primary color images of the scene, side by side—red, green and blue. The electron beam starts scanning at the left which is in the red area. This portion of the tube responds only to red components and as the electron beam scans through this red portion, it generates signals which vary in amplitude in proportion with the relative intensity of the red components. It takes $1/15,750$ of a second to complete line 1—the time required under our present standards for the scanning of one line. At the expiration of this time, the scanning beam enters the green area and since the electron beam scans at a sloping angle, the beam is now at line 3. This line is scanned in green in $1/15,750$ of a second. The scanning beam then enters the blue area at line 5 and scans this in blue in $1/15,750$ of a second. The electron beam then snaps back to the left hand side of the picture to scan line 7 in red, and so on until one field is completed in $1/60$ of a second. The process is then repeated for successive fields. At the receiver, a similar scanning process is employed in connection with a cathode-ray tube having three vertical bands of color primary phosphors—red, green and blue. A suitable optical system is employed to superimpose the three color images on a viewing screen.

40. All of the synchronizing signals, horizontal and vertical, employed in the case of monochrome are also utilized in the CTI system; there are also additional synchronizing signals discussed above. The CTI color receiver must be so constructed that it does not react to each horizontal synchronizing pulse in the same manner as a monochrome receiver. If it did, the scanning beam would be snapped back to the left hand of the picture when the first pulse is transmitted—at $1/15,750$ of a second. However, at that moment the scanning beam has only traversed the first third of the tube's surface—the red portion—and must still scan across the green and blue surface. Accordingly, appropriate circuits are required to make sure that the scanning beam is snapped back only after every third horizontal pulse. This can be accomplished by appropriate counting circuits or by adding an appropriate pulse during the blanking period of each third horizontal pulse.

C. The CBS System

41. In the CBS system scanning is accomplished in the same manner as in the present system. First, all of the odd lines are scanned and then the even lines, and so on. The effect of color is achieved by the fact that when the odd lines are scanned in the first field, they are scanned in red; the even lines of the second field are scanned in blue; the odd lines of the third field are scanned in green; the even lines of the fourth field are scanned in red; the odd lines of the fifth field are scanned in blue; and the even lines of the sixth field are scanned in green. Thus, it takes six complete fields to produce one complete color picture. The fact that the color is switched at the end of each field gives the CBS system its name, field sequential system.

42. The CBS system does not utilize the same scanning standards as does monochrome television. Instead of 525 lines the CBS system has 405 lines. The theoretical horizontal resolution in terms of lines is reduced from 380 lines to 205. A field rate of 144 per second is employed instead of 60, and 24 complete pictures per second result

rather than 30. Under the CBS system the horizontal synchronizing rate is 29,160 per second¹² as compared with 15,750 per second for black and white, and the vertical synchronizing rate is 144 per second as contrasted with 60 per second for black and white.

43. During the latter stages of the hearing, CBS offered testimony concerning the utilization of horizontal interlace in its system as a means of improving horizontal detail; it did not offer horizontal interlace as a proposal. A demonstration of this process was held on the record in New York City on April 26, 1950. In this system, each line is broken up into picture elements with blank spaces in between. In the first field, alternate dots are sampled for the odd lines; in field two, alternate dots are sampled¹³ for the even lines. The blank spaces are filled in by successive fields. It thus takes 12 fields to produce a complete color picture and as a result 12 complete color pictures per second occur. However, even with horizontal interlace, color switching in the CBS system occurs after each field, the horizontal interlace being used to increase the horizontal resolution.

44. The apparatus utilized by CBS to demonstrate its system can be described as follows: At the camera a rotating disc containing segments of red, blue and green filters is inserted between the lens and the tube. The disc rotation is coordinated with the field scanning rate of 144 per second. In the $1/144$ of a second that the red filter is in front of the tube, all of the odd lines are scanned. Since the filter transmits red components, the scanning beam generates signals that vary in amplitude in proportion to the varying intensity of the red components of the scene being transmitted. The same process is repeated for each field. At the receiver a rotating disc with colored segments is placed in front of the cathode-ray tube. When the receiver is turned on and the motor attains its full speed, the color disc may or may not be in proper stop with the disc at the camera. If the colors are false, as indicated by skin tones or other obvious color faults, the viewer presses a button to place the disc in step. This may require one or two pushes of the button. Once the correct color position is attained, the synchronizing pulses automatically keep it correct. The scanning at the receiver repeats the process at the camera end, and a color picture results. At the New York demonstration, CBS also demonstrated a projection receiver somewhat similar to that employed by CTI. In addition, at the Laurel demonstration, it demonstrated a receiver which automatically chose the correct color. This requires an extra synchronizing signal to insure correct color phase.

D. The RCA System

45. It is difficult to make an accurate description of the RCA system because it involves new and complex techniques, many of which were never clearly expounded during the hearing. We have, however, endeavored to make as complete and accurate a description as possible.

46. The RCA system unlike the other two systems involves a change in the scanning method utilized under the present system. As will be recalled, under the present system the electron beam scans a line continuously from left to right, skips a line, scans another line, and so forth until the end of the field. The lines that were not scanned during the first field are then scanned in the second field. This is line interlace and the process is retained in the RCA system. What RCA has done is to add a process called dot interlace. As the name implies, dot interlace is accomplished by scanning each line in a series of dots rather than continuously. As illustrated in the table below, during the first scanning field, the odd numbered lines are scanned in order. Colored dots are laid down in order along line 1 as shown. Next, line 3 is scanned with a displacement for each color dot shown. The remaining odd

¹² This figure is derived as follows: Each complete picture per second has 405 lines. Each of the 24 complete color pictures is composed of three 405 line pictures made up of red, blue and green components. Thus, $405 \times 24 \times 3 = 29,160$.

¹³ A description of sampling is set forth in Paragraph 51 in connection with the RCA system.

lines are scanned in order. This scanning of the first field takes place in 1/60 of a second.

47. During the second field, the even lines are scanned, first line 2 with the colors laid down as shown, then line 4, and so on. The dot pattern laid down during the third field is shown by the lower diagram where the odd lines are scanned in succession. During the fourth field, the even lines are again scanned in succession with the color dot pattern shown. Thus, the odd lines are scanned during the first field, but dots of the same primary color are separated by spaces. The even lines are scanned during the second field, again with spaces between like color dots. During the third field, the odd lines are again scanned but with the color dots displaced so that the spaces are filled. The even lines are scanned during the fourth field, with the color dots displaced to fill in the spaces left during the second field scanning. Four scanning fields are required to completely cover the picture area, with all spaces filled, with say, green dots. Simultaneously, the area is being covered with red dots and with blue dots. Since there are 60 fields per second, it may be said that there are 15 complete color pictures per second.

Line	1st Field	Line	2nd Field
1	G R B G R B	1	B G R B G R
2		2	G R B G R B
3	B G R B G R	3	
4		4	B G R B G R
5	G R B G R B	5	
6		6	B G R B G R

Line	3rd Field	Line	4th Field
1	B G R B G R	1	G R B G R B
2		2	B G R B G R
3	G R B G R B	3	
4		4	B G R B G R
5	B G R B G R	5	
6		6	G R B G R B

Combining the above lines, dots and fields into one table, we have the following representation of a complete color picture (the numbers in the table refer to fields):

Line	G	B	R	G	B	R	G	B	R	G	B	R
1	1	3	1	3	1	3	1	3	1	3	1	3
2	4	2	4	2	4	2	4	2	4	2	4	2
3	3	1	3	1	3	1	3	1	3	1	3	1
4	2	4	2	4	2	4	2	4	2	4	2	4
5	1	3	1	3	1	3	1	3	1	3	1	3
6	4	2	4	2	4	2	4	2	4	2	4	2

48. Scanning is accomplished in the following manner: The RCA color camera consists of three separate camera tubes, each of which is capable of response to 4 megacycles. In front of these tubes is an optical system consisting of dichroic mirrors and lens. The dichroic mirrors are so constructed that each one reflects only one of the three primary colors—green, blue, red. The light reflected by each such mirror falls upon the photosensitive surface of one of the three camera tubes. Each of the camera tubes has applied to it the same horizontal and vertical scanning pulses from a common synchronizing generator. The electron scanning beams in the three tubes thus scan the entire scene simultaneously and generate separate signals. Of course, the signals generated by the scanning beam in the green tube vary in amplitude in proportion to the relative intensity of the green components of the picture being scanned and similarly for the blue and red cameras.

49. Thus, three signals are derived from the camera tubes, each with a response out to four megacycles. Since these signals must be transmitted in a 4-megacycle video band, some method must be devised of combining or merging these signals for purposes of transmission. To understand how this is done, a discussion of the so-called mixed-highs principle is necessary.

50. As was set forth above, each of the three camera tubes in the RCA system is capable of response out to four megacycles. Where a picture being scanned does not have fine detail, the full response of 4 megacycles is not neces-

sary. Coarse detail can be transmitted by a camera with a much narrower response—e.g., 2 megacycles. The response between 2 and 4 megacycles is necessary for fine detail. During the hearings RCA presented evidence designed to show that the human eye is not at all sensitive to fine detail in color; that the physiology of the eye is such that it can distinguish colors only in coarse detail; for example, the eye can recognize color in a piece of colored string but cannot in the case of a single strand of colored thread held at any appreciable distance from the observer. RCA testified that it devised a system whereby the coarse detail of the picture (e.g. from 0-2 megacycles) is transmitted in color whereas the fine detail in each of the colors (e.g. from 2-4 megacycles) are "mixed" together and transmitted as black and white pictures. The two signals are then transmitted together and give a color picture composed of the low frequency components (0-2 megacycles) for each of the three primary colors and the mixed highs (2-4 megacycles) as black and white.

51. It is claimed that the above process has saved band width. Instead of 12 megacycles being required to transmit three 4-megacycle signals, the requirement is reduced to eight megacycles—2 megacycles for each of the 3 low frequency color signals and 2 megacycles for the mixed highs. Of course, even 8 megacycles are too much for the 4-megacycle band available. RCA endeavors to save the rest of the space by a process known as dot interlace which involves color sampling. Part of the band saving comes from the fact that it requires four fields instead of two in order to completely scan the picture area once as illustrated in paragraphs 46 and 47. The rest of the apparent band saving comes from permitting a certain amount of cross talk (dilution of color and contrast) in the picture. Each of the 3 signals passes through appropriate electrical filters. These filters separate the low frequency components (0-2 megacycles) out of each of the three color signals. The low frequency color signals are sent to an electronic commutator or sampler. The remaining high frequency components are combined into mixed highs. The sampler operates as an automatic high speed valve that opens and closes at a rate of approximately 11 million times per second. The three color signals enter the sampler. The sampler is so arranged that each 3.6 millionth of a second the sampler opens the valve to the green, red and blue signals in sequence and permits that portion of the particular color signal to pass through to a so-called adder circuit. Thus, instead of transmitting the entire 2-megacycle component for each of the 3 colors, a dot sample is taken at regular intervals. The sampling sequence and the method of dot interlace for the samples taken in successive fields have been described in paragraphs 46 and 47.

52. The mixed highs are also fed into the adder circuit, referred to in the preceding paragraph. The appropriate synchronizing signals¹¹ are added at this point also and all the signals are then sent to the transmitter.

53. The apparatus utilized by RCA to demonstrate its system has already been described so far as the camera is concerned. The receiving apparatus demonstrated at the original October demonstration consisted of projection receivers, and direct view receivers employing two or three color tubes and dichroic mirrors. The two-tube dichroic mirror receiver, showing two-color television, was not demonstrated again and an RCA witness testified that "the need for a two-color process will be pretty much submerged" when a tri-color tube is developed. Likewise, the projection receivers were not exhibited again after the original demonstration, and until the April 6, 1950, demonstration all receivers shown by RCA contained dichroic mirrors and three cathode-ray tubes. At the April 6 demonstration, two models of a direct view color tube were demonstrated—one with three electron guns and the other with a single electron gun. RCA described these tubes as

¹¹ In addition to the usual horizontal and vertical synchronizing pulses, an extra synchronizing pulse, consisting of a burst of the sampling frequency, is added after each horizontal pulse during the blanking period. Its purpose is to keep the color sampler at the receiver and the one at the transmitter in step with each other.

follows: In each model the screen of the tube consisted of 117,000 groups with 3 primary color phosphor dots in each group. Between the electron gun and the screen was a mask with 117,000 holes in registry with the dot groups. On the tube with three guns the signals were applied to the three guns in the same manner as to three separate kinescopes. The angle of arrival from each gun was so arranged that each beam hit the hole in the mask in such a way as to line up correctly with the appropriate dot of color phosphor. In the one-gun model the signals were applied to the gun sequentially and the beam was rotated by appropriate deflection circuits keyed to the sampler to insure the correct angle of arrival at the holes in the mask. An RCA witness testified that it was part of the RCA development program to increase the number of picture dots in the tri-color tube with a view to doubling them. The tri-color tubes demonstrated provided a picture about the size of a 14-inch monochrome tube, but RCA testified that there was no reason why a larger tri-color tube could not be made.

III. EVALUATION OF THE THREE SYSTEMS

A. General

54. In the preceding section of this Report, we had a description of each of the three proposed color systems. In this section of the Report we will evaluate the three systems under each of 9 headings. It should be recognized that when a composite picture is segmented for the purpose of analysis, there is inevitably some overlapping in the categories and some of the characteristics that are included under one heading could just as well have been included under a different heading. The evaluation of the three systems is based upon the testimony and evidence in the record and upon the observations which the Commission had an opportunity to make at the demonstrations held on the record. In making this evaluation consideration is given to each of the systems as demonstrated in these proceedings and also to potentialities for improvement which may be inherent in the systems, based upon developments disclosed in the record.

B. Flicker, Motion Continuity, and Allied Effects

1. General

55. There are three subjects which are covered by this heading: large area flicker, small area flicker, and continuity of motion. Large area flicker is a problem in television as in motion pictures. The problem arises from the fact that appearance of motion is achieved by a rapid succession of pictures thrown on the viewing surface. The pictures themselves are illuminated on the viewing surface, but during the period that a picture is being changed the viewing surface is dark. If the rate of change of pictures is too slow, noticeable flicker appears on the screen which is very annoying to the viewer and the brighter the picture the more annoying the flicker. Thus, a fast repetition rate is important to eliminate flicker. The rate must be high enough so that a picture of adequate brightness is possible; the higher the repetition rate the brighter the picture which can be viewed without flicker. In monochrome television a repetition rate of 60 fields per second is employed.¹⁵

56. Small area flicker is a problem for television but not for motion pictures. In motion pictures a complete still picture is transmitted as a whole, but in television adjacent lines on the face of the tube are scanned during different fields as a result of line interlacing and this gives rise to interline flicker. In dot interlace television systems there is, in addition, inter-dot flicker. Both are considered under small area flicker.

57. The problem of continuity of motion has two aspects. First, in order to achieve smoothness of motion and avoid jerkiness, the picture repetition rate must be sufficiently high so that the persistence of vision in the eye creates the

¹⁵ The ability to observe flicker varies from person to person. It is affected by the amount of illumination in the room, the high-light brightness of the picture, the field rate, the luminosity in case of color, the relative duration of light to darkness, and also by the ratio between the picture height and the distance of the viewer from the screen.

illusion of smooth motion. The second aspect of the problem deals with the ability of the system to portray moving objects. Where a moving object is being scanned, it is apparent that it will be in a slightly different position in each of successive fields. There is a tendency for moving objects to be smeared and for detail to be lost. The faster the field repetition rate, the better the results that can be expected with respect to continuity of motion.

58. In order to understand the potentialities for improvement in the three systems so far as flicker is concerned, an understanding of the decay nature of phosphors is necessary. The phosphor utilized on the receiving tubes in television receivers has the property of being illuminated when hit by the electron scanning beam. The illumination remains for a time after the scanning beam has moved on, but shortly thereafter the illumination ceases. This cessation is not abrupt but gradual; hence the expression, the "decay" characteristics of phosphor. "Slow decay phosphors" and "long persistence phosphors" are correlative terms and are used interchangeably in this Report.

59. In practice, the phosphors presently utilized are fast decay phosphors. It can readily be seen that by utilizing slow decay phosphors, there is a good deal of room for reducing the flicker problem without increasing the field rate, or conversely to reduce the field rate and permit an increase in resolution. This is due to the fact that slow decay phosphors by their nature increase the time that the tube face is illuminated and decrease the time that it is dark. Since flicker is produced by the alternation of light and dark time on the viewing surface, anything that decreases the amount of dark on the viewing surface has an effect so far as flicker is concerned similar to increasing the repetition rate. There has been no incentive for the utilization of slow decay phosphors in our present system since the repetition rate is high enough to provide adequate brightness without flicker even when fast decay phosphors are used.

60. There was testimony in the record concerning long persistence phosphors and a demonstration of one such phosphor was held on the record in the CBS Laboratory in New York on April 26, 1950. The tri-color tubes shown at the RCA demonstration of April 6, also had long persistence phosphors. While the Commission is anxious to see further testing conducted, we are nevertheless able to find on the basis of this record that long persistence phosphors are practical and can be taken into account in considering the potentialities of the systems under consideration.

61. During the hearing frequent reference was made to receiver storage tubes. A storage tube is a specialized long persistence tube. It has the property that once it has been illuminated, it will retain that level of illumination until replaced by a different level of illumination; the change is instantaneous. If such a tube were developed for use in home television, it would reduce flicker substantially since it would shorten the blackout period on the viewing screen. However, no demonstration was made of such a tube nor was any evidence offered that such a tube has been developed, or could be developed within the foreseeable future. Accordingly, we are unable on this record to take storage tubes into account in arriving at our decision.

2. The CTI System

62. As has been indicated, the susceptibility of a television system to large area flicker depends on the number of fields per second. The CTI system has a field rate of 60 per second, the same as the present television system and should have about the same performance characteristics on this score when showing black and white pictures. So far as color pictures are concerned, insufficient evidence was offered as to whether the flicker characteristics are the same as for black and white pictures. There was no flicker observed at any of the demonstrations on the record but it should be noted that the pictures had very low illumination.

63. There is a problem in the CTI system so far as small area flicker is concerned. In all of the demonstra-

tions there was a most noticeable line crawl or jitter, which seriously marred the quality of the transmitted picture. The line crawl apparently results from the fact that there is a relatively low line repetition rate in each of the primaries and the eye thus tends to follow each line down. As was pointed out above, line crawl is inherent in a line sequential system where the shift in initiation of colors is uniform. The purpose of the various shifts developed by CTI was to eliminate the problem, but they did not accomplish this purpose. Although the last shift demonstrated—the interlaced shift—may have reduced line crawl somewhat, it still remains to a prominent degree. This line crawl or jitter was noticeable even with the very low level of picture illumination that CTI was able to produce on its projection receiver. Since line crawl is a flicker phenomenon, it can be expected to be intensified with increased brightness. This turned out to be the case at the San Francisco demonstration where the CTI color transmissions utilizing the interlaced shift were received on a 3-tube, dichroic mirror type of receiver. This receiver produced higher brightnesses than the other CTI receivers and, as was to be expected, the line crawl was more noticeable. It can be expected that the development of tubes with long persistence phosphors would reduce the line crawl but to what extent is not known since no demonstration has been held and line crawl may very well be an inherent defect of the CTI line sequential system. Moreover, it should be noted that if the phosphor was of long enough persistence to eliminate the problem of line crawl, the effect on color fidelity and the portrayal of objects in motion would have to be carefully evaluated.

64. So far as continuity of motion is concerned, the CTI system produces no more than 10 color pictures per second. No problem was evident at the demonstrations as to continuity of motion but such demonstrations involved only pictures of low illumination.

3. The CBS System

65. The CBS system has a field repetition rate of 144 per second. However, the primary color repetition rate is 48 per second. It is this latter figure that is utilized in assessing the susceptibility of the system to large area flicker in color pictures. Why this is so can be illustrated by the situation where a scene is being scanned that has large areas of green in it—or any other single primary. When the field containing the green components is on the screen, the tube will be illuminated. The tube face will be relatively dark thereafter until the green field appears again in 1/48 of a second. Thus, in effect there is a repetition rate of 48 per second so far as flicker is concerned under the circumstances described above.¹⁹

66. CBS testified that the flicker in its disc type receiver became noticeable at 24 foot lamberts¹⁷ (for a 7 to 1 viewing distance) and that flicker did not become objectionable until a higher figure of brightness was reached. Flicker is a physiological phenomenon that varies from person to person and hence is not capable of exact measurement. However, on the basis of the record, the Commission is able to find that flicker is not objectionable on the CBS disc type receiver up to highlight brightnesses of from 20 to 30 foot lamberts. The present black and white television system with a field rate of 60 has a flicker threshold many times that of the 24 foot lambert figure mentioned above, although there is serious doubt as to whether such highlight brightnesses are used by the public.¹⁸ If

¹⁷ When a black and white picture is shown, the susceptibility to flicker would probably be less than for a color picture.

¹⁸ A foot lambert is the unit for measuring the brightness of light reflected from a surface.

¹⁹ The only testimony on this subject was given by John V. L. Hogan, Vice-Chairman of JTAC, testifying as a witness for CBS, and T. T. Goldsmith of DuMont. Hogan's testimony was based upon a survey in stores of 75 new receivers of various makes which showed that only 0.7 of 1% of such sets had a highlight brightness reading of between 28 and 30 foot lamberts; the largest percentage was between 18 and 20 foot lamberts; and the average was 17. Goldsmith testified on direct examination that he had measured DuMont receivers and that 120 foot lamberts were typical. On cross examination, he testified that the average was 50 foot lamberts. The Commission does not believe that there is sufficient evidence in this record upon which to base a finding as to the level of brightnesses at which sets are operated in the home. Nor

tubes with long persistence phosphors were utilized, it would be possible to increase brightness several fold with no flicker problem. A CBS witness testified that brightness could be increased to more than 100 foot lamberts without flicker, but it is not possible to predict the exact extent of such improvement without further testing. It should be noted, however, that there is a limitation on the use of very long persistence phosphors with a disc type receiver. To illustrate, when a field is scanned in red, the red filter is in front of the tube. In the next 1/144 of a second, the blue filter is in front of the tube. If there is still any substantial illumination left, it will merge with the illumination from the blue signal.

67. No problem of small area flicker was observed at any of the demonstrations on the record. However, if horizontal interlace were utilized, a certain amount of small area flicker might appear which can best be described as dot motion or twinkle. Since it is a flicker phenomenon, tubes with long persistence phosphors should minimize the problem. The magnitude of this flicker cannot be ascertained without further study.

68. As to continuity of motion, no problem was experienced at any of the demonstrations on the record.

4. The RCA System

69. The RCA system has 60 fields per second and its performance as to large area flicker is the same as the present system, so far as black and white pictures are concerned. So far as color pictures are concerned, insufficient evidence was offered as to whether the flicker characteristics are the same as for black and white pictures. There was no flicker observed at any of the demonstrations on the record, but it should be noted that the pictures had very low illumination.

70. At the demonstrations on the record small area flicker in the form of dot motion or twinkle has been observed. How serious a problem this is cannot be entirely ascertained at this time since the RCA demonstrations produced only a dim picture. With increase in brightness of the picture to the level necessary for home use, the effect will be accentuated, although it is possible that this effect may be overcome or minimized by the utilization of tubes with long persistence phosphors. The extent of such improvement cannot be determined without further testing. If the phosphor is of long enough persistence to reduce substantially the above defects, the effect on color fidelity and the portrayal of objects in motion would have to be carefully evaluated.

71. As to continuity of motion, no problem was observed at any of the demonstrations on the record with the low level of illumination present in the picture.

C. Brightness-Contrast

1. General

72. Under the preceding heading we discussed the problem of brightness as it related to the question of flicker. In this part brightness will be considered from the point of view of adequacy—is the picture bright enough so as to give a sufficient contrast range²⁰ and so as to be capable of being viewed under normal home viewing conditions? There is no precise ratio for satisfactory contrast; it is a matter of choice with the individual viewer. In general, the wider the contrast range the better, since there is more flexibility for reproducing shades of gray in black and white pictures and shadings of color in a color picture. Based upon the demonstrations on the record, a contrast ratio of 30 to 1 for color pictures produces a very satisfactory picture.²¹ However, with receivers operating in

is it necessary that we do so because, as will be pointed out below (Paragraph 74) 20 to 30 foot lamberts are sufficient for disc type receivers and long persistence phosphors make higher brightnesses without flicker possible on other types of receivers.

²⁰ The contrast range is determined by the ratio of brightness between the brightest and darkest portions of a picture. The brightest portion of the picture is determined by the amount of illumination which is produced by the scanning beam. The darkest portion is determined by the amount of light which the tube surface will reflect; the light in general comes from illumination in the room where the picture is being viewed.

²¹ So far as black and white pictures are concerned, it is possible that a higher contrast range is required since color by its nature gives contrast to a picture.

normally lighted rooms with brightnesses of the order indicated in the Hogan testimony, a much lower contrast ratio is achieved. The Commission has no reason to believe that these pictures are not satisfactory to the viewers.

2. The CTI System

73. At none of the demonstrations did any of the CTI receivers possess sufficient brightness. The highest measured brightness for a CTI receiver was 4 foot lamberts, although an RCA type of receiving equipment employing three tubes with dichroic mirrors was able to produce a brighter picture at the San Francisco demonstration. The CTI pictures were so dim that all CTI demonstrations had to be conducted in a room that was virtually dark. It should be noted that the failure to produce brighter pictures is undoubtedly due in large measure to the particular type of apparatus used and there is no reason to believe that the CTI system is incapable of generating much brighter pictures. However, as has already been indicated, higher brightnesses complicate the problem of line crawl which is already serious even at the low level of illumination demonstrated by the CTI system.

3. The CBS System

74. The amount of brightness which can effectively be utilized is determined by the flicker level. This figure is 20 to 30 foot lamberts on CBS disc receivers. The maximum figure achieved for a disc receiver at a demonstration on the record was 22 foot lamberts. We are of the opinion that the color picture so produced is bright enough and has sufficient contrast range to be entirely adequate for use in the home under normal viewing conditions. Indeed, the CBS demonstrations were the only ones that were conducted in a lighted room and during one of the demonstrations a light from a 300-watt lamp was thrown directly on the face of the receiver without seriously affecting the quality of the picture. This is possible because the disc operates as a two-way filter so far as illumination in the room is concerned; that is, any light that is reflected from the tube which originates in the room must pass through the disc on its way to the tube and the light that is so reflected must pass through the disc again on its way out. By way of illustration, if the disc utilized permits 10% of the light to pass through, filtering out 90%, it would be possible to view a 20-foot lambert picture on the CBS disc receiver in a room with an illumination of 67 foot lamberts and still retain a contrast ratio of 30 to 1.²¹

75. As was pointed out previously, higher brightness without flicker are possible in the CBS system by the utilization of tubes with long persistence phosphors. Tubes with long persistence phosphors cannot be utilized on disc receivers without a problem of color contamination, and the disc would not be present to serve as a filter. The viewer could have a neutral density filter on his receiver to improve contrast in the same way as on a black and white receiver.

4. The RCA System

76. At none of the demonstrations on the record did any of the RCA color receivers produce sufficient illumination for ordinary home use. Indeed, all of the RCA demonstrations on the record were conducted in a room with virtually no illumination. While equipment can undoubtedly be developed that will produce higher brightnesses, there is some doubt—which can be resolved only by further testing—as to whether the duty cycle of the RCA system will permit much higher brightnesses on the tri-color tube. Moreover, the RCA system has difficulty in maintaining adequate contrast, particularly in small areas. This defect appears to be due to the use of the mixed highs principle, cross talk and to the efforts made to smooth out the dots as much as possible so as to avoid the appearance of dot structure in the picture.

²¹ For a 20-foot lambert picture, the reflected light cannot exceed 2/3 of a foot lambert on a 30 to 1 ratio. If the ambient illumination at the receiver is 67 foot lamberts, this is reduced to 6.7 foot lamberts on the way through the disc to the tube and this in turn is reduced to 0.67 foot lamberts on the way out through the disc.

D. Superposition of Color Images

1. General

77. There are three subjects covered by this heading: registration, color breakup, and color fringing. The problem of registration arises from the fact that since color television involves the transmission of three separate pictures in different colors, which are then combined into one color picture, it is apparent that the three separate pictures must have the same size and shape and must appear to lie directly one over the other if a satisfactory picture is to result. As can be seen, this must be so both for the electrical and optical components of each of the three pictures. When this is successfully accomplished, the pictures are said to be in "register" or the "registration" is satisfactory. Otherwise, registration is not satisfactory and both resolution and color fidelity are adversely affected.

78. Color breakup may occur when the eye moves while watching a color picture and causes the viewer to see the separate primary colors. It is caused by the fact that successive fields occupy slightly different positions on the retina of the eye. Color fringing appears in the form of fringes along the edge of objects and it usually occurs when a rapidly moving object is televised in color.²²

2. The CTI System

79. There is a severe registration problem at the camera and receiver. At the camera end the optical system must be so adjusted and maintained that the image being transmitted falls upon the three separate color bands of the tube in exactly the same relative position. Moreover, each color band must be so constructed and maintained that it will cause the electron scanning beam to generate signals of exactly the same linearity as the other two bands. For example, if an object an inch square were being scanned, if one band produced signals that reproduced the object as 7/8 of an inch, the second band an inch, and the third band 1 1/8 inch, it is obvious that reduction in resolution and color distortion would result. At the receiver end, the same precise adjustments must be made. It is exceedingly difficult to construct equipment which is as precise and uniform in response as required for accurate registration. It is even more difficult to maintain the precision as time goes along, for the electrical component parts age. The difficulty of securing accurate registration is illustrated by the fact that there was evidence of faulty registration at every one of the CTI demonstrations held on the record. And this occurred when the equipment was in control of trained technicians. The results would undoubtedly be much worse if the receivers were in a home, operated by untrained people, and had not been adjusted to optimum operating conditions just prior to the demonstration but had been in operation for a substantial period of time with no service adjustment.

80. Color breakup has not been observed at any of the demonstrations on the record; it does not appear to be a problem in a line sequential system. Color fringing has likewise not been observed so far as moving objects are concerned but line interlace causes color fringing on nearly horizontal lines of other than primary colors. In addition, an effect similar to color fringing was apparent due to misregistration.

3. The CBS System

81. The CBS system is not troubled by other than minor registration problems either at the camera or receiver. These minor problems arise from power supply hum, stray fields, and vibration but they are easily cured. The reason why no fundamental registration problem exists is that only a single tube is utilized both at the camera and disc type receiver; the field sequential system is the only one that can do so.²³ Hence, the response of the scanning beam is the same for each color and each field. At none of the demonstrations on the record did the Commission observe any evidence of misregistration.

²² An effect similar to color fringing is caused by misregistration.

²³ As will be pointed out later, if a tri-color tube is developed which can be utilized without the disc, it will have to have correct registration built into it to be capable of use.

82. Color breakup and color fringing were observed at the demonstrations on the disc receivers. The use of tubes with long persistence phosphors should minimize color breakup at the receiver. Color fringing, moreover, will still occur due to the use of the color disc at the camera.

4. The RCA System

83. Registration, both electrical and optical, is a severe problem both at the camera and receiver. At the camera this is due to the fact that three separate pick-up tubes are utilized. The optical system must be so adjusted and maintained that the image being scanned falls upon the three tubes in exactly the same relative position. Moreover, three separate electrical signals of exactly the same linearity must be generated. Even if equipment is originally constructed that could meet this test, it is extremely doubtful that such precision could be maintained. The rate of deterioration is likely to differ for each of the three tubes. The same problems are also present on the three tube receiver. RCA demonstrated a receiver employing a single tri-color tube in which it was claimed correct registration was built into the tube.²¹ It should be noted, however, that all of the demonstrations on the record, there was evidence of faulty registration. This was also true of the demonstration on April 6 where the tri-color tube was shown. Of course, such misregistration may have been the fault of the camera rather than the receiver since a misregistered picture results if there is misregistration in either the optical or electrical aspects of the camera or receiver. Hence, even if the tri-color tube does have correct registration built into it, misregistration results at the receiver unless misregistration is corrected at the camera. The problem has not been solved by RCA at any of the demonstrations on the record when only indoor equipment was utilized. The problem by its nature is bound to be far more difficult in the case of outdoor pickups and RCA has not demonstrated any outdoor pickup camera. RCA did testify that a single tri-color tube could be developed for the camera which would have correct registration built into it. No such tube was demonstrated nor was there any testimony that one had been constructed. It is difficult for the Commission to see how the RCA system could utilize such a tube even if one were constructed. The principle of mixed highs upon which RCA relies so heavily requires by its very nature a simultaneous camera pickup of 3 color signals.

84. There should be no problem of color breakup or color fringing due to motion in the RCA system. However, faulty registration of pictures observed at the demonstrations produces an effect similar to color fringing.

E. Color Fidelity

1. The CTI System

85. At all of the demonstrations on the record, CTI had difficulty with color fidelity because of faulty registration. There was also difficulty in accurately reproducing skin tones. Moreover, the low levels of illumination at which the pictures were shown rendered difficult a judgment as to the quality of the color fidelity.

2. The CBS System

86. The color fidelity of the CBS system as demonstrated on the disc receiver has been of a uniformly high quality. No determination can be made on the record as to whether receivers utilizing a direct view tri-color tube can achieve the same uniform high quality of color fidelity as disc receivers. This is due to the fact that there is no evidence in this record that color phosphor surfaces have been developed to the point where they produce colors as accurately as a filter, and also because a tube utilizing separate color phosphors loses the advantage of the use of a single viewing surface for all three colors.

3. The RCA System

87. At all of the demonstrations on the record, RCA had difficulty producing a color picture with adequate color

²¹ See Paragraph 53.

fidelity.²² The difficulty undoubtedly arises from several factors which are part of the RCA dot sequential system. In the first place, registration is most difficult to maintain and when misregistration occurs there is color contamination and a loss in resolution. In the second place, color control is exceedingly difficult to maintain. A time error of only 1/11,000,000 of a second in the sampler, results in the wrong color being transmitted or received. In the third place, the utilization of mixed highs, cross talk, and the fact that the colored dots are larger than a single picture element appear to prevent the production of color detail in small areas over the entire picture. In the fourth place, the fact that the three primary color images are scanned on three separate surfaces at the camera, makes it exceedingly difficult to obtain uniform sensitivity for all colors over the whole picture area. The result was that color fidelity of a high quality was not consistently achieved at any of the demonstrations on the record and in particular there was no real success in correctly reproducing skin tones. All of these difficulties will undoubtedly be aggravated on outdoor pickups as will be more fully explained in paragraph 118. So far as the tri-color receiving tube is concerned, the RCA picture also suffers from the limitations as to color fidelity which are involved in the use of color phosphors rather than filters.

F. Resolution

1. General

88. Since a television picture is scanned line by line, it is apparent that the more lines per second that are scanned, the finer the vertical detail that can be portrayed. Hence, one of the methods commonly utilized to measure the definition capabilities of a system is geometrical resolution—the number of lines which the system can provide. In practice, resolution is determined by readings on a test pattern; vertical resolution is read on the horizontal wedges and horizontal resolution on the vertical wedges. These test patterns are principally of use in reading resolution of a black and white picture. For color pictures, an adequate test pattern must still be developed with wedges and lines in color. Besides resolution there are other factors which enter into the apparent definition of a picture, such as contrast, sharpness of the picture, etc. However, these are subjective factors and unlike resolution are not susceptible of ready measurement. Nevertheless, they are important and are the subject of consideration under the next heading. Moreover, color itself gives realism to pictures, affords better contrast, and thus improves apparent definition.

2. The CTI System

89. In theory the resolution of the CTI system should approach that of the present system. This has not been the case, for at none of the demonstrations on the record did CTI produce a picture which could compare in resolution with black and white television. The reason for this lies in the faulty registration which has been observed at each demonstration and in the line crawl which is present in the system.

3. The CBS System

90. The CBS system produces 405 lines per picture as compared with 525 lines per picture for the present system. Hence, as is to be expected, the vertical resolution of the CBS picture is below that of the present system. The use of 144 fields per second, with a resulting line scanning rate of 29,160 per second, results in a loss of horizontal resolution. There is a reduction in vertical resolution by 23% and horizontal resolution by 46% as compared with the present system. By utilizing horizontal interlace and retaining the horizontal scanning rate suggested by CBS, the vertical resolution would still be reduced by 23% but the horizontal resolution would be approximately the same as monochrome. Further testing is required in order to determine whether this increase can be achieved in practice.

²² Although there is some testimony that at times the color fidelity of the RCA picture was adequate, this was achieved either at a special demonstration not on the record or sporadically on the record.

4. The RCA System

91. Although the RCA system produces lines at the same rate as the black and white system, its resolution even in theory is not equal to that of the present system for all types of scenes. The vertical resolution should approach that of the present system but the horizontal resolution ranges between 67% and 100% of the present system. This is probably due to cross talk and the use of mixed highs. Moreover, if in the scene being scanned there are two adjacent areas of different colors which are of equal intensity, no mixed highs would be generated and in this type of situation the horizontal resolution could be reduced to as little as 33%. Finally, in practice, the RCA resolution has suffered from the misregistration which has been present at each of the demonstrations on the record.

G. Picture Texture (Structural)

1. General

92. Under the previous headings we have described the several qualitative aspects of a color television picture seriatim. Under this heading we will evaluate the over-all quality of the picture.

2. The CTI System

93. It is difficult to make a final judgment as to the picture texture of the CTI system since virtually all of the pictures were shown on a projection receiver at low levels of illumination. Projection receivers by their very nature produce "soft" pictures as compared with direct view receivers. However, in the CTI system line structure is prominently apparent in areas of red and green primary colors and line crawl is visible over the entire picture.

3. The CBS System

94. At all of the demonstrations on the record, the CBS picture compared favorably with the present system so far as contrast, sharpness of picture, and freedom from line structure are concerned. As above stated, the geometrical resolution of the CBS picture was inferior to a picture under the present standards.

95. During the course of the hearing there was a good deal of discussion concerning "crispening" in the CBS system, whereby apparent definition is improved by making the picture appear sharper. Crispening circuits do have the capacity of producing sharper pictures. While their use may not be limited to any one system, no demonstration of crispening was had with any of the other systems, and, accordingly, it is not possible to determine what the extent of improvement for these systems would be. Moreover, it is doubtful whether crispening can be utilized by a system employing horizontal interlace.

96. If horizontal interlace were utilized on the CBS system, the picture texture could be affected thereby. Dot structure or twinkle could appear in the picture. CBS testified that this could be avoided in its system utilizing horizontal interlace. Satisfactory proof of this point requires further testing.

4. The RCA System

97. The RCA picture has a "soft" quality when compared to pictures of the present system. This is probably due to the difficulty in maintaining contrast, particularly in small areas. Picture texture was also marred at all of the demonstrations on the record by the visibility of dot structure at distances at which the lines begin to be unresolved. RCA testified that the dot structure could be minimized by the use of electrical filters, but no demonstration of this process was made on the record. Moreover, it appears to the Commission that if the dots are smoothed out, the consequences are likely to be a loss in resolution or contrast, or in both.

H. Susceptibility to Interference

1. General

98. The quality of a television picture can be marred not only by inherent defects but also by interference. The sources of interference include not only television signals from other stations on the same or adjacent channel but

also ignition systems, diathermy, oscillator radiations from other receivers, etc. So far as co-channel interference is concerned, a process known as offset-carrier operation gives promise of reducing the effects of interference. The process will be fully explored in subsequent phases of this hearing but enough evidence was introduced on the subject in the color phase of the hearing to warrant consideration so far as susceptibility of the three systems to interference is concerned.

2. The CTI System

99. In general, the CTI system appears to have the same susceptibility to interference as the present system. However, no evidence was introduced concerning offset-carrier operation on this system. There is some reason to believe that the CTI system would not derive as much benefit from offset-carrier operation as would black and white television or the other two color systems because there is likely to be a coarse beat between system line structure and offset line structure.

3. The CBS System

100. The CBS system has about the same susceptibility to interference as the present system for both normal operation and offset-carrier operation. If horizontal interlace is utilized, the system may be susceptible to oscillator radiation and other forms of continuous wave interference. CBS testified that its system with horizontal interlace would not be susceptible to this type of interference but had no demonstration which proved the point. The Commission believes that further testing is necessary before the CBS contention can be accepted.

4. The RCA System

101. With the exception noted below, the RCA system has about the same susceptibility to interference as does the present system, both for normal operation and offset-carrier operation. The exception is in the case of oscillator radiation and other forms of continuous wave interference where a greater susceptibility to interference exists than for the present system or the other two color systems. This is caused by the presence of the sampler synchronizing pulse and the color subcarrier which are not present in the black and white system or the other two color systems. A demonstration of oscillator radiation such as would be received from other television receivers not only caused severe interference to the picture but under certain conditions upset color synchronization so that color control was lost.

I. Adaptability and Convertibility

1. General

102. The Commission's Notice of Further Proposed Rule Making in these proceedings provided that proposals for changes in transmission standards so as to provide for color television would be considered only if a showing were made, inter alia, that:

Existing television receivers designed to receive television programs transmitted in accordance with present transmission standards will be able to receive television programs transmitted in accordance with the proposed new standards simply by making relatively minor modifications in such existing receivers.

It is not entirely clear from a reading of the language itself as to whether the above requirement is directed to the changes in existing receivers necessary to enable them to receive color programs in black and white, or in color, or in both. However, it does appear to be clear from a reading of the above provision in the context of the entire notice that it covered both requirements. In a proceeding involving a possible change of standards where several million receivers were already in the hands of the public, it was obviously important to ascertain the changes that would be required to enable existing black and white receivers to continue receiving pictures in black and white and also the changes necessary to enable them to receive the new color pictures in color. The parties themselves must have construed the notice in the same way since they addressed themselves to both facets of the problem.

103. At the hearing, some dispute developed concern-

ing the appropriate words to be utilized in describing each facet of the problem. In order that there should be no ambiguity as to the meaning of the words as utilized in this Report, the word "adaptability" will be utilized to cover the changes that are required to enable existing receivers to receive a black and white picture from color transmissions, and the word "convertibility" will be utilized to cover the changes that are necessary to enable existing receivers to receive color transmissions in color. The word "compatibility" covers the specialized case of adaptability where no change whatsoever is required in existing receivers in order to enable them to receive a black and white picture. No correlative term is employed so far as convertibility is concerned since no system was proposed where existing receivers without making any changes whatsoever could receive color transmissions in color.

2. The CTI System

104. No change whatsoever is required in existing receivers in order to enable them to receive a black and white picture from CTI color transmissions. However, the picture so received is substantially inferior in quality to a regular black and white picture. This is due to the prominent line structure, jitter, and line crawl which are present in the CTI system. As to convertibility, CTI does not contend that as a practical matter existing receivers can be converted to receive color transmissions in color.

3. The CBS System

105. Existing receivers are unable to receive a black and white picture from CBS color transmissions without making some changes in the receivers to enable them to handle the different vertical and horizontal scanning rates. These changes may be made either by rewiring the circuits, or by attaching an external adapter. CBS presented evidence from manufacturers experienced in the field indicating that the retail price of external adapters, exclusive of installation charges, would range from \$32 to \$50, and that adaptation may be accomplished by rewiring the circuits at a somewhat lower price; automatic switching from 525-line monochrome to 405-line CBS transmissions could be effected at an additional cost of about \$5 to \$15.²⁶ Testimony was also introduced concerning the adaptation by the Commission's laboratory of four conventional 7-inch and 10-inch receivers. Parts for the conversions—at a cost level somewhere between retail prices and manufacturer's prices—ranged from about \$4 to \$12, the higher figure including automatic switching; labor and installation costs would be extra. Philco gave a list price of \$45 to \$50 for an external adapter, with other changes in the receiver and various unitemized costs bringing the total cost to between \$75 and \$100; and DuMont estimated the total cost to be between \$100 and \$125. The Philco and DuMont estimates appear to be unreasonably high in the light of the cost of the parts required for adaptation, and seem to have been based on the replacement of major parts rather than on the minimum necessary changes.²⁷

106. Existing receivers can be converted to enable them to receive CBS color transmissions in color by the addition of an adapter to change the scanning rates and a rotating color filter disc; a magnifying lens may also be added to increase the picture size. Based upon evidence offered by independent manufacturers called as CBS witnesses, the retail price of adapting and converting an existing 7-inch tube receiver to CBS color to provide a 10-inch picture (magnified) would range from \$95 to \$130. Likewise, a 10-inch tube set could be adapted and converted to provide a 12½-inch picture (magnified) for from \$110 to \$150, and a 12½-inch set to provide a 16-inch picture (magnified) for from \$125 to \$170. Since the rotating disc must be placed in front of the cathode-ray tube, some existing re-

²⁶ The figures quoted in this paragraph refer to external adaptation for existing receivers. The cost of building the necessary additional circuits into a new receiver at the factory to permit it to receive CBS transmissions is substantially lower.

²⁷ For example, the DuMont estimate included the following items: Sweep conversion unit, \$80, different yoke and transformer, \$15, and service charge, transportation, etc., \$25. Philco did not supply a similar cost breakdown as applied to its estimates.

ceivers with doors or recessed tubes would, in practice, be difficult to convert. As will be explained in Paragraph 111, on receivers with direct view tubes larger than 12½ inches, the color picture will be reduced to 12½ inches unmagnified or up to 16 inches magnified. Philco and DuMont indicated that the cost of conversion would be much higher than indicated above but the Commission is unable to accept their estimates for the reasons set forth in the preceding paragraph.

4. The RCA System

107. No change whatsoever is required in existing receivers in order to enable them to receive a black and white picture from RCA color transmissions. However, the picture so received is somewhat inferior to present black and white pictures which may be due to the appearance of dots in the picture and to misregistration at the camera. So far as convertibility is concerned, no practical converter was demonstrated at any of the demonstrations on the record.

J. Equipment Considerations

1. The CTI System

108. At the present time, apparatus in the CTI system is limited to projection receivers. In black and white television, projection receivers have not had widespread acceptability in the market. The CTI receiver is bound to be more complex than present receivers principally because of the difficulty of maintaining image registration. The control for this purpose is very critical and in its present stage is beyond the capabilities of the average viewer under normal home viewing conditions, as is evident from the fact that even trained technicians were unable to maintain accurate registration throughout any one of the demonstrations that were held on the record.

109. At the station, no change is required in the transmitter or antenna to broadcast CTI color. Extensive changes are required in the camera and associated studio equipment. Based upon CTI's estimates the cost of converting a single existing studio camera chain is about \$7,000. Moreover, this equipment is likely to be quite complex since very critical tolerances must be achieved and maintained if registration is to be accurate. This means complex and expensive equipment to begin with; costly maintenance work to keep the critical parts of the equipment in perfect operating condition; and frequent replacement of expensive tubes when they start to deteriorate at an uneven rate. These difficulties are the ones that will be encountered in studio equipment. So far as equipment for outdoor pickups is concerned, none was demonstrated by CTI. The difficulties here are even more pronounced than for studio equipment since such equipment must be capable of being moved about from one spot to another and it is subjected to varying conditions.

110. So far as networking is concerned, no special problems are presented. The present inter-city facilities of common carriers are either radio relays which are capable of a 4-megacycle response or coaxial cables which are capable of a 2.7 megacycle response. CTI color programs can pass over either type of facility. Of course, a CTI color program which is transmitted over a 2.7 megacycle cable suffers a reduction in horizontal resolution in the same way as does a black and white picture.

2. The CBS System

111. At the present time, the apparatus in the CBS system is limited to projection receivers or to color pictures (unmagnified) of approximately 12½ inches on a direct view tube in a disc type receiver. The limitation on direct view tubes in disc receivers arises from the fact that the diameter of the disc must be at least twice that of the tube. It is not practical to have a disc much larger than 26 inches in diameter in the home. Receivers can be made with tubes larger than 12½ inches and the full surface of the tube can be utilized to view black and white pictures; the disc folds aside when black and white pictures are being received. For such larger tubes, the picture must be reduced to no more than 12½ inches when a

color picture is being viewed. Of course, the viewer may, if he chooses, utilize a magnifying lens to increase the 12½ inch picture to 16 inches. Magnifying lenses have not been popular in black and white receivers since they severely restrict the viewing angle and are susceptible to annoying specular reflections from lights in the room. According to testimony of manufacturers called as CBS witnesses, new combination black-and-white and CBS disc-type color receivers could be sold at a retail price of approximately \$200 for a 7-inch tube magnified to 10 inches, and approximately \$300 for a 10-inch tube magnified to 12½ inches. DuMont testified that a new combination black-and-white and CBS disc receiver, using a 12-inch tube (without magnification) could sell for \$500 to \$600 based on an annual production of 100,000, compared to \$329 for a DuMont black-and-white set of similar quality.²⁸

112. The operation of the CBS disc type receiver is relatively simple. Since CBS proposes that the present monochrome standards be retained for black and white pictures, a manual or automatic switch is necessary to handle the monochrome standards for black and white pictures and the CBS standards for color pictures. When the viewer desires to tune in a color program, he turns a switch which operates the adapter and also turns on the motor which turns the disc. As soon as the motor reaches full running speed, the viewer presses a button that is designed to make sure that the particular color filter in front of his tube is the same color as the one before the camera; this can be done by inspection. One or two pushes of the button are necessary for this purpose.²⁹ When this is done, nothing further need be done. As can be seen, color control is quite simple and it is not at all critical. The color switching is accomplished at the relatively slow rate of 144 times per second, and hence receivers for the CBS system are relatively simple. Since two different standards of transmission are provided under the CBS proposal for black and white and color, it is apparent that broadcasters cannot readily change from color to black and white or vice versa (e.g. a black and white program with color commercials) during the course of a program.

113. At the station, no change is required in the transmitter or antenna. The camera and associated equipment do require changes and CBS submitted evidence that an existing studio camera could be converted for \$3,622 and that CBS had bought a new color camera chain from RCA for approximately \$27,000. The use of the disc in the camera presents no problem since camera tubes are relatively small in diameter. The color controls in the CBS camera are not critical and CBS successfully demonstrated on the record outdoor pickups as well as studio performances.

114. So far as networking is concerned, CBS color pictures can be transmitted over the radio relay or coaxial cable. The coaxial cable reduces the horizontal resolution in the same manner as black and white pictures.

3. The RCA System

115. At none of the demonstrations on the record was a practical RCA home receiver shown. The projection receivers shown at the first demonstration were withdrawn by RCA and not resubmitted. The direct view receiver consisting of dichroic mirrors and three kinescopes is so bulky, so complex, and so expensive that it could not be seriously considered for home use. The controls are so critical that even trained technicians were unable to main-

²⁸ RMA Exhibit 408, entitled "Time Availability and Cost of Apparatus Necessary for Color Television", consists of replies by various manufacturers to a letter from Dr. W. R. G. Baker, Director of RMA Engineering Department, which he sent to all 54 members of the RMA Set Division. Dr. Baker testified that "I didn't recommend that they (the Commission) give serious consideration to this exhibit, if I remember rightly. I said this was a very rough approximation and I explained in detail why." The Commission has not given this exhibit serious consideration not only because of Dr. Baker's statement, but also because no supporting data were submitted with respect to the above cost estimates, and most of the manufacturers submitting estimates did not appear to testify concerning them and were not available for cross-examination.

²⁹ See Paragraph 44 for reference to automatic color phasing shown at the Laurel demonstration.

tain correct registration and color fidelity throughout a single demonstration on the record.

116. RCA showed a tri-color tube at the demonstration on the record held Apr. 6, 1950. Even at that demonstration, there was evidence of faulty registration, although it does not appear whether such misregistration was due to the receiver or camera, or both. Since color control is extremely critical in the RCA system, there can be no assurance that the fault does not exist at both ends. Moreover, there is no assurance on the record that the tube is an assured fact.³⁰ The tube was demonstrated towards the close of the hearing and has had very little field testing. It has not been made available to other parties or to the Commission's laboratory for study. An RCA witness testified that the tube would cost about 50 to 100 percent more than black and white tubes of similar size at the same relative stage of development; no data were submitted in support of this estimate. Finally, as demonstrated, the tube developed insufficient illumination, it had an inadequate number of dots, and it had a serious moire pattern in it.

117. In any event, RCA color receivers are expected to be more complex than receivers of the other two systems. Since a time error of only 1/11,000,000 of a second adversely affects color fidelity (see Paragraph 87), many of the components must be built to a very critical tolerance. Moreover, since RCA utilizes a subcarrier of 3.6 megacycles for the purpose of carrying its color information, receivers must be built with a band pass of at least 3.6 megacycles. Many of the cheaper receivers today are built with a band pass narrower than 3.6 megacycles. Early in the proceedings RCA demonstrated projection and direct view color receivers. An RCA witness testified that a 10-inch direct view three tube set would cost between \$650 and \$800; a 7-inch by 9½-inch projection receiver would cost between \$550 and \$700; a 15-inch by 20-inch projection receiver would cost between \$800 and \$1000; and a two color direct-view 10-inch receiver would cost between \$400 and \$550. As was indicated above, the projection receivers and two-color receivers shown at the first demonstration were not demonstrated again by RCA. With respect to receivers containing a tri-color tube, an RCA witness testified that the set itself aside from the tube was likely to be between 25 to 50 percent more expensive than a black and white receiver of the same size and character, and that the tube itself was likely to be between 50 and 100 percent more expensive than black and white tubes of similar size.

118. At the station no change is required in the transmitter or antenna. Extensive changes are required in the camera and associated equipment. RCA admitted that existing camera equipment cannot be converted. It estimated that the cost for new RCA color studio camera equipment would be \$54,440. This would include one camera chain, the necessary 3-image orthicons, a pedestal, a friction head, a flag burst generator, crystal standard, power supply and cabinet rack, a color monitor, and power supplies for the monitor. An additional color camera would cost \$26,750. Moreover, the equipment is likely to be very complex since extremely critical tolerances must be achieved and maintained. This means complex and expensive equipment to begin with. It also means costly maintenance work to keep the critical parts of the equipment in precise operating condition and frequent replacement of expensive tubes when they start to deteriorate at an uneven rate. The difficulties are compounded so far as outdoor pickup is concerned, which RCA did not demonstrate on the record. Outdoor equipment must be capable of being moved around from spot to spot and is subjected to varying conditions.

119. So far as networking is concerned, radio relays have a response to 4 megacycles and would handle RCA color transmissions. The coaxial cable has a response of 2.7 megacycles and, accordingly, RCA color transmissions

³⁰ RCA testified that within 60 to 90 days from May, 1950, it expected to have developmental model color receivers using the tri-color tube available for field tests; during September, 1950 5 or 6 such receivers would be produced each week from a pilot assembly operation. Factory production at a weekly rate of 200 receivers would begin by June, 1951, if RCA standards were adopted, and by the end of 1951, the rate would be 1000 per week.

come through the coaxial cable as black and white pictures with reduced horizontal resolution. At the April 6, 1950, demonstration on the record, RCA simulated a color transmission over the coaxial cable by utilizing a frequency limiting circuit. To accomplish this, the signal was originally sampled at a 3.6 megacycle rate and then before going into the circuit that simulated the cable, it was resampled at a 2.4 megacycle rate. When it comes off the cable, it is again resampled at the 3.6 megacycle rate. In the demonstration, a color picture was received, with reduced horizontal resolution. This process would require extra terminal equipment on the cable not required for CTI or CBS color transmissions. Further testing on the cable itself is required before a final judgment can be made.

IV. CONCLUSIONS

A. General

120. The testimony and demonstrations in these proceedings leave no room for doubt that color is an important improvement in television broadcasting. It adds both apparent definition and realism in pictures. It opens up whole new fields for effective broadcasting, rendering life-like and exciting scenes where color is of the essence—scenes which in black and white television are avoided or, if telecast, have little appeal.

121. Because color is such a fundamental improvement in television, the Commission is of the opinion that in establishing standards, a system must be chosen that produces a satisfactory color picture and is capable of operating through apparatus that is simple to operate in the home and is cheap enough in price so as to be economically available to the great mass of the American purchasing public. The Commission is of the firm opinion that it would not be in the public interest to establish a television system where only black and white receivers are cheap enough for the great mass of the American people and color television is available to those who can afford to pay luxury prices.

122. In order for a color system to be considered eligible for adoption, it must meet the following minimum criteria:

a. It must be capable of operating within a 6-megacycle channel allocation structure.

b. It must be capable of producing a color picture which has a high quality of color fidelity, has adequate apparent definition, has good picture texture, and is not marred by such defects as misregistration, line crawl, jitter or unduly prominent dot or other structure.

c. The color picture must be sufficiently bright so as to permit an adequate contrast range and so as to be capable of being viewed under normal home conditions without objectionable flicker.

d. It must be capable of operating through receiver apparatus that is simple to operate in the home, does not have critical registration or color controls, and is cheap enough in price to be available to the great mass of the American purchasing public.

e. It must be capable of operating through apparatus at the station that is technically within the competence of the type of trained personnel hired by a station owner who does not have an extensive research or engineering staff at his disposal and the costs of purchase, operation, and maintenance of such equipment must not be so high as unduly to restrict the class of persons who can afford to operate a television station.

f. It must not be unduly susceptible to interference as compared with the present monochrome system.

g. It must be capable of transmitting color programs over inter-city relay facilities presently in existence or which may be developed in the foreseeable future.

123. It should be noted that the above criteria do not include compatibility. The Commission is of the opinion that if a satisfactory compatible system were available, it would certainly be desirable to adopt such a system. Compatibility would facilitate for the broadcaster the transition from black and white broadcasting to color broadcasting and would reduce to a minimum the obsolescence problem of present receivers. However, as will be developed

more fully later on in this Report, no satisfactory compatible system was demonstrated in these proceedings and the Commission is of the opinion, based upon a study of the history of color development over the past ten years, that from a technical point of view compatibility, as represented by all color television systems which have been demonstrated to date, is too high a price to put on color. In order to make these systems compatible, the alternatives have been either an unsatisfactory system from the standpoint of picture quality, or a complex system, or both. A complex color system will have such formidable obstacles in its path that there is no assurance it would be acceptable to the American public. The Commission is compelled to reach the conclusion that no satisfactory compatible color system has been developed.

124. The receiver aspect of compatibility, moreover, is merely a temporary problem which will decrease progressively each year once receivers are built incorporating new standards. Based upon an assumption of 7,000,000 sets in the hands of the public at the present time, the problem of compatibility would be diluted each year depending on the annual rate of production. It is not possible to forecast what the annual rate of production would be, but, by way of illustration, if sets were continued to be manufactured at the present rate of production (e.g. five to six million sets a year) then one year after the adoption of an incompatible system approximately 40% of the receivers in the hands of the public should be capable of receiving these signals without any change whatsoever—they will have been built that way.³¹ The percentage will become progressively larger each year. So far as owners of existing receivers are concerned, if they make no change, they will still be able to receive programs broadcast in accordance with present monochrome standards—there will undoubtedly be such for several years after a decision—or they can spend the relatively minor amount of money necessary to adapt their sets and thus be able to receive all programs in black and white or they can spend a slightly larger amount and get color programs in color. It would not be in the public interest to deprive forty million American families of color television in order to spare the owners of seven million sets the expense required for adaptation.

125. The criteria set forth in Paragraph 122 likewise do not include any reference to convertibility or adaptability. Much of the reasoning applicable to compatibility applies likewise to convertibility or adaptability. While there is some doubt as to whether some of the color systems proposed here meet the test of adaptability and convertibility (as defined in Paragraph 103) contained in our Notice of July 11, 1949, no objection was raised by the Commission or any of the parties to the consideration of any of the color systems proposed herein and no objection is raised in any of the Proposed Findings or Replies. Accordingly, the three systems are considered on the merits.

126. During the hearing evidence was introduced to show the patent position which is held by RCA in the television field, and one of the parties urged the Commission to reject the RCA system in order to encourage competition and avoid monopoly. The Commission recognizes that if a monopolistic patent position exists in the radio field, it would tend to discourage fundamental research by other companies and would tend to foster concerted action on the part of the patent licensor and its licensees, which could result in control of receivers sold to the public. However, on the record in these proceedings we do not believe that we are called upon to make a decision as to whether RCA does have a monopolistic position in the radio field, as urged by some, or merely one of leadership, as contended by RCA, because the decision as to whether the RCA system should or should not be adopted is based solely on a consideration of the system on the merits. If the Commission should find that a monopolistic situation

³¹ The Commission is aware that some manufacturers expressed a reluctance to build sets for an incompatible system if it is approved by the Commission. We believe that an informed public would demand receivers that are capable of getting programs from all television stations in the area and that the manufacturers would build such receivers.

does exist or such a situation should develop, appropriate proceedings can be instituted under the anti-trust laws or the Commission can seek from Congress legislation to prevent the building of monopolistic patent structures in the radio field, or both.

B. The CTI System

127. The Commission is of the opinion that the CTI system falls short of the criteria we have established for a color system. In the first place, the quality of the color picture which the CTI system produces is not at all satisfactory. There is a serious line crawl problem and the picture texture is not satisfactory. These defects were clearly evident at the demonstrations on the record at the low levels of illumination there used. With the higher illuminations that would be required for home viewing, the defects would be more pronounced. Improvements in apparatus will in all probability not eliminate these defects since they appear to be inherent in the CTI line sequential system.

128. In the second place, there is great doubt as to whether CTI even qualifies on what it claims to be one of its principal advantages—compatibility. There is a serious degradation in quality of the black and white pictures which existing receivers get from CTI color transmissions. While the Commission would not rule out an otherwise satisfactory color system merely because some degradation resulted in the black and white pictures which existing sets would receive from the color transmissions, a serious problem would be presented where the degradation is as substantial as in the case of the CTI system.

129. In the third place, the equipment utilized by the CTI system is unduly complex. At the receiver, image registration control is so critical that it is entirely unlikely that the average person could successfully operate it. At the station end, the equipment is likewise so complex that even though trained personnel would be available, it is most doubtful that they could maintain the equipment in the precise operating condition that is necessary for the system for a regular broadcast operation. This difficulty will be particularly onerous in the case of outdoor pickup equipment which is subject to much harder use and rougher handling than studio equipment. CTI did not demonstrate any outdoor pickup equipment.

130. In the fourth place, CTI did not offer sufficient evidence on which a finding could be based as to whether the system is unduly susceptible to interference. While the evidence introduced does indicate that the system has approximately the same susceptibility to interference as the present monochrome system so far as normal operation is concerned, no evidence was offered concerning offset carrier operation and there is reason to believe that the CTI system would not derive as much benefit from offset carrier operation as the present monochrome system or the other two color systems.

131. So far as networking is concerned, CTI color transmissions are capable of being relayed over both coaxial cable and microwave relays.

C. The RCA System

132. The RCA system also falls short of the criteria set forth above. In the first place, the color fidelity of the RCA picture is not satisfactory and it would obviously not be in the public interest to adopt as standard a color system which does not produce a satisfactory color picture. At none of the demonstrations on the record could RCA consistently produce pictures with adequate color fidelity. The inability accurately to reproduce skin tones is a particularly serious handicap. There appears to be no reasonable prospect that these difficulties in the RCA system can be overcome, because of misregistration, mixed highs, cross talk between picture elements, and criticalness of color control implicit in a system where a time error of $1/11,000,000$ of a second results in color contamination.

133. In the second place, the texture of the color picture is not satisfactory. At all of the demonstrations the quality of the picture was marred by misregistration and also

to a certain extent by dot structure. Indeed, even on the score of compatibility the quality of black and white pictures which existing sets receive from RCA color transmissions is somewhat degraded because of dot structure and misregistration at the camera; however, the black and white picture remains of reasonably good quality. Moreover, the RCA color picture has a "soft" quality, probably due to the difficulty in maintaining contrast, particularly in small areas. It is difficult to see how these defects can be eliminated. Correcting misregistration in the RCA system is an exceedingly difficult task as has already been indicated. Smoothing out the dot structure can mean losing resolution or contrast, or both. Poorness of contrast, particularly in small areas, appears to be the price of mixed highs, cross talk, and dots which are larger than single picture elements.

134. In the third place, the receiving equipment utilized by the RCA system is exceedingly complex. The Commission would certainly not consider adopting a system which was limited to receivers of the dichroic mirror type demonstrated on the record. These receivers are so bulky, so complicated, so difficult to operate, and so expensive that it is inconceivable that the public would purchase them in any quantity. RCA did demonstrate a receiver using a direct view tri-color tube towards the end of the hearing but the Commission is not satisfied that the tube solves the problem of complex receivers. The tube was not demonstrated until late in the proceedings and has had very little field testing. It has not been available to other parties or the Commission's laboratory for the purpose of checking its operation. As demonstrated, the tube had an inadequate number of dots, produced insufficient illumination, and had a serious moire pattern in it. There is no assurance that the tube will not be unduly expensive, for while an RCA witness testified that the tube would cost 50 to 100 percent more than black and white tubes of corresponding size, no data were submitted in support of this estimate. Finally, even though the tube is developed, there is no assurance that the receivers will not continue to be unduly complex and difficult to operate. Since a time error of $1/11,000,000$ of a second results in color contamination, it is difficult to see how color control can be simplified to a sufficient extent for home use.

135. In the fourth place, the equipment utilized at the station is exceedingly complex. There is no assurance that satisfactory commercial type equipment can be built because at not a single demonstration on the record was accurate registration maintained throughout the demonstration. Moreover, there is such great difficulty in maintaining the equipment in the precise operating condition which the system entails that it is extremely unlikely that the job could be done by an organization that does not have an extensive staff of research personnel and engineers at its disposal. The type of trained personnel which is generally available to the average station could hardly be expected to handle such a difficult job. The above difficulties will be particularly onerous in the case of outdoor pickup equipment which is subject to much harder use and rougher handling than studio equipment. RCA did not demonstrate any outdoor pickup equipment.

136. In the fifth place, the RCA color system is much more susceptible to certain kinds of interference than the present monochrome system or the other two color systems. A demonstration of oscillator radiation such as would be received from other television receivers not only caused severe interference to the picture but under certain conditions upset color synchronization so that color control was lost.

137. So far as networking is concerned, RCA color transmissions can be handled by inter-city relays with 4-megacycle capacity but there is not adequate assurance on this record that color pictures can be transmitted over the 2.7 megacycle coaxial cable facilities. On this point, the common carriers who testified at the hearing indicated that they are progressively increasing the percentage of their inter-city facilities which are represented by microwave relays. Moreover, the coaxial cable is capable of

being modified to accommodate 4 megacycle television transmissions. The Commission expects the common carriers to have 4 megacycle facilities for all television programs as soon as possible so that the public will not be required to accept network programs which are substantially degraded in horizontal resolution.

138. Finally, the RCA system has not met the requirements of successful field testing. The system introduces entirely new techniques into broadcasting, principally dot sampling and the use of mixed highs. Extensive field testing is required before a final answer can be given as to the value of these techniques. The Commission is still of the same view today as it was in March 1947 when it rejected the former CBS color system—a much simpler system and one which had more field testing than the RCA system. At that time, it stated:

Before approving a new system of television it is indispensable that there be an adequate program of field testing. Receivers and transmitters must be subject to numerous tests over a long period of time and at a diversified set of locations and operating conditions so that operation under average home conditions is closely approximated. Without such field testing, there is no assurance that all fundamental defects have been eliminated. There is a great difference between the performance of a system in a laboratory with trained personnel and its operation in the home by the average citizen. In the history of electronics there have been developments which looked promising in theory and even in operation in the laboratory but which revealed such fundamental defects when subjected to adequate field testing that they had to be abandoned entirely.

RCA has not successfully shown that its equipment is simple enough to be operated by the average individual; the testimony of a trained expert that it can be done is not a satisfactory substitute.

139. In ruling out the RCA system, the Commission has not overlooked the testimony of the many radio manufacturers who directly, and through their trade association, endorsed the dot sequential system. The Commission is aware that of necessity it must rely to a great extent upon industry experts for data and expert opinion in arriving at decisions in the field of standards; our own facilities are too limited to gather much of the data. However, the responsibility for decision is that of the Commission and we cannot feel bound to accept recommendations and expert opinions when we find from a study of the record that the record supports different conclusions. Moreover, the testimony of many of the parties was not based on field testing conducted by them or upon an analysis of field testing made by others but were simply recommendations and expert opinions of a general nature. In weighing these recommendations and expert opinions we cannot overlook the fact that many of these same parties offered recommendations and expert opinions of the same kind as the basis of their advocacy in the 1946-1947 hearing of the simultaneous system—a system which never survived field testing.

D. The CBS System

140. This leaves for consideration the CBS system. In the Commission's opinion, the CBS system produces a color picture that is most satisfactory from the point of view of texture, color fidelity and contrast. The several demonstrations on the record included a wide variety of subject matter both in the studio and out of doors and the picture which resulted was in each case entirely suitable for home viewing purposes.

141. Receivers and station equipment are simple to handle. They have been subjected to use in widely diversified circumstances and no difficulty has been encountered. The receivers are simple and when produced on a mass marketing basis, should be within the economic reach of the great mass of purchasing public.

142. The susceptibility to flicker in the CBS system is greater than in the present monochrome system but in the Commission's view the brightnesses that have been achieved on disc receivers are adequate for home use and the evidence concerning long persistence phosphors shows that there is a specific method available for increasing brightness on non-disc receivers with no objectionable flicker. The CBS system is subject to color fringing or

color breakup under certain circumstances. This is not a serious obstacle for two reasons. In the first place, many viewers after awhile tend not to see these defects. This is evident from a comparison of the little amount of comment on this subject in this hearing, compared to the 1946-1947 hearing. In the second place, these effects occur rather infrequently and many of them can be minimized by programming techniques. When they do occur, they are no more annoying to the viewer than stroboscopic effects in motion pictures.

143. The CBS system has less geometric resolution than the present monochrome system but the addition of color more than outweighs the loss in geometric resolution so far as apparent definition is concerned. Of course, owners of receivers which have adapters but which are not built for color will receive only a black and white picture from CBS color transmissions—a picture which will not have color to compensate for the loss in resolution. However, this is a matter of choice for the viewer; he can have color if he so desires. Moreover, the black and white picture he receives from CBS color transmissions is still an acceptable picture; the degradation is of the order involved when black and white pictures are transmitted over the coaxial cable. There appears to be no alternative to some degradation in the quality of the black and white picture from color transmissions since even the so-called compatible systems suffer from the same failing.

144. At the present time, the CBS system is, as a practical matter, limited to projection receivers or direct-view tubes of no greater size than 12½ inches (which can be magnified to 16 inches). Projection receivers have not had widespread public acceptability and the trend in direct-view receivers is to tube sizes larger than 12½ inches. The tri-color tube demonstrated by RCA is not limited to 12½ inches and RCA witnesses as well as other witnesses agreed that the tri-color tube could be utilized on the field sequential system. The Commission has no doubt that this is so, if the tube is successfully developed. However, at the one demonstration on the record when such a tube was shown—the RCA demonstration of Apr. 6, 1950—the pictures were not in correct registration. It was not possible to determine whether the registration difficulties were at the camera or in the tri-color tube, or both. Since accurate registration has proved exceedingly difficult to achieve at the receiver as well as at the camera in the RCA system, the Commission is unable to conclude on the basis of this record that a successful tri-color tube has been devised with correct registration built into it. Moreover, the RCA tube as demonstrated had inadequate resolution, insufficient brightness, and a serious moire pattern in it. Finally, we are not certain that the color fidelity of a tri-color tube is of sufficiently high quality for a broadcast service.

145. Since there was no demonstration on the record of a direct view tri-color tube on the CBS system, the record does not contain a definitive answer as to whether direct-view tubes larger than 12½ inches are possible with the CBS system. Thus two difficult courses of action are open to the Commission. The first course of action is to reopen the record and to have a demonstration on the record wherein a tri-color tube or other technique for displaying large size direct-view pictures could be tried out on the CBS system. The second course of action is to adopt a final decision now promulgating color standards on the basis of the CBS system with the confidence that since the radio industry has succeeded in creating much larger tube sizes than those demonstrated in 1941 when standards for black and white television were adopted, they would succeed in building apparatus that would eliminate the present limitation in the CBS system as to size of direct view tube.

146. The advantage of the first course of action is that the Commission would not be compelled to speculate as to an important basis for its decision but would have a definitive answer on the basis of which to act. The disadvantage is that it would postpone a final decision and hence would aggravate the compatibility problem. The time already devoted to this hearing has magnified the

problem. The advantage of the second course of action is that it would bring a speedy conclusion to the matters in issue and would furnish to manufacturers a real incentive to build a successful tri-color tube as soon as possible. A real competitive advantage would accrue to the company that succeeded in bringing out such a tube. The disadvantage is that the Commission's determination on an important part of its decision would be based on speculation and hope rather than on demonstrations.

147. Three other matters present the Commission with the same difficult choice between the two courses of action referred to above. Two developments were demonstrated in this hearing which hold real promise for increasing definition both in color and black and white pictures. One is horizontal interlace and the second is the efficacy of long persistence phosphors in reducing flicker, thus providing the means for decreasing the field rate and increasing the number of lines in the picture. Both of these techniques require further testing and, if successful, may make desirable additional changes in the field and line repetition rate.

148. The third matter we refer to is the possibility of new color systems and improvements in existing color systems which have been informally called to our attention since the hearings closed. Of course, these are not matters of record and cannot be relied on in reaching a decision unless the record is reopened. In considering these developments the Commission is aware that the institution of these proceedings stimulated great activity in the color field and that since fundamental research cannot be performed on schedule, it is possible that much of the fruit of this research is only now beginning to emerge. On the other hand, the Commission cannot overlook the obvious fact that one of the easiest methods of defeating an incompatible system is to keep on devising new compatible systems in the hope that each new one will mean a lengthy hearing so that eventually the mere passage of time overpowers the incompatible system by the sheer weight of receivers in the hands of the public.

149. The answer as to which course of action to choose depends on whether a method exists for preventing the aggravation of the compatibility situation if a final decision is postponed. If there is no method to accomplish this, the Commission believes that a final decision should not be delayed and that the CBS color system should now be adopted. This would be consonant with our action in launching black and white television in 1941. On the basis of this record, the CBS color system is at least as fully developed as was the black and white system in 1941. However, if there is a method whereby aggravation of the compatibility problem can be avoided, we would feel more confident in postponing a decision so that a definitive resolution could be had of the matters set forth in the preceding paragraphs.

150. The answer to this question rests with the radio manufacturing industry. Existing television receivers are built to operate on transmission standards that have a horizontal synchronizing rate of 15,750 and a vertical synchronizing rate of 60. As a practical matter, the oscillators on receivers that accomplish the synchronization are built so that this response is broader than the specific figures set forth above. For example, if the horizontal synchronizing rate were 15,000 or 16,000, the receiver could accommodate itself to the change; there are controls on the front or back of the receiver that can be adjusted to operate on any figure within the assumed bracket 15,000 to 16,000. The same is true for the vertical oscillator. It is obvious that if the bracket within which the receiver could operate were as high as 29,160 for the horizontal oscillator and 144 for the vertical oscillator,³³ it would be capable of receiving CBS color transmissions in black and white simply by the adjustment of controls already on the receiver. Moreover, such a receiver would be capable of handling the different synchronizing rates that might be later adopted by the Commission for modification of the existing black and white, or CBS field sequential color, or

both, as a result of further tests with horizontal interlace and long persistence phosphors.

151. In order to accomplish this purpose, the Commission simultaneously with the release of this Report is issuing a Notice of Proposed Rule Making providing for bracket standards in the present monochrome system. These bracket standards provide for a television composite video signal of substantially the type and proportion now employed in monochrome, but with the number of lines variable from 15,000 to 32,000 per second, and number of fields ranging from 50 to 150 per second.³³ Receivers built to incorporate such bracket standards would be equipped with a manual or automatic switch to select instantaneously between two sets of standards falling within the above ranges, one of which will be the present monochrome standards, and the other the CBS proposed standards. The receiver would produce pictures of equivalent size, geometrical linearity and brightness on each of the two positions of the switch. Interested persons are given until Sept. 29, 1950, to submit comments. In addition, manufacturers are requested to submit a statement as to whether if the bracket standards are adopted they would, commencing with the effective date of the order adopting the bracket standards as final—30 days after publication of the order in the Federal Register—build all their television receivers so as to be capable of operating within the above brackets. If, on the basis of the comments submitted, the Commission is able to adopt the bracket standards as final without a hearing and if the Commission receives assurances from a sufficient number of manufacturers to insure that such bracket standards will be incorporated in the great majority of television receivers, then we will be in a position to postpone a decision in this proceeding since we will have the time to explore more fully the matters set forth above, confident in the knowledge that adequate provision has been made to prevent aggravation of the compatibility question. If the bracket standards cannot be made final without a hearing or if assurances are not received from a sufficient number of manufacturers concerning their plans for incorporating bracket standards in their receivers, the Commission will not feel free to postpone a decision, for every day that passes would aggravate the compatibility problem. In that event, a final decision would be issued adopting the CBS color standards.

152. One of the proponents of a color system in these proceedings is a substantial manufacturer of television receivers. One of the companies which has informally advised the Commission that it has developed a new color system is also a substantial manufacturer of television receivers. Two other parties in this proceeding are in the same category. Finally, the Radio and Television Manufacturers Association, a party in these proceedings, is a trade association whose membership comprehends a very large part of the television manufacturing capacity in this country. Within this group lies the answer as to whether the status quo on compatibility will be maintained if the Commission postpones the issuance of a final decision at this time. The Commission proposes to afford this group an opportunity to indicate to the Commission this answer by means of the procedure set forth in the previous paragraph.

153. If, pursuant to the procedure set forth in Paragraph 151, bracket standards are adopted as final and a decision as to the color phase of these proceedings is postponed, the Commission will issue a second Notice of Proposed Rule Making proposing that color standards be adopted on the basis of the CBS field sequential system. The same bracket standards set forth for black and white television in the previous paragraph would also be proposed for color television. In addition, interested persons would be invited to conduct field tests with respect to horizontal interlace for use in both black and white and color television so that specific proposals based upon such field testing could be presented to the Commission for its con-

³³The Notice provides that if the brackets are adopted, television broadcasters will continue, until further order of the Commission, to broadcast in accordance with present standards—15,750 lines per second and 60 fields per second.

³² See Paragraph 42.

sideration. Also, provision would be made for any person to propose a color system different from the field sequential color system proposed in the Notice by complying with the procedure set forth in Paragraph 154.

154. A special procedure would be established with respect to submission of comments addressed to the second Notice. Any person desiring to submit comments in favor of or in opposition to the Notice, or who desired to submit proposed amendments could do so by Jan. 5, 1951. Oppositions or replies could be filed by Jan. 22, 1951. If any person desired to propose a color system different from the field sequential color system described in the Notice, he would be required to deliver representative receiver apparatus to the Commission's laboratory at Laurel, Maryland, by Dec. 5, 1950, and by that same date he would be required to have a signal on the air in Washington, D. C., for the purpose of demonstrating his system. He would also be required to conduct a series of demonstrations during the period from Dec. 5, 1950, to Jan. 5, 1951, to which the Commission would be invited. No color system would be considered eligible for any consideration by the Commission unless all of the above requirements were strictly complied with and unless the tests conducted during the period from Dec. 5, 1950, to Jan. 5, 1951, showed to the Commission's satisfaction that, in its judgment, the system had a reasonable prospect of satisfying all of the criteria for a color television system set forth in Paragraph 122.

155. It is apparent that the procedure described in Paragraphs 151-154 could necessitate a reopening of the record.

This would be done if CBS desired to demonstrate its system with a direct view tri-color tube or other technique of displaying large size direct view pictures. In that event the Commission would be prepared to give CBS every assistance possible in securing the use of tubes or other equipment. The Commission would not expect that at the demonstration CBS should show a commercial type of equipment or equipment that was fully developed. What would be expected would be a detailed description of the equipment, an opportunity for the Commission's laboratory to examine such equipment, and a demonstration that was sufficiently successful so as to form the basis for a reasonable judgment that it would be possible to have color pictures of adequate color fidelity and resolution with no artificial limitation on the size of direct view tubes.

156. A hearing could also be required if an appropriate proposal were made concerning horizontal interlace or if a color system were proposed which fully meets the conditions set forth in the previous paragraphs. If the record is reopened for any one or more of the above purpose, the Commission's order will specifically prescribe the issues as to which further evidence will be taken and no evidence will be received concerning any other matter.

157. Simultaneously with the issuance of this Report, the Commission is also issuing a Notice of Proposed Rule Making providing for bracket standards in the present monochrome system and a notice setting the date of Oct. 2, 1950, for commencement of hearings with respect to the general issues in these proceedings.

SEPARATE VIEWS OF COMMISSIONER HENNOCK

I agree with the majority of the Commission that more time is desirable before making a final decision of the very difficult question confronting us in this proceeding. I also feel that in order to gain that time it is imperative that the problem posed by the great number of black and white receivers in the hands of the public which are unable to receive transmissions under the standards proposed for the most promising of the color systems we have considered, be contained at its present level. I therefore concur fully in the decision to issue a Notice of Proposed Rule Making concerning bracket standards. In the event that we do not receive sufficient assurance that this protection for future investors in television receivers will be built into sets hereafter produced, I would adopt field sequential color standards.

However, I cannot agree that in the event that bracket standards are adopted a tentative determination to adopt an incompatible color system should be made. Such a decision would, I believe, be premature. I agree with the majority that neither of the compatible systems considered in this proceeding could be authorized at the present time. Still, the improvement which took place during the course of the hearings, a relatively short time when compared to the previous course of television development, was impressive. There are many indications that intense effort is being exerted to overcome the difficulties inherent in compatible color systems. Off-the-record developments by Hazeltine, General Electric, Color Television, Inc., and RCA may be bringing us a little closer, if not near, to the realization of a practical compatible color system. In any event we should work toward that end with all our energy until the last possible moment, and not foreclose the possibility of its achievement until convinced that it is a practical impossibility.

I realize that the concept of compatibility as used in this Report is not identical with that set forth in the Notice of Further Proposed Rule Making issued in this proceeding on July 11, 1949. It has, however, in my opinion become evident since that time that the effect on our present VHF television service caused by the adoption of any system which is not compatible as defined in this Report would be very serious. The problems which it would pose for the present set owner and the broadcaster should loom

large in our thinking, and we should do our best to avoid them if possible.

The most direct effect of the adoption of incompatible color standards on the present set owner would be an immediate or eventual diminution of television service, or alternatively, the necessity of making an additional expenditure to maintain the usefulness of his set. To the extent that the proposed field sequential standards are utilized the present set owner would be unable to make use of his receiver. Although color broadcasts may be restricted to "fringe" time in the beginning, there must eventually come a time when there are sufficient new or adapted sets in the hands of the public that color would be broadcast during the more choice hours. At that point the present set owner would be forced either to buy a new set,¹ adapt his present set if that is practicable, or give up virtually all television service. I feel that there is a moral obligation on this Commission to insure that valuable programming service will continue to be rendered to present set owners, both day and night, for a reasonable period, e.g., three to five years, without the necessity for making any expenditure to change their sets.

Although the record in this proceeding indicates that many sets may be adapted for \$32 to \$50, it is also clear that other sets might require more expensive changes to be enabled to receive field sequential color broadcasts even in black and white. The problems posed by the necessary servicing of such installations have not been fully explored—many sets may have to be returned to the factory, sufficient properly trained service personnel may not be available, and the cost of labor for even a home installation may greatly increase the difficulty of adaptation. And it must be remembered that with all this the set owner may have an additional gadget to place on his receiver, the receiver will probably be more complicated to operate, and the geometric resolution of the picture he receives will be reduced without the compensating advantage of color.

¹ I include the possibility of converting present sets for the reception of color broadcasts in color with this alternative. The change required would be quite extensive, and there is considerable question in my mind whether this course would prove popular even with the owners of sets which could be so converted. This would be true of the compatible systems as well, but in their case only those who felt that color was worth the additional expense would have to change their receivers.

The magnitude of these problems is tremendous when it is realized that estimates indicate that almost 7 million sets were in use on Aug. 1, 1950, and that there will be 10 million in the hands of the public by the end of the year.

Incompatibility will also pose a serious problem for the broadcaster, and its effects will very likely be felt by all television viewers. To the extent that there are receivers in the hands of the public which are unable to receive field sequential color broadcasts, every program broadcast under those standards entails a loss of audience for the broadcaster. Our broadcasting system is dependent for its economic existence upon advertising revenue, and the advertising value of a broadcast varies directly with the number of people which it can reach. The decision to produce a program in color will be a difficult one for the broadcaster to make if it means that the program will thereby become less saleable. The transition to color must, when viewed in this light, be long and difficult. With compatibility any program could be produced in color without loss of audience, and a great impetus would

be provided for the purchase of new color receivers.

Color television is, I feel, a great forward step, with untold potentialities for the improvement of television for education and industry as well as entertainment. But it has been decided by this Commission that the most desirable course to follow would be to allow more time for the development of all color systems, including the CBS field sequential system. In view of this fact, and the fact that the problems posed by incompatibility will be frozen at their present level, I feel that every encouragement should be given the development of a compatible color system. It would be improvident, in my view, to allow only as little as three months for such a significant and difficult development to take place. I therefore feel that the date of final decision in this matter should be postponed until June 30, 1951. I do agree with my colleagues in their evaluation of the present state of the relative development of the various proposed systems so that if by that time no significant change has occurred, I would vote for the adoption of the field sequential system.

SEPARATE VIEWS OF COMMISSIONER HYDE

I fully concur with the findings, with Paragraph 120 to 143 inclusive of the conclusions of the majority, and with the proposal to adopt bracket standards. However, I am of the firm opinion that, based upon such findings, a final decision should be issued forthwith adopting standards for the CBS color system for the cogent reasons set forth in the mentioned conclusions with which I concur, and for the following additional reasons:

First—the fact that the operation of the CBS field sequential system with a direct view tri-color tube has not been demonstrated to the Commission, does not, in my opinion, preclude a final decision at this time. I am confident that acceptable tri-color tubes will be developed in the not too distant future and that the skill and ingenuity of the electronics industry will resolve the technical difficulties still to be overcome. Further, and in accord with the views of the majority, I believe that the normal competitive forces which would be released by the final adoption of a system at this time, would hasten the development of tri-color tubes. Moreover, the unanimous opinion of the expert witnesses representing both proponents and opponents of the CBS system, who testified on this point, was to the effect that such tri-color tubes would be usable by a field sequential system. This minimizes the “speculation and hope” referred to by the majority and makes the usability of such an ultimately developed tube by a field sequential system a virtual certainty. In addition, during the interim period required to develop an acceptable tri-color tube, color television would be available to those desiring it, through the use of disc or projection equipment.

Second—I am of the opinion that such dislocation and inconvenience as will necessarily be caused by the introduction of a color system, would be minimized by definitive action now. Such dislocation and inconvenience would be magnified by the absence of final action during the period of indecision, the length of which cannot be precisely determined at this time. Purchasers of new sets who would have had the option of obtaining color sets immediately, if they so desired, will now be forced to elect either to purchase a set which will require conversion to color, or to await final action at some future undeterminable date. Manufacturers would have been able to devote their full television research facilities and energies towards the further improvement of one proven and accepted system meeting all of the criteria set forth in Paragraph 122 of the conclusions, instead of dissipating them in further attempts to surmount difficulties which may be inherent in non-field

sequential systems, such as those shown to exist in the systems demonstrated in this proceeding. Broadcasters would have been able to begin immediate experimentation with color programming techniques, assured of a progressively growing audience during the period of transition.

Third—although I agree with the majority that the adoption of bracket standards will minimize further aggravation of the existing problem of compatibility, the majority discards too lightly the fact that the important problem of convertibility to color will be progressively worsened by each day of delay, and with each set manufactured.

Fourth—I am in full agreement with the majority's fear, as expressed in Paragraph 148 of the conclusions, that “one of the easiest methods of defeating an incompatible system is to keep on devising new compatible systems in the hope that each new one will mean a lengthy hearing so that eventually the mere passage of time overpowers the incompatible system by the sheer weight of receivers in the hands of the public”. The past history of these proceedings clearly shows that the danger feared by the majority of the possibility of unwarranted and costly delays hindering the introduction of color television is all too real. I am, therefore, of the opinion that the surest method to obviate the risk of unnecessarily delaying color would be to make a final determination at this time.

However, despite our differences as to methods to be used to achieve our aim, I am confident that all the Commissioners and the responsible members of the industry are as eager as I to terminate these proceedings with the adoption of a system meeting all of the mentioned criteria set forth in Paragraph 122 of the conclusions, and to expedite the use and enjoyment of color television. Accordingly, I hope that the fears expressed by the majority and by me will not be realized, and that industry will cooperate with the Commission in reaching the goal by not requesting unnecessary or unwarranted delays. Such delaying tactics would receive the short shrift they merit at the hands of the full Commission, in accord with avowed views of the majority as specifically set forth in Paragraphs 154 to 156 of the conclusions. Although, as I have heretofore stated, I am in favor of a final decision now, the Commission by majority vote has selected a different procedure for the termination of these proceedings. Accordingly, I concur especially with those conclusions which place stringent limitations on the reopening of the record and which restrict the issues and scope of the further proceedings in the event the record is reopened.

SEPARATE OPINION OF COMMISSIONER JONES DISSENTING IN PART

I certainly join in all the findings and the conclusions up to and including paragraph 143, unanimously adopted by the Commission. These findings and conclusions establish that CBS is the superior color system and the only system ready for adoption. The reasons for my dissent from the majority's action are:

1. I dissent because there is a fundamental disagreement between the majority and myself. Stated as succinctly as possible, that fundamental disagreement between us is that I am for color now. Whatever the protestations or words of the majority, their action on this day is most certainly against color now.

2. Two systems, RCA's and CTI's, claimed at the beginning of the hearing to be fully compatible and to render a high standard of performance. They failed on both accounts throughout 9700 pages of record and in the individual and comparative demonstrations held over an eleven-month period.

3. The third system, CBS's, fully complied with the Commission's Public Notice of May 1949 and its formal proposal of July 1949 commencing these proceedings. CBS successfully demonstrated on the same record and in the individual and comparative demonstrations during the same period that it was adaptable—that satisfactory black and white pictures could be received from CBS color signals with minor modifications on existing sets at relatively minor cost.

4. The Commission unanimously finds that CBS field sequential color is superior to RCA dot sequential color and CTI line sequential color.

5. As a system, CBS now fully complies with the criteria unanimously adopted by all seven Commissioners and described in paragraph 122.

6. The Commission unanimously has said about CBS color, and I heartily agree, that it produces a color picture that is most satisfactory from the point of view of "texture", "color fidelity" and "contrast". Receivers and station equipment are simple and easy to operate. It has found that the CBS picture "is bright enough and has sufficient contrast range to be entirely adequate for use in the home under normal viewing conditions". It has concluded that despite the fact the CBS system has less geometric resolution than standard monochrome, "the addition of color more than outweighs the loss in geometric resolution so far as apparent definition is concerned". It has found that compared to present commercial black and white television, interference factors are substantially the same. As a matter of fact, the Commission expressly states: "On the basis of this record, the CBS color system is at least as fully developed as was the black and white system in 1941"—when standards were set for commercial black and white set operation. The obvious question naturally poses itself: Why, if these things are true, do the majority not adopt final standards for field sequential color? In assigning "reasons" for not adopting final standards for field sequential color, the majority has invented new hurdles for color to jump when the old hurdles have been overcome.

7. The majority promises that these hurdles will be cancelled in thirty days if the industry does not build bracket standards into a substantial number of black and white television receivers produced hereafter. Thus the majority abandons its power to now decide the color question on the merits—after it has found that field sequential color is superior and is ready now. It lets the television industry decide whether we will have field sequential color thirty days from now or whether we will wait until January 1951, or perhaps throw the system out completely.

8. The Commission says "if a satisfactory compatible system were available, it would certainly be desirable to adopt such a system"; that based upon a study of the history of color development over the past ten years, "from a technical point of view compatibility . . . is too high a price to put on color". Nevertheless, it abandons its op-

portunity to finalize on the successful incompatible system in favor of a possible decision by any one in the television industry to try any other color system.

9. In view of the consistent record of the industry thwarting color for ten years,¹ the Commission gambles with the only proponent who has advanced a successful system of color television these ten long years. Although the majority claims that the status quo will be maintained by a promise of the industry to build bracket standards into a substantial number of new black and white receivers, color still is not being fostered commercially and only black and white is being fostered. The majority says "one of the easiest methods of defeating an incompatible system is to keep on devising new compatible systems in the hope that each new one will mean a lengthy hearing so that eventually the mere passage of time overpowers the incompatible systems". In its attempt to relieve the compatibility problem, during the period of more delay, the majority overlooks the fact that because the percentage of sets capable of receiving CBS color signals in black and white goes up, color is not promoted one iota.

10. The majority decides: A demonstration of the direct-view tri-color tube with the CBS system is unnecessary if a substantial percentage of black and white receivers hereafter produced do not contain bracket standards. If such sets do contain bracket standards, the majority avoids finalization because it wants such a tube demonstrated.

11. The majority decides more information on horizontal interlace is unnecessary if a substantial percentage of black and white receivers hereafter produced do not contain bracket standards. If they do, the majority again avoids finalization because, it says, it wants to know more about horizontal interlace. But it has found that the apparent definition of CBS color pictures is already satisfactory without horizontal interlace. So why wait?

12. The majority decides that it need not further consider the development of long persistence phosphors if a substantial percentage of black and white receivers hereafter produced do not contain bracket standards. If they do, the majority again avoids finalization because it wants to know more about long persistence phosphors. The Commission, however, as a part of this decision would force the industry to adopt bracket standards in black and white receivers without requiring any further proof or field testing of long persistence phosphors. Why, therefore, shouldn't we treat color in the same way?

13. We either need more information concerning direct-view tri-phosphor color tubes, long persistence phosphors and horizontal interlace, or we do not, irrespective of what the industry position is. Since the Commission will finalize CBS color if the majority of the manufacturers refuse to build bracket standards in a substantial majority of black and white sets hereafter produced, then it necessarily follows that the findings of fact amply support such action right now.

14. I agree with the majority that we ought to propose the adoption of bracket standards. I do not, however, believe that consideration of these standards should be permitted to delay a final color decision.

15. Had the Government thrown its weight against the public's desire to buy and play with crystal sets, against receivers with morning glory loud speakers and howling signals, on the theory that radio should not be commercialized until superheterodyne and FM were invented, the tycoons of television would be dwarfs today and the radio industry would be but a feeble voice in America. Today we have a color system that has long since passed the howling speaker and crystal set stage. All of the Commissioners have agreed that the field sequential system is as good as black and white was in 1941 when commercial standards were set. Every proceeding must come to an end sometime. The Commission has tested the opinions

¹ See the Annex to this opinion.

of the whole industry in the crucible of exhaustive public hearings. It has determined those positions that have been unsound, lacking in imagination, and based upon fear of competition of color with black and white television. The impurities of engineering and economic thought have been burned out by the findings and conclusions to which I adhere. The industry should examine carefully the refined ore so that it may align itself with the public interest. The Commission, on the other hand, should by final

decision now cut the Gordian knot which has bound color television for ten years.

Editor's Note: Appended to Mr. Jones' opinion is Annex totaling 80 single-spaced typewritten pages, presented as "a study of the disgraceful treatment of the field sequential system by the industry from 1940 to date." It is omitted for space reasons.

Notice to Manufacturers

FCC Proposal Regarding 'Bracket Standards'

(Full Text of FCC Public Notice No. 50-1065, Adopted Sept. 1, 1950)

SECOND NOTICE OF FURTHER PROPOSED RULE MAKING

1. Notice is hereby given of further proposed rule making in the above-entitled matters.

2. The Commission proposes to amend Part 3, Subpart E, of its Rules and Regulations ("Rules Governing Television Broadcast Stations") and Sections 1 and 2 of its Standards of Good Engineering Practice Concerning Television Broadcast Stations, in accordance with the "First Report of the Commission (Color Television Issues)" (FCC 50-1064) issued in these proceedings simultaneously with this Notice. Because of the size of the Report, it is not attached to this Notice, but copies of the Report are available on request at the offices of the Commission. However, for information of interested persons, paragraph 151 of that Report, relative to the adoption of bracket standards, is quoted, as follows:

151. In order to accomplish this purpose, the Commission simultaneously with the release of this Report is issuing a Notice of Proposed Rule Making providing for bracket standards in the present monochrome system. These bracket standards provide for a television composite video signal of substantially the type and proportion now employed in monochrome, but with the number of lines variable from 15,000 to 32,000 per second, and number of fields ranging from 50 to 150 per second.³³ Receivers built to incorporate such bracket standards would be equipped with a manual or automatic switch to select instantaneously between two sets of standards falling within the above ranges, one of which will be the present monochrome standards, and the other the CBS proposed standards. The receiver would produce pictures of equivalent size, geometrical linearity and brightness on each of the two positions of the switch. Interested persons are given until Sept. 29, 1950, to submit comments. In addition, manufacturers are requested to submit a statement as to whether if the bracket standards are adopted they would, commencing with the effective date of the order adopting the bracket standards as final—30 days after publication of the order in the Federal Register—build all their television receivers so as to be capable of operating within the above brackets. If, on the basis of the comments submitted, the Commission is able to adopt the bracket standards as final without a hearing and if the Commission receives assurances from a sufficient number of manufacturers to insure that such bracket standards will be incorporated in the great majority of television receivers, then we will be in a position to postpone a decision in this proceeding since we will have the time to explore more fully the matters set forth above, confident in the knowledge that adequate provision has been made to prevent aggravation of the compatibility question. If the bracket standards cannot be made final without a hearing or if assurances are not received from a sufficient number of manufacturers concerning their plans for incorporating bracket standards in their receivers, the Commission will not feel free to post-

³³ The Notice provides that if the brackets are adopted, television broadcasters will continue, until further order of the Commission, to broadcast in accordance with present standards—15,750 lines per second and 60 fields per second.

pone a decision, for every day that passes would aggravate the compatibility problem. In that event, a final decision would be issued adopting the CBS color standards.

3. The amendments proposed by this Notice provide for bracket standards as follows:

a. The scanning line frequency shall be within the bracket 15,000 to 32,000 per second.*

b. The field frequency shall be within the bracket 50 to 150 per second.*

In other respects the transmission standards would not be changed by this Notice.

4. On or before Sept. 29, 1950, any interested person who is of the opinion that the amendments proposed in Paragraph 3 of this Notice should or should not be adopted, or should not be adopted in the form set forth, may file a written statement setting forth his comments or proposed amendments.

5. All manufacturers of television receivers are requested by the Commission to submit comments in accordance with Paragraph 4 of this Notice, and to include in such comments an affirmative statement as to whether such manufacturers would, commencing with the effective date of the adoption of bracket standards,** design and manufacture all their television receivers so that:

(a) Such receivers would be capable of operating within the brackets set forth in Paragraph 3 of this Notice;

(b) Such receivers would be equipped with a manual or automatic switch so as to be able to select one of the following two sets of standards:

(i) 15,750 lines per second and 60 fields per second.

(ii) 29,160 lines per second and 144 fields per second.

(c) Such receivers would be capable of producing monochrome pictures of equivalent size, geometric linearity and brightness on each of the above two sets of standards.

6. In accordance with Section 1.754 of the Commission's Rules and Regulations, an original and 14 copies of such written statement shall be filed with the Commission.

7. Authority to issue the proposals herein is vested in the Commission by Sections 4(i), 301, 303(a), (b), (c), (d), (e), (f), (g), (h) and (r) of the Communications Act of 1934, as amended.

* Until further order, television stations shall utilize the following standards: the number of scanning lines shall be 15,750 per second, and the number of fields shall be 60 per second.

** An order of the Commission adopting the bracket standards would become effective 30 days after its publication in the Federal Register.

ADDING TO THE TV PRICE SPIRAL: Any way you look at it, FCC's "color scheme" would inevitably force another increase in prices of TV receivers -- another in a series of increases that have already occurred and are likely to occur. This is clear not only from preliminary cost estimates of proposed adapters and converters (see story on pages 4-5 of first section) but from other more immediate factors:

(1) Shortages of components and rising costs, causing interrupted production lines, coupled with prospect of war production, have already led to imposition of price increases by all manufacturers of any consequence. Six companies announced further hikes this week, 3 going into second round. And, illustrating acuteness of shortage situation, DuMont was forced to shut down receiver production entirely this week, awaiting supplies. Others say they're operating nip and tuck, on day to day supply basis -- simply hoping for best.

(2) 10% manufacturers excise on TVs must be passed on to customer, probably will amount to 6-10% at retail when put into effect, probably Oct. 1 (Vol. 6:34-35).

(3) Oscillator radiation, which set makers are attacking seriously, must inevitably cost money to eliminate -- and no one thinks it can be done cheaply. This is proving to be one of TV's most irksome problems (Vol. 6:23).

(4) UHF may be with us soon -- if FCC so decrees after upcoming freeze hearings -- and that could mean further adaptation and/or conversion if vhf-uhf channels are assigned to same areas. That, too, can't be done on the cheap.

Add the imposition of FCC's "bracket standards," involving like-it-or-not costly adapters to future and existing sets; take into account higher costs of color TV sets themselves -- and you face a spiraling of prices that may throw TV purchasing back to 1946-47, when sets were commonly regarded as "rich man's plaything".

* * * *

Air King, Tele-tone and Zenith announced second price increases this week. And Hallicrafters, Olympic and Sentinel were added to list of 28 firms previously announcing hikes (Vol. 6:35). All gave higher components costs, shortages and interruptions to production as reasons. [For details, see Topics & Trends, p. 3.]

DuMont's Labor Day week of 4 days saw complete shutdown of receiver plant, but not CR tube production. Set production is due to resume next week, when sufficient stockpile of scarce items may assure no further interruption for awhile. Whether DuMont will continue to ship without some tubes, isn't stated; most manufacturers take dim view of method, think whole set must be tested on 'hot line' -- one even asserting: "Shipping without tubes is like shipping cars without engines."

* * * *

Intended frankly as brake on buying, new Regulation W was announced Friday by Federal Reserve Board, effective Sept. 18. Among other things, it requires 15% down payment, with no more than 18 months to pay, on TVs, radios and other appliances now often sold with only 10% or no down payments and 2 years or more maturity. Items selling for less than \$100 are exempt from down payment requirements, but must be paid off within the 18-month time limit. And as we went to press, President Truman was preparing to make another fireside chat Saturday night explaining home front mobilization, including plans to allocate scarce materials, give priority to defense contracts, finance defense plant expansions, control inventories, discourage hoarding, etc.

* * * *

Note: Feverish rate of current production is indicated by industry figures for first 3 August weeks (projected from RTMA). They show 159,755 TV sets produced first week, 175,609 second, 179,032 third -- total of 514,396. Radios numbered 276,264, 330,554, 299,689 -- total 906,507.

NEW PICTURE TUBES DUE IN FALL-WINTER: First of the big tubes (above 20-in.) to appear in sets is likely to be DuMont's 30-in. (Vol. 6:12,21,27,28). Dr. DuMont expects to have them in "fair amount" of receivers by October or November, consoles only. His own sets will take all he can make, he says.

Prospect of military orders hasn't interrupted plans for 30-in., says DuMont, pointing out that huge units will also have number of military applications -- radar, classroom instruction, etc.

Except for 30-in., work on new tubes seems most heavily concentrated on new 17 & 21-in. metal-coned rectangulars, with tough production problems fairly well licked. RCA has already sampled 17-in., but large-scale production and delivery isn't expected until December. RCA hasn't yet decided what next larger size will be, but it's definitely planning one in 21-to-23-in. range -- nothing bigger now.

Sylvania expects to sample 17 & 21-in. in about 60 days, make deliveries during first quarter 1951. DuMont intends to have 17-in. out before end of year, 21-in. a little later.

Production of 24-in. is less definite. GE is "going ahead with plans" (Vol. 6:19), but doesn't indicate when 24-in. sets will appear. Sylvania reports that mobilization uncertainties have slowed its 24-in. plans. DuMont doesn't intend to make anything between 21 & 30-in.

* * * *

Production of glass blank makers Corning and American Structural Products Co. is currently as follows:

Corning: Making 12½-in. only for replacement and for Philco's special shape (Vol. 6:25); 14-in. rectangular volume small, "almost obsolete,"; 17-in. rectangular is the big item, with 16-in. rectangular and round fast fading; 19-in. round output small; 20-in. rectangular production just beginning; 24-in. rectangular in planning stage, production probable, but not until next year; no other sizes contemplated.

ASPC: No 12½-in.; 14-in. rectangular running about 10% of total, with "revival of interest in it during last month"; 16-in. rectangular accounts for almost all the rest, with 17-in. deliveries just starting; 19-in. rectangular still indefinite as far as actual production dates concerned; no firm plans for still larger sizes; no rounds have been made for 3 months.

Glass makers have no fears of raw material shortages, although there has been some trouble getting soda ash because of a strike. Even metal cone tubemakers don't seem worried about steel shortages. However, it's generally agreed steel would run short before glass, if mobilization went into high gear.

Trade Personals: Scott W. Donaldson, deputy asst. Secretary for the Air Force, Sept. 15 joins Tele King as v.p.; he's former sales mgr. for A. S. Aloe Co., St. Louis (hospital & surgical supplies), later was asst. to Surplus Property Administrator . . . Robert S. Bell, v.p. & asst. gen. mgr., promoted to executive v.p. of Packard-Bell . . . B. L. Bethel, ex-Zenith, Bendix, Muter and Stewart-Warner, named v.p. in charge of purchasing for John Meck Industries . . . Harold R. Terhune, ex-RCA Victor, joins Mycalex Tube Socket Corp. as v.p. in charge of standards dept. . . . John M. Miller Jr., principal TV receiver engineer, promoted to chief engineer of Bendix TV-radio research and engineering dept.

One newspaper page that folds over into 16, offering daily TV schedules for following week, plus editorial commentaries and "full page" ads opposite, is new wrinkle in publication of advance TV program schedules started in *Washington Post Sun.*, Sept. 3. Section is called *TV Week*. Readers are instructed how to fold and trim, so that 5½x7½-in. "booklet" is made handy for daily reference. First issue had 8 "full-page" ads, mostly dealers, plus "cover" picture and back-page house ad.

RTMA Parts Division chairman R. G. Zender, Lenz Electric Mfg. Co., has appointed 1950-51 section chairmen as follows: G. O. Benson, Premax, antenna; K. E. Rollefson, Muter, ceramic capacitor; Edwin I. Guthman, coil; W. Myron Owen, Aerovox, fixed capacitor; D. S. W. Kelly, Allen-Bradley, fixed resistor; R. L. Triplett, instrument & test equipment; Jay H. Johnson, Johnson & Hoffman, metal stampings & metal specialties; S. N. Shure, phonograph cartridges, pickups & microphones; H. E. Moon, General Industries, record changers & phono-motor assemblies; Lester W. Tarr, Cinch Mfg., socket; Matt Little, Quam-Nichols, speaker; Wm. H. Welsh, speaker parts; W. R. McLeod, King Labs, special products; W. S. Parsons, Globe-Union, switch; L. S. Racine, Chicago Transformer, transformer; S. L. Gabel, Superior Tube, tube parts; Russell E. Cramer Jr., Radio Condenser, variable condenser; Victor Mucher, Clarostat, variable resistor; John S. Miller, Cornish Wire, wire; Roy S. Laird, Ohmite, wire wound resistor & rheostat.

Western Merchandise Mart's winter market has been set for Feb! 5-9 inclusive, combined with Western Gift, Toy & Housewares Show.

Topics & Trends of TV Trade: Probably epitomizing the reaction of TV distributors to FCC color report, is this missive received from Richard S. Levy, of W. Bergman & Co., Philco distributor for Buffalo area, representing second generation management, engineering-graduate type of distributor who follows main trends more closely than ordinary run of merchandiser. His note was mailed Sept. 1, same day report was released, so represents an instant reaction:

"We think the mountain has gone through mock labor to produce a mouse. The pro-CBS leanings are disturbing from a common sense standpoint. What will 100,000-plus TV owners here do—"wait and see" again before spending money for modification? And will our lone telecaster or future telecasters wait until an audience develops from new sets (possibly made by reluctant manufacturers) or modified by a cautious public?"

"I dread the thought of starting the cycle all over again, when we really should know better."

If these reactions are typical, they represent a lot of grass roots influence. There are an estimated 1500 distributors, 30-40,000 dealers (Vol. 6:8)—besides 7,500,000-plus set owners now. And there will very likely be 10,000,000 sets in homes by year's end when volume of adapted sets, let alone color sets, will still be insignificant—regardless what FCC, CBS or manufacturers do.

* * * *

TV-radio manufacturers are again major sponsors of network TV programs, as new fall-winter schedules start this month—with NBC-TV having most sponsors but CBS-TV having more actual time sold in that classification. On NBC-TV are: Admiral, *Lights Out*, Mon. 9-9:30 on 53 stations; Crosley, *Saturday Night Revue*, 10-10:30 segment on 46; Emerson, *The Clock*, alternate Fri. 9:30-10 on 31; Philco, *TV Playhouse*, Sun. 9-10 on 60; RCA, *Kukla, Fran & Ollie*, Mon. & Fri. 7-7:30 on 55. In addition, Motorola is reported to have signed for every fourth Wed. 8-9 starting Oct. 4.

On CBS-TV are: GE, *Fred Waring Show*, Sun. 9-10 on 44 stations (resumes Sept. 24); Magnavox, *Magnavox Theatre*, alternate Fri. 9-10 on 17 (starts Sept. 15); Sylvania, *Beat the Clock*, Fri. 10:30-11 on 20 (starts Sept. 29); Westinghouse, *Studio One*, Mon. 10-11 on 45.

On ABC-TV are: Admiral, *Stop the Music*, Thu. 8-8:30 on 29 stations; Philco, *Don McNeill Show*, Wed. 9-10 on 39 (starts Sept. 13). And on own network, DuMont sponsors *Morey Amsterdam Show*, Thu. 9-9:30 on 45. Many other manufacturers, of course, are using local radio and TV spots, with Hoffman making extensive use of both media.

* * * *

Olympic hiked prices on 6 of its 17 sets \$10 to \$20. The new prices (increases in parentheses) are as follows; for description of sets see *TV Directory No. 11*:

16-in. rectangular: Model 762 Riviera, \$269.95 (\$20); 753 Monte Carlo, \$299.95 (\$10); 753B, \$314.95 (\$10); 764 Broadmoor, \$329.95 (\$10); 764B, \$349.95 (\$10).

19-in. round: DX932 Diplomat, \$389.95 (\$20).

* * * *

Sentinel raised prices \$10 on 2 sets, \$20 on remaining 7 models in new line (Vol. 6:32). New prices (increases in parentheses):

16-in. rectangular: Model 420TVM, \$259.95 (\$20); 423CVM, \$299.95 (\$10); 423CVB, \$309.95 (\$10); 424CVM, \$349.95 (\$20); 424CVB, \$369.95 (\$20).

19-in. round: 428CVM, \$379.95 (\$20); 428CVB, \$399.95 (\$20); 425CVM, \$449.95 (\$20); 425CVB, \$469.95 (\$20).

For description of sets, see *TV Directory No. 11*.

Zenith boosted prices \$10 to \$55 on all sets, including 6 of those raised month ago (Vol. 6:31). New prices are as follows (amount of increase in parentheses); for description of sets see *TV Directory No. 11*:

12½-in. (all up \$10): H2227R, \$189.95; H2227E, \$199.95; H2226R, \$209.95; H2250R, \$249.95; H2255E, \$269.95.

16-in. rectangular: H2329R, \$249.95 (\$10); H2328R, \$259.95 (\$10); H2352R, \$319.95 (\$20); H2353E, \$329.95 (\$20).

16-in. round: H2438R, \$319.95 (\$20); H2449E, \$339.95 (\$20); H2439R, \$359.95 (\$10); H2437R, \$379.95 (\$20); H2437E, \$399.95 (\$20); H3267R, \$489.95 (\$20); H3475R, \$549.95 (\$25); H3469E, \$599.95 (\$50).

19-in. round: H2447R, \$429.95 (\$30); H2445R, \$479.95 (\$30); H3477R, \$695 (\$45); H3478E, \$750 (\$55).

* * * *

Tele-tone increases cover 18 of 21 sets, with hikes of \$10 to \$60. This follows first increases on 9 out of 12 sets of regular line month ago (Vol. 6:31). Following are new prices (increases in parentheses); for description of sets see *TV Directory No. 11*:

14-in. rectangular: Model 322, \$169.95 (\$20); 323, \$179.95 (\$10); 318, \$189.95 (\$10); 314, \$199.95 (\$20).

16-in. rectangular: 335, \$239.95 (\$20); 325, \$259.95 (\$20); 325R, \$309.95 (\$40); 326, \$299.95 (\$20); 326R, \$349.95 (\$50); 330, \$249.95 (\$20); 310, \$349.95 (\$10); 331, \$369.95 (\$20); 332, \$369.95 (\$20); 333, \$369.95 (\$20).

17-in. rectangular: 336, \$219.95 (\$30); 327, \$399.95 (\$30). 19-in. round: 329, \$349.95 (\$60); 328, \$369.95 (\$30).

* * * *

Hallicrafters raised prices \$4 to \$40 on 14 of 18 sets. New prices (increases in parentheses) are as follows; for description of sets see *TV Directory No. 11*:

16-in. rectangular: Model 810, \$239.95 (\$40); 815, \$259.95 (\$10); 811, \$279.95 (\$10); 805, \$289.95 (\$10); 806, \$299.95 (\$4).

16-in. round: 822, \$319.95 (\$20); 818, \$339.95 (\$10).

17-in. rectangular: 870, \$319.95 (\$20); 871, \$339.95 (\$20); 820, \$359.95 (\$10); 821, \$389.95 (\$10); 860, \$459.50 (\$10); 861, \$499.50 (\$10).

Only 19-in., 880, was boosted \$20 to \$399.95.

* * * *

Air King raised prices \$10 to \$30 on 4 sets in line for second time in month (Vol. 6:32) and for first time on 2 other models, also discontinued 12½ and 14-in. production. New prices (increases in parentheses) follow; for description of sets, see *TV Directory No. 11*:

16-in. rectangular: Model 16M1, \$219.95 (\$20); 16T1, \$249.95 (\$10); 16C1, \$299.95 (\$20); 718, \$349.95 (\$20); 16K1, \$429.95 (\$30).

19-in. round: 19C1, \$379.95 (\$20).

* * * *

New private label TV with AC-DC, for New York's reported 400,000 families with direct current power, has been put on market by Raytheon distributor Colen-Gruhn Co. Bearing name "Gotham Visionaire", line of 12½-in. sets consists of table at \$240, console \$270, period console with doors \$340. Sets are made by Harold Shevers Inc.

Sears Roebuck's fall-winter catalog lists 2 new Silver-tone sets—16-in. rectangular in mahogany table, \$220; same in console with AM-FM-phono, \$350. Reduced was 16-in. rect. in metal table from \$210 to \$180.

Two of larger military contracts for electronics equipment announced by Commerce Dept. for week ended Sept. 5 (both let through Signal Corps, Philadelphia): Sperry Gyroscope, \$242,356, electron tubes (2824 units); Transmitter Equipment Mfg. Co., Inc., New York, \$192,928, radio terminal sets (23 units).

Joint Electronics Industry Committee, top level group of 22 formed to advise on industry's part in defense mobilization (Vol. 6:32), added 4 members at New York meeting Sept. 5: John W. Craig, Crosley; Allen B. DuMont; Harry A. Ehle, International Resistance; H. L. Hoffman, Hoffman Radio. Organizational meeting in office of Western Electric's Fred Lack designated him officially as chairman, with these aides: John L. Sullivan, ex-Secretary of Navy, counsel; H. G. Beauregard, of Sullivan's Washington law office, secy.; Commodore J. K. Richards, executive director of National Security Industrial Assn., treas.; Patterson Humphrey, NSIA communications specialist, asst. treas. Headquarters are in Mr. Sullivan's Washington office, 804 Ring Bldg.

FCC's color report brought into being unusual organization. Assn. of Tele-Viewers, 1737 DeSales St. NW, Washington, issued widely published press release Friday, stating: "The need for the [association] has been brought into sharp focus by the recent announcement of the FCC's contemplated decision to authorize a non-compatible color TV system which, it is feared by the ATV, will relegate the present TV audience of 25,000,000 to 'second class tele-viewing.'" First job, it said, was to get FCC to reopen hearing to get testimony from public. Handling public relations is Charles E. V. Prins, formerly public relations director of Office of Defense Transportation, now on his own. He identified 4 of 7 board members of "non-profit educational" group as follows: John M. Carmody, ex-Administrator, Federal Works Agency, now consultant; H. D. Cleveland, chairman of John S. Emery Inc., New York shipping firm; J. Hobart Hutchinson, financial secretary of IBEW-AFL's local in Chicago (its largest—15,000 members), with dominance in Admiral, Rauland and Webster-Chicago plants, among others; George L. Shields, independent Hollywood film producer. Organization was "spontaneous," says Prins, but impression given is that he's guiding light. He insists group has no connection with industry. RTMA and RCA say they never heard of group. In Washington offices of IBEW, Lawson Wimberly, asst. to president, had no knowledge of ATV. He said both CBS and RCA had tried to get IBEW to intervene in color squabble, but union refused. Prins said group has enough finances "to do what we're doing. But we may accept memberships from public later, at nominal fee."

"Who's Kid'n Whom?" heads managing editor Earl Lifshey's column in Sept. 5 *Retailing Daily*, in which he takes strong issue with RTMA president Robert C. Sprague's assertion that there are enough parts for replacement market (Vol. 6:34-35). "There are just not enough tubes and components available (or in sight) to take care of both the record TV production and the servicing requirements of sets already sold," said Lifshey. Manufacturers, he says, are choosing to use scarce supplies for new sets, not replacement—and he warns they may wake up later "with a belly-full of irate customers."

Pacific Electronic Exhibit in Long Beach (Cal.) Auditorium, Sept. 13-15, has more than 120 exhibitors, including such TV and radio set producers as DuMont, GE, Hoffman, RCA, Westinghouse. Most others are component makers. During same dates, Pacific IRE convention meets—with more than usual interest in banquet speech and TV symposium to be conducted by FCC Comr. George Sterling, during which he inevitably will be asked questions on FCC color decision. On panel are: James McLean, Philco; Cameron Pierce, ABC; Merrill Trainer, RCA; Robert Sanders, Hoffman.

Motorola earnings for full year 1950 may exceed \$14 a share under present tax rates, according to C. F. Wagner, of Shearson, Hammill & Co.

Financial & Trade Notes: International Resistance Co., largest of resistor manufacturers, reports sales of \$4,629,646 for period Jan. 1 to June 25, 1950 and profit of \$417,447 or 45¢ per share on 896,297 common shares outstanding. This compares with \$3,086,287 sales and \$169,465 profit (17¢ on 755,419 shares) for equivalent 1949 period. Increase in common resulted from 2-for-1 conversion of preferred. President Ernest Searing stated firm is expanding facilities to meet increasing demand, having arranged for 3½% loans up to \$1,200,000 from two local banks for expansion and working capital.

Olympic sales for 6 months ended June 30 reached record total of \$7,702,377 vs. \$3,400,128 in same 1949 period, and came within 20% of \$9,609,672 total for all 1949. Profit for first 6 months this year was \$479,135, or \$1.44 per share on the 322,974 shares of common outstanding at June 30, as against \$162,959 (49¢) for same period last year. Present plans are for output of 100,000 TV sets during last 6 months of year, but president Adolphe Juviler says military orders and "growing stringency" in components may preclude this goal.

General Instrument Corp. has called stockholders meeting Oct. 2 to authorize increasing authorized common from 700,000 (486,858 issued) to 1,500,000 shares as preliminary step in providing for long-term financing program. Plans are to acquire Midwest factory. For 4 months ended June 30, sales were reported at \$7,304,909 vs. \$3,057,643 for same 1949 period; net income after all taxes \$343,100 vs. loss of \$204,266 for same 1949 period.

Collins Radio Co. sales were \$12,400,000 for fiscal year ended July 31 vs. \$9,675,000 in preceding year. Subject to audit, net profits are estimated at \$400,000 vs. \$290,605. President Arthur A. Collins reports company has backlog of \$45,000,000 in govt. and civilian orders, compared with \$21,000,000 on July 31, 1949 and \$25,000,000 as of Jan. 31, 1950.

Cornell-Dubilier sales for 9 months ended June 30 were \$19,432,514, net income \$970,148 or \$2.15 per share on 423,485 common shares outstanding after allowing for preferred dividends. Comparative figures for same 1949 period are unavailable. For 6 months ended March 31, net income was \$554,823 (\$1.21) on \$10,167,358 sales.

Dividends: Admiral regular quarterly dividend of 25¢ is payable Sept. 30 to stock of record Sept. 18 . . . Arvin (formerly Noblitt-Sparks) dividend of 50¢ is payable Sept. 30 to stock of record Sept. 18; this is equal to 75¢ on old shares, a 50¢ stock dividend having been paid July 6 . . . Corning Glass regular quarterly 25¢ dividend is payable Sept. 30 to stock of record Sept. 19 . . . Muter, quarterly dividend of 15¢ is payable Sept. 30 to stock of record Sept. 15.

Radio Condenser Co. Ltd., Toronto subsidiary of Trenton manufacturer, plans new \$250,000 factory which when completed next March will employ 200 in manufacture of TV tuners, variable condensers, etc. . . . Packard-Bell has awarded contract for new \$200,000 building to be completed in November; it will add 50,000 sq. ft., adjoining present 54,000-ft. factory in Los Angeles.

TV set maker Earl Muntz, once Los Angeles used car dealer, has announced plans to produce new auto capable of 140mph and selling for about \$5000. Muntz Car Co. Inc. has been chartered in Illinois, with authority to issue 2,000,000 shares of no par common stock, initial financing to come from 275,000 shares at \$1 each.

Television-Electronics Fund Inc. is new name of Television Fund Inc., open end investment trust, approved this week by stockholders (Vol. 6:33).

Looking to End of TV Freeze

Order & Appearances for Hearing on General Issues

(Scheduled to be Conducted Before FCC En Banc Oct. 2, 1950; Docket No. 8736)

With Gist of Comments and List of Opposition Witnesses

Adopted Sept. 1, 1950, and Released as FCC Public Notice No. 50-1066

For text of proposed rules and allocations, see Supplement No. 64 as corrected by Supplement No. 66

For digests of oppositions, see Supplements No. 67 to 67G

In the Matters of
 Amendment of Section 3.606
 of the Commission's Rules
 and Regulations. } Docket Nos. 8736 and 8975

Amendment of the Com-
 mission's Rules, Regulations
 and Engineering Standards
 Concerning the Television
 Broadcast Service. } Docket No. 9175

Utilization of Frequencies
 in the Band 470 to 890 Mcs.
 for Television Broadcasting. } Docket 8976

FIFTH NOTICE OF AMENDMENT OF
 Notice of Further Proposed Rule Making

and

Notice of Hearing and Order of Testimony
 (General Issues)

1. Testimony relating to the general issues listed in the attached Appendix will be heard by the Commission on Oct. 2, 1950, at 10 A.M. in the U.S. Department of Commerce Auditorium, 14th Street between E Street and Constitution Avenue N.W., Washington, D. C.

2. Parties listed in the attached Appendix will be permitted to testify if they so desire, in support of general comments contained in their filed statements. Parties who have filed statements herein which combine general proposals and proposals for the allocation of specific channels to specific communities will not be permitted to testify concerning such specific proposals at this time.¹ At a later date, the Commission will issue a Notice scheduling the hearing on such specific proposals and listing the parties entitled to participate therein. Parties listed in the attached Appendix who desire to rest on their written comments heretofore filed, and who do not desire to testify, are requested to so advise the Commission Counsel in advance of the commencement of this portion of the hearing. Accordingly, parties desiring to testify should take into account that all listed parties may not desire to be heard, and should plan their availability with this in mind.

3. Commencing on June 5, 1950, the Commission heard testimony with respect to paragraph "11" of the "Notice

¹ The overall allocation plan proposed by Allen B. DuMont Laboratories, Inc. (*Television Digest* Supplement No. 68) will be considered at the inception of the subsequent portion of the hearing relating to allocation of specific channels to specific communities. Parties who have filed comments with respect to the specific allocations proposed by DuMont will be heard at that time.

of Further Proposed Rule Making" (FCC 49-948) issued herein on July 11, 1949, concerning the following issue:

"To receive evidence and data with respect to the question whether there should be an allocation of the band 470-500 Mcs. to multi-channel broadband common carrier mobile radio operation in lieu of television broadcasting."

Parties who presented testimony in support of the above allocation and who completed their direct cases were Bell Telephone Laboratories, Inc., United States Independent Telephone Association, National Mobile Radio System and Mutual Telephone Company. Parties who opposed said allocation were Television Broadcasters Association, Allen B. DuMont Laboratories, Inc., and Philco Corporation and Philco Television Broadcasting Corporation. The three opposing parties were permitted to make limited presentations and were granted leave to "make a complete showing on their affirmative case in connection with the further hearings to be had herein relating to the promulgation of television rules and standards and the allocation of television channels in the UHF band." The above ruling provided further that "At the time of such presentation, the common carrier parties who have appeared herein with respect to the issue now being tried will be afforded an opportunity to participate further in the consideration of this question through cross-examination of the witnesses presented in behalf of the broadcasters." Accordingly, the names of the above supporting parties have been listed in the attached Appendix as parties entitled to cross-examine TBA, DuMont and Philco and to offer rebuttal evidence.

4. Immediately upon the conclusion of the direct testimony of any of the parties listed in the attached Appendix, such parties will be subject to cross-examination by the Commission, its staff, the four supporting parties listed in Paragraph "3" above, and all parties who have filed oppositions to the proposals of the party presenting its direct testimony.

5. Attention is again called to Paragraph "15(d)" of the "Notice of Further Proposed Rule Making" herein (FCC 49-948) which requires parties to have available at the hearing for distribution among the Commission and its staff 20 copies of all exhibits offered in evidence. In addition, participants should plan, if possible, to have available 100 additional copies of each exhibit for distribution to interested parties and persons attending the hearing.

6. The Appendix attached hereto lists the issues to be considered by the Commission and the order in which the interested parties will testify. Parties who have duly filed statements or oppositions concerning any of the general issues and whose names do not appear on the attached

Appendix should promptly communicate with Commission Counsel their desire to be listed.

7. Attention is called to the discussion with respect to horizontal interlace in the First Report of the Commission (Color Television Issues) (FCC 50-1064) issued this date. The Commission is of the opinion that horizontal interlace gives promise of being an important development in television broadcasting. Interested persons are urged to con-

duct a series of field tests to determine whether horizontal interlace can be utilized in the present monochrome system. Any person desiring to offer any specific proposal for the use of horizontal interlace in the present monochrome system may present evidence on this phase of the proceedings at the conclusion of the other matters listed in the attached Appendix. Notice of intention to offer such evidence shall be given by Oct. 31, 1950, unless a later date is prescribed by the Commission.

APPENDIX—Order of Testimony

ISSUE

A. APPENDIX A OF NOTICE OF FURTHER PROPOSED RULE MAKING (FCC 49-948) ISSUED JULY 11, 1949. (With Gist of the Comments Filed by Principals)

Note: Bell Telephone Laboratories Inc., U. S. Independent Telephone Assn., National Mobile Radio System, Mutual Telephone Co. will be permitted to cross-examine on assignments of 470-500 mc to common carriers (Vol. 6-23-24).

Joint Technical Advisory Committee—Recommends allocation of more uhf channels, consideration of adoption of offset carrier for overall allocation, grouping of uhf channels to reduce oscillator and image interference.

Television Broadcasters Assn., New York, N. Y.—Requests assignment of at least 4 channels for each major city; objects to intermingling of vhf and uhf channels in same cities; recommends addition of entire 475-890 mc band for TV. Counsel: Roberts & McInnis.

Oppositions: Bell Telephone Laboratories Inc., United States Independent Telephone Assn., National Mobile Radio System, Mutual Telephone Co., John H. Poole.

Allen B. DuMont Laboratories Inc., Passaic, N. J., operator of TV stations WABD, New York; WDTV, Pittsburgh; WITG, Washington. General comments and proposed new allocation plan. Counsel: Roberts & McInnis.

Oppositions: Bell Telephone Laboratories Inc., United States Independent Telephone Assn., National Mobile Radio System, Mutual Telephone Co., WDEL Inc., Allegheny Broadcasting Corp., WGAL Inc., Associated Broadcasters Inc., Keystone Broadcasting Corp., Gable Broadcasting Co., Hazelton Broadcasting Co., Reading Broadcasting Co., John H. Poole, Pittsburg Broadcasting Co. Inc.

Philco Corp., Philadelphia, Pa., licensee of TV station WPTZ—Recommends immediate unfreezing of vhf, urges use of offset carrier, that uhf allocation be studied from point of view of receiver design. Representative: David B. Smith.

Oppositions: Bell Telephone Laboratories Inc., United States Independent Telephone Assn., National Mobile Radio System, Mutual Telephone Co.

Radio-Television Manufacturers Assn., Washington, D. C.—Calls attention to previous recommendations that assignments of vhf and uhf be arranged so there is a minimum of overlap.

National Association of Broadcasters, Washington, D. C.—Questions legality of putting allocations in rules; suggests further study of standards in conjunction with Bureau of Standards.

Federal Communications Bar Association, Washington, D. C.—Objects to procedure proposed by the Commission; claims procedure for changing table of allocations violates Communications Act of 1934 since it deprives applicants of statutory right to be heard. President: Guilford Jameson.

Assn. of Federal Communications Consulting Engineers, Washington, D. C.—Objects to making allocations part of rules, objects to assumption in proposed standards that vhf and uhf channels are equal, recommends adequate coverage be made basis for minimum power regulation, believes separation factors may be too great, recommends full use of directional antennas, offset carrier, etc., declares protection of stations to natural areas is more logical. Counsel: Dow, Lohnes & Albertson.

Columbia Broadcasting System Inc., New York, N. Y., operates WCBS-TV, New York; owns 49% of KTTV, Los Angeles; 45% of WTOP-TV, Washington—Objects to intermingling of vhf and uhf channels in same cities.
Oppositions: John H. Poole.

Haley, McKenna & Wilkinson, Washington, D. C., in behalf of various clients—General comments on proposed FCC standards and allocations.

Paramount Television Productions Inc., Los Angeles, Cal., licensee of TV station KTLA—Says economic factors should be taken into account; recommends assignment of uhf channels in major cities to assist in developing such frequencies. Counsel: Arnold, Fortas & Porter.
Oppositions: Columbia Broadcasting System Inc., Allen B. DuMont Laboratories Inc.

American Broadcasting Co., New York, N. Y., licensee of AM stations WJZ, New York; WENR, Chicago; KGO, San Francisco; WXYZ, Detroit; KECA, Los Angeles; operating TV stations in foregoing cities—Requests no intermingling of vhf and uhf channels in same city. Also requests assignment of Channel 8 to Wilmington in lieu of Channel 7; assignment of Channel 12 to Grand Rapids in lieu of Channel 7; deletion of Channel 7 from Mexicali, Mexico.
Oppositions: John H. Poole.

Technical Appliance Corp., Sherburne, N. Y.—Has testimony on receiving antenna characteristics in uhf bands. Appearance: Kendrick H. Lippert, chief engineer.

WSM Inc., Nashville, Tenn., licensee of AM station WSM—Requests permission to submit data on tests on 70 mc and 600 mc. Counsel: Caldwell-Rollo.

Associated Broadcasters Inc., Easton, Pa., licensee of AM station WEST—Requests assignment of additional Channel 51 to Allentown-Bethlehem-Easton area; on assumption entire 500-890 mc band is used. Counsel: George O. Sutton.

Keystone Broadcasting Corp., Harrisburg, Pa., licensee of AM station WKBO—Requests assignment of Channels 22, 42, 46 to Harrisburg; on assumption whole uhf band 500-890 mc is used. Counsel: George O. Sutton.

Kansas State College of Agriculture & Applied Science, Manhattan, Kan. (KSAN)—Requests assignment of Channel 8 to Manhattan from Junction City, Kan.; assignment of Channel 15 to Junction City; also requests that stations in non-metropolitan areas be permitted to operate with lower power than proposed as minimum for metropolitan stations.

Valley Electric Co., San Luis Obispo, Cal., licensee of AM station KVEC—Requests assignment of Channel 3 to San Luis Obispo; also that minimum powers for metropolitan stations be reduced when lower powers give adequate coverage of city. Counsel: Caldwell-Rollo.

Communications Measurements Laboratory Inc., New York, N. Y.—Opposes FCC plans; recommends stopping of all vhf grants, provision in uhf for all existing vhf authorizations, start allocation from middle of uhf bands; other proposals re block assignments to eliminate interference.

Oppositions: WDEL Inc., Allegheny Broadcasting Corp., WGAL Inc., Associated Broadcasters Inc., Keystone Broadcasting Corp., Gable Broadcasting Co., Hazelton Broadcasting Co., Reading Broadcasting Co., Houston Post Co., KTRH Broadcasting Co., Texas Television Co., Shamrock Broadcasting Co.

Television Research, Washington, D. C.—Recommends own plan to provide more channels in larger cities by cutting down on separation mileage for uhf channels. Appearance: Alexander Korn.

Oppositions: WDEL Inc., Allegheny Broadcasting Corp., WGAL Inc., Associated Broadcasters Inc., Keystone Broadcasting Corp., Gable Broadcasting Co., Hazelton Broadcasting Co., Reading Broadcasting Co.

California Communications Advisory Board, Sacramento, Cal.—Favors FCC's allocations, particularly use of Channels 4 and 5 in Los Angeles and San Francisco, which permits State's public safety service to operate without interference.

William H. C. Higgins, West Orange, N. J.—Recommends no allocation of community channels be made; also that provision be made for temporary operation at less than minimum powers where it can be shown a good grade of service will result; also requests Channels 14, 16 or 28 be assigned to LaPorte-Michigan City, Ind.
Oppositions: Home News Publishing Co.

WBEN Inc., Buffalo, N. Y., licensee of AM station WBEN and TV station WBEN-TV—Requests clarification of proposed power-antenna height rules; also asks inclusion in standards of methods and curves included in Vol. 1, Report of Ad Hoc Committee. Counsel: Spearman & Roberson.

Archer S. Taylor, Missoula, Mont.—Requests waiver of minimum power proposal for metropolitan stations for Montana, Wyoming, Nevada and Idaho; or for cities of less than 50,000 population; or that a minimum of 500 watts be permitted, provided Grade A service is rendered city limits.

Hearst Radio Inc., New York, N. Y., licensee of TV station WBAL-TV, Baltimore—Favors FCC proposals for maximum power. Counsel: Dempsey & Koplovitz.

Johnson-Kennedy Radio Corp., Chicago, Ill., licensee of AM station WIND—Requests revision of maximum power to permit station to cover 90% of Grade B service area. Counsel: Pierson & Ball.

Independent Merchants Co., Minneapolis-St. Paul, Minn., licensee of AM station WLOL—Requests revision of maximum power to permit station to cover 90% of Grade B service area. Counsel: Pierson & Ball.

Triangle Publications Inc., Philadelphia, Pa., licensee of AM station WFIL and TV station WFIL-TV—Requests WNHC-TV, New Haven, not be changed from a community to a metropolitan station, or, if changed, be required to install and use a directional antenna to protect WFIL-TV; objects to proposal to authorize metropolitan stations to increase power to 100 kw. Counsel: Morton H. Wilner.

WDEL Inc., Wilmington, Del., licensee of AM station WDEL and TV station WDEL-TV—Requests assignment of Channel 8 in lieu of Channel 7 to Wilmington. Counsel: George O. Sutton.

Massachusetts Broadcasting Corp., Boston, Mass., licensee of AM station WCOP—Requests assignment of additional Channels 9 and 13 to Boston; affecting Manchester, Portsmouth, Portland, Yarmouth (N. S.), Charlotetown (PEI), Ste. Anne de la Pocatiere (Quebec). Counsel: Segal, Smith & Hennessey.

Trent Broadcasting Corp., Trenton, N. J., licensee of AM station WTTM—Requests assignment of Channel 8 to Trenton; modification of minimum power requirements; permission to render Grade B service to 90% of metropolitan district. Counsel: Pierson & Ball.

Mercer Broadcasting Co., Trenton, N. J., licensee of FM station WTOA—Requests assignment of vhf channel to Trenton. Counsel: Arthur W. Scharfeld.

WHEC Inc., Rochester, N. Y., licensee of AM station WHEC—Requests assignment of Channel 10 to Rochester from Syracuse, Channel 6 to Syracuse, with interference reduced through use of directional antenna. Counsel: Dow, Lohnes & Albertson.

Hudson Valley Broadcasting Co., Albany, N. Y., licensee of AM station WROW—Requests retention of Channels 4, 7, 11 for Albany-Troy-Schenectady area instead of Channels 4, 42, 44. Counsel: Prince, Cilneburg & Nunn.

Community Broadcasting Co., Toledo, O., licensee of AM station WTOL—Requests assignment of Channel 10 to Toledo; modification of minimum power requirements; use of offset carrier, directional antennas. Counsel: Pierson & Ball.

WGAL Inc., Lancaster, Pa., licensee of AM station WGAL and TV station WGAL-TV—Favors FCC's proposed assignment of Channel 4 to Lancaster. Counsel: George O. Sutton.

Presque Isle Broadcasting Co., Erie, Pa., licensee of AM station WERC—Requests assignment of Channel 3 to Erie; objects to substitution of Channel 45 therefor. Counsel: Arthur W. Scharfeld.

Eastern Radio Corp., Reading, Pa., licensee of AM station WHUM—Requests Channel 8 or Channel 12 for Reading by utilizing a 500 watt transmitter and directional antenna. Counsel: Fly, Fitts & Shuebruk.

Pennsylvania Broadcasting Co., Philadelphia, Pa., licensee of AM station WIP—Requests assignment of Channel 12 to Philadelphia, instead of uhf channel proposed; would substitute uhf channel at Binghamton if interference is factor. Counsel: Dow, Lohnes & Albertson.

WDSU Broadcasting Services, New Orleans, La., licensee of AM station WDSU and TV station WDSU-TV—Requests modification of FCC proposals to require use of directional antennas and offset carrier in regions where tropospheric interference is greater than normal; that Channel 6 in Beaumont-Port Arthur be required to use directional antenna or offset carrier to protect Channel 6 in New Orleans. Counsel: Pierson & Ball.

Collins Radio Co., Cedar Rapids, Iowa—Will report on work "in adapting resonatron tube as a linear power amplifier capable of uhf cw power output of 30 kw and having a bandwidth of 6 mc with a power gain of 10 db in the uhf band." Appearance: L. Morgan Craft, vice president.

Alr King Products Co. Inc., Brooklyn, N. Y.—Recommends that every uhf transmitter be required to transmit simultaneously both video and sound and a cw carrier; with cw carrier so spaced in frequency from picture and sound carrier that difference will fall into unused vhf channel in particular locality; thus, permitting crystal to be used in present receiver antenna lead-in. By converting uhf channel to unused vhf channel, says there would be no need to have additional tuning or tubes. Plan would also help overcome uhf oscillator difficulties. Appearance: Leopold M. Kay, v.p. in charge of engineering.

Vincent Andrew Artuori, New York, N. Y.—Proposes a method to extend the effective ranges, in certain areas, of any one of the present vhf television channels and also the ranges of any one of the proposed channels by means of a relay electronic amplifier unit; also a second similar method bringing about the extension by means of a non-electronic, non-amplifying device.

Federal Telephone & Radio Corp., Nutley, N. J.—Confirms availability of equipment for 10-200 kw on uhf band; has 1 kw transmitter in 470-600 mc band. Appearance: Norman Young.

Peoples Broadcasting Co., Lancaster, Pa. (WLAN)—Opposes proposal to assign uhf and vhf to same cities; requests use of directional antennas; requests assignment of Channel 9 to Lancaster. Counsel: Stephen Tuhey.

Oppositions: Eastern Radio Corp., Lehigh Valley Television Inc., Easton Publishing Co., WTOP Inc., General Teleradio Inc., WCAE Inc., WCAU Inc., WDEL Inc., Evening Star Broadcasting Co. Inc., American Broadcasting Co. Inc., Daily News Television Co.

B. "STRATOVISION"

Westinghouse Electric Corp., Pittsburgh, Pa., licensee of AM stations KDKA, Pittsburgh; WBZ, Boston; KYA, Philadelphia; WOWO, Ft. Wayne; KEX, Portland; operates WBZ-TV, Boston—Intends to submit data on Stratovision; requests assignment of Channel 6 to Pittsburgh from Johnstown; Channel 7 to Pittsburgh from Wheeling; Channel 11 to Johnstown; Channel 13 to Pittsburgh from Johnstown; wants offset carrier used to reduce mileage separation between stations; asks relaxation of minimum power requirements, use of directionals.

Oppositions: WDEL Inc., Allegheny Broadcasting Corp., WGAL Inc., Associated Broadcasters Inc., Keystone Broadcasting Corp., Gable Broadcasting Co., Hazelton Broadcasting Co., Reading Broadcasting Co., Fort Industry Co., WCAE Inc., Hearst Radio Inc.

C. "POLYCASTING"

Raymond M. Wilmotte Inc., Washington, D. C.—Requests further hearings on uhf standards, desires further study of polycasting and on use of FM for TV, general comments on proposals and allocations.

Oppositions: Allen B. DuMont Laboratories Inc.

D. RESERVATION OF CHANNELS FOR NON-COMMERCIAL EDUCATIONAL TELEVISION STATIONS

U. S. Office of Education, Washington, D. C.—Requests assignment of 20% of uhf band for non-commercial, educational stations; assignment of at least one vhf channel in every metropolitan city and major college center for same purpose. Appearance: Earl J. McGrath, Commissioner.

National Education Assn., Washington, D. C.—Requests assignments of Channels 2, 3, 4, 5 and 6 in major cities plus 8 or 10 uhf channels for non-commercial, educational TV; requests uhf channels be between Channels 13-55 or immediately adjacent thereto; requests 20% of TV channels, both vhf and uhf be reserved for non-commercial, educational TV. Appearance: Eal-mont Farley, director, press and radio relations.

Oppositions: WDEL Inc., Allegheny Broadcasting Corp., WGAL Inc., Associated Broadcasters Inc., Keystone Broadcasting Corp., Gable Broadcasting Co., Hazelton Broadcasting Co., Reading Broadcasting Co., McClatchy Broadcasting Co., Houston Post Co., KTRH Broadcasting Co., Texas Television Co., Shamrock Broadcasting Co.

Association of Land Grant Colleges and Universities—see National Assn. of Educational Broadcasters. Counsel: Cohn & Marks.

National Assn. of State Universities—Requests reservation of channels for non-commercial, educational TV. Counsel: Cohn & Marks.

National Association of Educational Broadcasters, Washington, D. C.—Requests 10 frequencies in the uhf band be reserved for non-commercial educational broadcasters; that if not possible in uhf TV band, they be reserved immediately adjacent to Channel 55. Counsel: Cohn & Marks.

Association for Education by Radio, Chicago, Ill.—Requests reservation of 10 uhf channels for non-commercial, educational TV, to be assigned immediately adjacent to Channel 55. Appearance: Gertrude G. Broderick, secretary.

American Council on Education, Washington, D. C.—Requests reservation of 10 uhf channels immediately adjacent to Channel 55 for non-commercial, educational TV. Appearance: George F. Zook, president.

National Council of Chief State School Officers, Washington, D. C.—Request for permission to testify. Appearance: Edgar Fuller, secretary.

American Federation of Teachers, Milwaukee, Wis.—Favors reservation of channels for non-commercial educational TV. Appearance: Irving R. Kuenzli, secretary-treasurer.

Allen B. DuMont Laboratories Inc., Passaic, N. J., operator of TV stations WABD, New York; WDTV, Pittsburgh; WTTG, Washington. General comments and proposed new allocation plan. Counsel: Roberts & McInnis.

E. "METERED TELEVISION" AND GENERAL COMMENTS

Thomas E. Corbett, Meadowsbrook, Briarcliff Manor, N. Y.—Submits proposal for "metered" TV.

NO SLACKENING OF DEMAND FOR TVs: Neither higher prices (soon to go higher yet, thanks to 10% excise), nor new Regulation W, nor FCC's disturbing color report has as yet appreciably cut into over-all demand for TV receivers. Nevertheless, one large manufacturer, referring more to difficulty in getting components than to impact of adverse market factors on demand, told us: "We're walking on eggs."

Over-riding influence with public seems to be attraction of TV programs. Football and World Series, to say nothing of Xmas trade, presage continued high demand for some months.

Name-brand makers -- the handful who produce 70% or more of industry's total and who presently can't turn sets out fast enough -- aren't too worried about immediate retail market. Their worries center chiefly on present and impending shortages of materials and manpower. When so well-publicized and confusing an issue as color doesn't deter enough buyers to make much difference to big mass producers, feeling is that nothing except war can really stop TV trade.

But industry's sensitivity to shortages -- and, soon, allocations -- is manifest from fact that DuMont had to shut down all last week due to scarcity of certain tubes (Vol. 6:36). (DuMont plant is back in full production this week.) And so obscure an item as soda ash, which goes into the making of picture tubes, is currently causing critical shortage of face plates for metal-coned tubes made by DuMont and others; biggest glassmaker, Pittsburgh Plate Glass, not affected by strike, is building another furnace to meet needs -- but can't produce for months.

Glass blank makers, likewise needing soda ash as a "fining agent," say they're using some substitutes and importing more from abroad; their problem is described as "not critical, but not very happy and quite expensive."

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Private brands apparently face rough going as TV-radio set makers push hard to turn out all they can under own names. Story in Sept. 15 New York Times may be symptomatic: It related that one of largest private-brand TV suppliers in metropolitan area was terminating such manufacture to concentrate on critically short components in sets under own name. "The move," said the Times, "is expected to touch off a wide curtailment in the production of private brands."

Area's largest private-brand makers -- Air King, Olympic, Tele King, Tele-tone -- all replied in negative when asked whether they were the unidentified maker. But all did say that their private-label business faces same threat of curtailments as own brands. Meanwhile, they're producing as fast as available materials permit.

Shortages look like they're going to hit small manufacturers soon -- "push them to the wall," as Times puts it. These are the scores of companies turning out 350 to 650 receivers per week, some even fewer. They, too, are scrambling for components, up against toughest kind of competition from the big companies. Their salvation seems to lie in forthcoming govt. electronics contracts.

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Add to pressures for further increases in TV-radio prices (Vol. 6:36): New wage increases industry in general and electronics in particular are being obliged to hand out. GE strike was ended Sept. 15, and TV-radio-tube factories were due to resume Sept. 18 after 2-week shut-down; new agreement gives workers 10¢-an-hour increase, pegs wages to govt. cost-of-living index. This week, RCA Victor workers approved 5¢-an-hour wage hike, new contract providing also for another boost of 4½¢ next June as well as added social benefits.

Note: Still pushing production hard, industry in fourth August week turned out 187,891 TVs, 296,940 radios, according to RTMA-projected estimates. That makes projected figure for month 702,287 TVs (highest ever), 1,203,447 radios. For preceding weeks' figures, see Trade Report, Vol. 6:36.

INDUSTRY PINNING DOWN SET RADIATION: "You're making excellent progress," FCC chief engineer Curtis Plummer told RTMA, after listening to description of manufacturers' work in reducing oscillator radiation (Vol. 6:14,19,35), during meetings of two committees in Washington this week. His commendation followed unanimous adoption by Committees R6 (FM receivers, Zenith's J. E. Brown chairman) and R15 (oscillator radiation, RCA's K. A. Chittick chairman) of two resolutions:

(1) Recommending that all FM sets, by June 30, 1951, be built with radiation limited to 50 uv/m at 100 ft.

(2) Recommending that TV set manufacturers aim for same limitation on Channels 2-6 and 150 uv/m at 100 ft. on Channels 7-13.

Second resolution isn't specific as to date because TV receiver committee wasn't on hand. It was felt that TV group should comment first.

RTMA engineering recommendations are usually heeded by whole industry, since membership on engineering committees isn't limited to RTMA members.

RTMA groups totaling about 35 met by themselves Sept. 11, and with FCC, CAA and other govt. officials Sept. 12. RTMA president Robert Sprague, who has taken problem closely to heart, was present, feels sessions were extremely successful.

Plummer said he couldn't commit FCC to endorsement of recommendations, pointed out that Commission still has proceedings pending on matter (amendment of Part 15 of rules), but he assured industry there is no intention to cram any arbitrary standards down its throat. Gist of his reactions: "Keep up the good work."

FCC engineers brought along Naval Research Labs expert Donald McClennan, who showed how Navy licked radiation problem, which is matter of life-and-death aboard ship. (Submarines can "home" in on excessively radiating receivers.) Since cost is no object in such receivers, industry people naturally wonder how many Navy techniques can be used -- but McClennan may have given them some ideas.

Still a big problem in oscillator radiation: After you do set standards, how do you know whether you're complying with them? Methods of measurement still vary widely, give different results. FCC offered cooperation of its labs in measuring sets. Industry, in turn, invited FCC engineers to New York and Chicago to inspect measurement techniques.

RCA DECIDES ON 17 & 21-in. FOR 1951: RCA has definitely chosen 21-in. metal-coned rectangular as next picture tube size -- having already decided on 17-in. metal-coned rectangulars (Vol. 6:36) now being sampled. In addition, if demand warrants, it will produce 14-in. glass rectangulars. But none of these sizes will be available until next year -- 17-in. in January, 21-in. during second quarter. Nor have prices been decided, but it can be assumed they will be competitive with RCA's present 3 basic types: 12½-in. glass round (fast diminishing in demand), 16-in. metal round (currently, biggest seller of all), 19-in. metal round (going good).

RCA decision confirms trend to 17 & 21-in. as basic in metal-coned types. RCA is biggest tube producer, and assumption is those sizes will also go into own next line of receivers. Sylvania and DuMont have 17 & 21-in. in works, too. None has quoted prices yet. All face same problem of securing metal cones in quantity when, as expected, steel goes on allocation.

Note: Tube makers are now getting deliveries of Corning's 20-in. glass rectangulars, and Philco's Lansdale plant is getting them at rate of about 2000 weekly. Philco's first 20-in. receivers will be ready to ship within week. There are 5 consoles with that size in Philco line (Vol. 6:25), including 2 with remote controls.

Dominance of 16 & 17-in. tube sizes is shown in July tube sales figures released by RTMA. Of month's 341,940 total sold to equipment manufacturers, 130,321 (38%) were 16 & 17-in. rectangulars; 118,214 (35%) were 16-in. rounds. RTMA report, first time broken down between rectangulars and rounds, also showed: 37,712 (11%) round 19-in. or larger; 31,799 (9%) rectangular 14-in. Only 20,826 (6%) were 12½-in. rounds and mere 2344 (.7%) were 10-in. rounds. Also listed were 587 tubes of less than 10-in. (7 & 8½) and 127 projections. Factory

value of all tube sales, including renewals, oscillographs, camera pickup, govt. and export, totaled \$9,948,160 in month. Vacation-month July sales to manufacturers compared with June's 566,942, May's 599,667 (Vol. 6:32 & 27).

Two controversial subjects scheduled for joint IRE-RTMA annual technical session Oct. 30-Nov. 1, in Hotel Syracuse, Syracuse, are: Phonevision, discussed by Zenith's E. M. Roschke; color, by Hazeltine's A. V. Loughren. Oct. 31 is devoted solely to TV.

Topics & Trends of TV Trade: Reduced rather than expanded lines, with emphasis on easiest-to-move models, are expected to be order of day henceforth in TV-radio, due to shortage of components. There's even talk that surviving models in present lines will be carried over into 1951, usual January-February showings of new models indefinitely postponed, due to expected shrinkage of civilian production forced by defense-induced materials allocations and shortages.

Admiral this week announced addition of 2 new 14-in. rectangulars to line—but at same time also made known cessation of all 12½-in. production. New sets are Model 14R12, plastic mahogany table just 18-in. sq., listed at \$189.95, and 24R12, same in console standing about 30-in. high, listed at \$199.95. Last 12½-in. was table at \$169.95.

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The survey signs continue good in TV-radio trade. Federal Reserve Board reports dept. store sales of TV-radio sets up 104% during first half of 1950, June sales alone going up 60% over June 1949. Dun & Bradstreet *Trade Review* of Sept. 1 reported high level of TV and appliance sales "largely sustained." *New York Herald Tribune* survey covering 28 of city's leading dept. and specialty stores showed that every one carrying TV-radio sets increased sales in August over August year ago. Other trade reports show TV-radio gains ranging from 111% to 266% during August in 7 out of 12 reporting New York dept. stores; gains in other 5 ran 12% to 51%.

Smaller TV manufacturers haven't made much splash about price increases, but in view of components shortages and their inability to buy in quantities comparable to big fellows there's little doubt they, too, have increased. Mars and Marathon went up this week, and Atwater increases were announced earlier. These companies (see *TV Directory No. 11*) may be added to lists totaling 31, and including practically all name-brand makers, published in *Trade Reports*, Vol. 6:35-36.

Local TV advertising, down considerably, in some places is slanted to upcoming 10% factory excise, which inevitably will raise prices at retail level anywhere from 6-10%. When tax goes into effect, manufacturers are expected to post new suggested lists, rather than ask customers to pay excise as separate item.

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Dun & Bradstreet reports 30 failures of radio-TV dealers with liabilities of \$801,000 during first 6 months of 1950, as against 53 failures with liabilities of \$809,000 for all 1949. Among radio-TV-appliance dealers, there were 93 failures with liabilities of \$1,865,000 first half of 1950 and 173 failures with liabilities of \$3,026,000 all last year.

Surprising fact is also disclosed that 19 radio manufacturers (not named, but presumably all obscure) failed during first half of this year in amount of \$1,216,000; during 1949, there were 27 failures with \$4,005,000 liabilities.

Also noted are increasing failures among concerns servicing TV sets, but there are no figures.

Reasons for failures are generally such human factors as judgement, personality, decision, ability, know-how. In a survey of 4468 failures (various businesses) during second half of 1949, it was shown that 96% were individually owned businesses. Largest single factors were incompetence, 33.7%; lack of experience in line, 24%; lack of managerial experience, 23.2%. Among apparent causes were inadequate sales, 42.9%; excessive fixed assets, 15.5%; inventory difficulties, 13.4%; heavy operating expenses, 11.6%; competitive weakness, 8.5%.

Unique combination—and a good hedge: Sol Blumberg, who owns string of 5 neighborhood theatres in Philadelphia, takes over local distribution of Arvin TV-radios.

Last stronghold of projection TV, except for a few small companies selling them for public places, North American Philips is entering home receiver field with 2 consoles using its Protelgram system and bearing "Norelco" trade name. Pictures from 2½-in. tube are 13½x18-in. Prices haven't been set yet, but will range between \$350 & \$425. Company also has 2 commercial models with 3x4-ft. pictures to sell at \$599.50 & \$895.

Also in retail field, North American Philips is continuing its Duo-Vue attachment for existing TV sets to convert them into 3x4-ft. projections (Vol. 6:8); this sells for \$219.50, with new directional screen as accessory. Company hasn't decided whether to sell direct to dealers or through distributors. Choice of CBS color system, its executives feel, would give projection TV new lease on life, and they say they have been in contact with CBS regarding large-size color pictures.

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Sylvania is expanding Warren, Pa., Parts Division with new plant specializing in plastic and plastic-metal components for TV-radio and lighting industries; 30,000-sq. ft. factory will be ready by Oct. 15, managed by L. R. Wanner, ex-Hugh H. Eby Inc. . . . Sylvania also announces new 7-in. CR oscilloscope specially designed for use in TV-radio receiver testing . . . Sylvania CR tube plant at Huntington, W. Va., employing up to 400, has gone on 6-day week due to heavy orders; employes get time-and-one-half for overtime, double time for holidays

Winners of DuMont's dealer promotion contest "on the most resourceful, original and effective promotion worked out by individual dealers on the 19-in. Hanover receiver," were disclosed last week as follows: Television Co. of Maryland, Baltimore (Milton Rabovsky, pres.), 1950 Cadillac sedan; Television Theatres Inc., Long Beach, Cal. (Howard S. Merrill), 1950 Plymouth convertible; Brookfield Radio & Appliance Service, Brookfield, Ill. (Byron Shaw), \$500 savings bond. In addition, there were 60 winners of gold wrist watches and portable typewriters.

Crosley's gen. sales mgr. W. A. Bles quotes following production estimates: 350,000 radios this year (150,000 last year); 240,000 TVs this year (96,000 last); 637,000 refrigerators this year (324,000 last). He admits "big if", however: defense production.

Bendix's R. W. Fordyce, sales mgr., reports TV-radio billings at factory (under its direct-to-dealer method of merchandising) exceeded \$2,250,000 during August, expected to continue on same level through September and possibly rest of fall season . . . Hallicrafters' president Wm. J. Halligan reports almost \$5,000,000 sales in August.

Radio Parts & Electronic Equipment Shows Inc. directors, meeting last week in White Sulphur Springs, voted to hold 3-day show May 21-23 in Stevens Hotel, Chicago. They re-elected Standard Transformer Corp.'s Jerome J. Kahn as president, chose following other officers: Samuel J. Spector, Insuline Corp., v.p.; Lew Hoard, Triad, secy.; Charles A. Hansen, Jensen, treas.

Federated Television & Electronic Service Assns. of America is announced by Frank J. Moch, president of Chicago's Television Installation Service Assn. Purpose, he says, is to get manufacturers to reappraise contract rates, ensure stock of replacement parts, eliminate tie-in sales, etc. New association is outgrowth of Moch's campaign to get national recognition for servicemen, work out mutual problems with manufacturers (Vol. 6:6, 10).

Bowers Television Co., subsidiary of Bowers Battery & Spark Plug Co., Reading, Pa., has resumed TV production after lapse of more than year. Its single set is 17-in. rectangular mahogany console, with FM-phono-jack, \$650.

Financial & Trade Notes: Zenith reports consolidated sales of \$17,739,857 for its first fiscal quarter ended July 31 vs. \$12,603,524 for same 1949 period. Estimated net profits were \$766,954 vs. \$170,945 for same period year ago after deduction of \$251,376 representing amortization of goodwill incident to acquisition of a subsidiary (Rauland). Sales and profits for first quarter reflected effect of 2-week vacation shutdown and costs of starting new TV line introduced in June.

IT&T chairman Sosthenes Behn assumes duties of Maj. Gen. Wm. H. Harrison, president, on leave as administrator of new National Production Authority in Washington, it was announced this week as financial statement was issued for 6 months ended June 30. Consolidated net income was \$4,972,296 vs. \$2,413,518 for same period last year—improvement being largely attributable to betterment in operating results of its Federal and Capehart-Farnsworth subsidiaries. Col. Behn stated their July-August operations “indicate a continuance of this improvement.”

Among officers' and directors' stock transactions reported by SEC for July (see Vol. 6:32 for June): Philip F. LaFollette, bought 250 shares of Hazeltine, now holds 750; William H. Harrison, bought 100 IT&T, holds 1700; Charles D. Hilles Jr., bought 100 IT&T, holds 200; Joseph W. Powell, bought 900 IT&T, holds 1000; Henry C. Roemer, bought 100 IT&T, holds 1700; Clendenin J. Ryan, bought 10,000 IT&T, holds 50,000; Harold R. Maag, bought 200 RCA, holds 200; Charles M. Odorizzi, bought 100 RCA (June), holds 500; Don G. Mitchell, bought 100 Sylvania, holds 2800; Donald MacGregor, bought 100 Zenith, holds 250.

Dividends: Motorola has voted extra dividend of 50¢ and quarterly dividend of 50¢, payable Oct. 16 to holders of record Sept. 29; previous quarterly payments were 37½¢, with year-end extra last Jan. 16 of 37½¢ . . . Trav-Ler announces dividend of one share of stock for every 5 shares held, payable Oct. 10 to holders of record Sept. 18; also 10¢ per share, payable Oct. 10 to holders of record Sept. 20 . . . Admiral, 25¢ quarterly dividend payable Sept. 30 to stock of record Sept. 18 . . . Tele-tone, 12½¢ quarterly dividend payable Oct. 2 to stock of record Sept. 15.

Allied Electric Products Inc. reports sales of \$4,303,517, earnings of \$160,814 (31¢ per share) for year ended June 30. During preceding fiscal year, sales were reported \$1,658,365, profit \$2354 (1¢).

That TV industry tailor receiver production to availability of service parts, is cogently argued by Albert M. Haas, president, Philadelphia TV Contractors Assn., in Sept. 14 “open letter to the industry.” He makes point that sales could outrun replacement parts and service manpower, thus engender ill feeling on part of set owners, diminish audience for telecasters. He also suggests TV service organizations be considered for defense production. He indicated service companies are losing technicians to military service, factories.

Ad Hoc Committee finally approved report on (1) “Description of the Concepts Involved in the Prediction of Broadcasting Service”; (2) methods of combining multiple interfering signals. At same time, FCC issued several other documents on TV propagation. We're told documents, which only a few experts can understand, don't appear likely to require any radical change in FCC's proposed allocation plan. Multiple interference has been made issue in general hearing starting Oct. 2 (see Supplement No. 70); people with more evidence may testify if they notify FCC by Sept. 26. Copies of reports are available from FCC.

Effect of TV on motion picture theatres will be one of subjects highlighting SMPTE convention Oct. 16-20 at Lake Placid Club, N. Y. Paper dealing with TV-imposed refinements and improvements in cinematography, theatre location, seating, design, will be by Benjamin Schlanger and William A. Hoffberg, theatre architects and consultants. Theatre TV will also be covered by RCA engineers speaking on RCA's PT-100 projection apparatus, now in operation or ordered by 10 customers, including Century-Circuit's Marine Theatre, Brooklyn, and Queens Theatre, Queens Village, Long Island; Fabian's Palace Theatre, Albany; Paramount's Tivoli Theatre, Chicago; Sherrill Corwin's Orpheum Theatre, Los Angeles; 20th Century-Fox's New York laboratories. Equipment is already in use at Fabian's Fox Theatre, Brooklyn, and Pinanski's Pilgrim Theatre, Boston. RCA began Sept. 11 in Camden to train 30 IATSE projectionists in operation of its theatre-TV equipment.

Out-of-home viewing in New York area is done by 732,500 people on average summer day, WOR-TV reports. Figure was contained in WOR-TV survey made during July, which also showed: (1) From 8-11 p.m., average of 210,200 persons watched TV away from home each quarter hour—a bonus of 16.4% to regular audience. (2) More than 75% of out-of-home viewers don't own sets. (3) Almost 70% watched in homes of friends and relatives—contradicting belief most bonus viewers are found in bars and grills. (4) Preference in nighttime for sports is 5 to 3, in daytime 8 to 5.

Retailers and dept. store executives will hear how to use TV-radio at “workshop” on subject in New York's Hotel Statler Sept. 28-29 under auspices of National Retail Dry Goods Assn. Speakers include: Howard P. Abrahams, NDRGA; Walt Dennis, Allied Stores; Sam Cuff, TV consultant; Arthur E. Duram, CBS-TV; Charles L. Kelly, WMAL-TV, Washington; Frank Silvernail, BBDO; Ivor Kenway, ABC; Eugene S. Thomas, WOR-TV, New York; George T. Shupert, Paramount; C. E. Hooper; William L. Norvell, Remington Rand.

There's no TV in Canada yet, but TV sets are highlight of current Canadian National Exhibition in Toronto. Set prices ranged from \$350 for 12½-in. table model to \$1250 for projection combination. Exhibited are sets by Brand & Millen (Crosley); Canadian Admiral, Canadian Marconi, Canadian Westinghouse, Dominion Electrohome, Philco, Philips Industries, Rogers-Majestic, Sparton of Canada, Stewart-Warner, Stromberg-Carlson.

More Sept. 1 sets-in-use, reported since NBC Research's “census” of Aug. 1 (Vol. 6:33): Los Angeles 693,369, up 98,369; Cleveland 287,498, up 27,498; New Orleans 34,348, up 3548; Johnstown 33,850, up 7350; Norfolk 29,365, up 6365; Ames (Des Moines) 14,258, up 1958; Boston 484,927 (Sept. 14), up 37,927; Providence 78,980 (Sept. 14), up 7180.

“TV Repair Is in Fine Fix” titled series of articles this week in *New York World-Telegram*, aimed at securing legislation to protect set owners from unscrupulous or irresponsible “service” organizations. Gyp servicing of TVs and radios in metropolitan area was first exposed in series by *Radio Daily*.

Trade Personals: Peter L. Jensen, president, Jensen Industries Inc., received Order of Knight of the Flag from King of Denmark during recent trip there, where book titled *Jensen, Inventor of the Loudspeaker* has been published . . . Clifford J. Hunt, Stromberg-Carlson, appointed chairman of RTMA Sales Managers Committee, which functions under Set Division chairmanship by Glenn W. Thompson, Arvin . . . Robert W. Felber promoted to sales service mgr., TV-radio div., Stewart-Warner.

HOARDING IS MAIN PRODUCTION WORRY: Curtailed raw materials and drains on manpower are the real factors which should chop down TV-radio set production when big military output gets under way. Immediate bugaboo, however, is hoarding of components, which if continued can ruin otherwise good prospects for substantial receiver volume well into or through 1951.

That was general sentiment reflected by RTMA board members meeting in New York Sept. 20. Plant capacity is there -- or will be before long. This seems to be true even as regards resistors and receiving tubes, despite fact shortages of these have already raised hob with some manufacturers' production lines.

Resistor maker told board that informal canvass of his colleagues showed that all demands now in sight can be met rest of this year and all next, military as well as civilian, by means of present facilities and expansions under way -- provided, he warned, there's no hoarding. Top tube producer had same story. Parts manufacturers, in meeting day before board, agreed there would be enough parts to go around for balance of 1950 "with proper channeling and no unnecessary stockpiling."

No other components seem as troublesome as these. At least, no one brought any up. Black and gray markets in raw materials for components are factors to look out for. Gray market in nickel is said to exist already. And copper is always quick to become short.

What it all adds up to is that current disruptions, wherever they occur, are almost totally unnatural; and that future civilian production hinges largely on how industry fares when it comes to allocations of critical materials (Vol. 6:37).

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RCA disclosed this week that it has acquired, for reported \$2,000,000, 17-acre tract with 180,000-sq. ft. plant of Rich Ladder & Mfg. Co., Cincinnati, for expanded production of miniature-type receiving tubes -- the ones so short now (and likely to continue to be under war orders) that several plants have been reported shipping sets without them (Vol. 6:35-36). It's RCA's third receiving tube plant, others being in Harrison, N.J. and Indianapolis, but it won't get into full production until autumn of 1951.

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Correction: Report here last week (Vol. 6:37), that Corning's 20-in. glass rectangulars are being shipped to Philco's Lansdale tube plant at rate of 2000 per week, was erroneous. That's number of sets that size Philco reported it was preparing to ship. Wholly-owned Lansdale plant, as is well known in the trade, does not supply all Philco's tube requirements, and Philco is large purchaser of picture tubes from others among the 35 tubemakers (TV Directory No. 11).

Note: Production of TVs during week ending Sept. 1 (which will be counted as first Sept. week in 5-week month) totaled 163,860, down somewhat from August's upward weekly spiral (Vol. 6:36-37) -- attributable to GE strike (still on in Syracuse). Radios totaled 235,284, likewise down and for same reason.

'BIG TEN' OF THE TV SET-MAKERS: Revised "guesstimates" of top TV producers of 1950, ventured once again by analysts of Television Shares Management Co., indicate first 10 will account for 5,370,000 of whole industry's anticipated 6,000,000-plus total. And top 4 producers will account for well over half of entire industry output, though there are about 100 manufacturers making telesets (TV Directory No. 11).

Here's how TSMC now ranks top 10, with number of 1950 sets estimated: RCA 950,000, Philco 900,000, Admiral 850,000, Motorola 650,000, Zenith 475,000, Emerson 450,000, GE 425,000, DuMont 275,000, Meck 200,000, Hallicrafters 195,000. Figures revise February estimates upward (Vol. 6:8), change several rankings.

Last February, top 10 were ranked thus: Admiral 800,000, RCA 700,000, Philco

625,000, Motorola 535,000, Zenith 330,000, Emerson 330,000, GE 300,000, DuMont 190,000, Tele-tone 175,000, Hallicrafters 170,000. In this current estimate, TSMC doesn't go beyond first 10, but next 10 were listed last February as follows: Westinghouse 150,000, Crosley 150,000, Meck 150,000, Raytheon 140,000, Sylvania 120,000, Magnavox 100,000, Capehart 100,000, Olympic 100,000, Garod (Majestic) 100,000, Hytron (Air King) 100,000.

"The planned expansion in armament production," states TSMC, which is selling agent for Television-Electronics Fund Inc., open end investment trust, "will of course put heavy demands on the facilities of many set manufacturers and when in full swing will require a fairly large proportion of many components..."

"During the past summer, several teletest manufacturers were building receivers at a rate in excess of the then existing demand. They did not consider "stockpiling" in the summer a great risk in view of the anticipated heavy fall demand. Because of the international situation, the summer doldrums were cut short and demand jumped to a level far above normal expectations. For two months the manufacturers have been in a sellers' market. This condition is accentuated by a shortage of a few component parts which will become progressively worse as preparations for the military programs are stepped up. Already in tight supply are several items, including receiving tubes, resistors, condensers, and silicon steel for transformer laminations.

"In short, the substantial expansion of component production begun before Korean developments will not be sufficient to take care of both civilian and military demand. For this reason more than any other, it is essential to point out that the guesstimates above are predicated on the supply of critical parts not being further curtailed..."

Trade Personals: E. W. Merriam, DuMont, appointed chairman of RTMA Service Committee, succeeding A. T. Alexander, Motorola . . . Harry R. Smith, ex-DuMont, appointed head of TV transmitter development for Standard Electronics Corp., subsidiary of Claude Neon Inc. . . . Edward Fishbein promoted to chief of Emerson parts sales & service division . . . Harry P. O'Brien new mgr. of RCA Exhibition Hall in Radio City, Howard W. Sharpell promoted to asst. mgr. . . . Mario A. Gardner promoted to v.p. in charge of purchases, Air King.

Among larger military contracts for electronics equipment announced by Commerce Dept. for week ending Sept. 15 and let through Signal Corps, Philadelphia: Hallcrafters, \$2,500,000, radio sets (461 units); Molded Insulation Co., Philadelphia, \$138,000, radiosonde transmitters (30,000 units). Let thru Wright-Patterson Air Force Base, Dayton: Western Electric, \$2,682,374, sub-assemblies for airborne radar equipment; Cincinnati Electronics Co., \$677,243, receivers.

Philco's Havana distributor has started TV service training school, with enrollment of 70, preparatory to opening up of that market next month, when Union Radio's TV station gets under way and when other projected stations get going (see Telecasting Notes). Separate classes are also held to instruct dealer salesmen in fine points of TV sales, and how to instruct consumers on proper use of receivers. Classes use same basic training procedure as in U. S.

Test pilots can sit on ground and make planes do things they never dared before, through use of TV, reports Air Force. Two planes at Wright-Patterson Air Base, Dayton, have cameras in cockpits to transmit pictures to ground where pilots can operate ships with radio controls. Equipment was developed by Philco and Lear Inc. Says Air Force: "The use of TV to replace test pilots on dangerous flights is entirely practical."

Tele-tone reports record-breaking shipment volume of more than \$2,500,000 during August.

Communications are called "nerve system of civil defense" in *United States Civil Defense*, report on subject submitted to President by National Security Resources Board and made public Sept. 18. Section on broadcasting ("including television") stresses utilization of TV-radio for (1) education on defense, and (2) information, such as location of shelters, how to prevent jamming of thoroughfares, etc. Paul J. Larsen resigned as director of civilian defense, NSRB; he's ex-director of AEC Sandia (N. M.) Laboratory, Johns Hopkins U physicist, member of TV committee of SMPTE.

Suspension of a "ham" operator's license for year because of interference to neighbor's TV and radio reception, was recommended this week by FCC examiner. It is first such action in FCC annals. James S. Sommerville, Highland Park, Ill., amateur, was found to have a fouled-up rig, never attempted to suppress spurious signals even after being warned. Commission engineers have been getting a few complaints from TV owners about "hams," find shielding of amateurs' equipment plus wave-traps on TV receivers clean things up pretty well. Lately, Commission engineers have been wrestling with question of responsibility when fringe-area TV owners complain about "ham" interference. Is such a set owner, way beyond stations' protected contours, entitled to protection?

RCA has given up "MP" initials in its "million-proof" TV ad campaign, although campaign itself will be continued. Reason, according to spokesman, is that company planned to drop initials after tease campaign was concluded; also that MP Television Co., Fairfield, Conn., had protested. Interesting sidelight is that RCA line contains 16-in. console named Fairfield.

Zenith has "enough Class A motion pictures to insure a daily changes of program for the duration of Phonevision tests, scheduled to start Oct. 1," writes Harold Smith in special TV section of Sept. 17 *Chicago Tribune*. Motion picture circles still don't know which producers are co-operating with Zenith.

Topics & Trends of TV Trade: Suggested code of advertising ethics for manufacturers is being circulated among members by RTMA. Draft was approved during Sept. 18-20 meetings of board and numerous committees in New York. Provisions of code are similar to standards adopted by New York Better Business Bureau (Vol. 6:26); i. e., "tell the truth." After receiving members' comments, board will consider final draft at Nov. 14-16 meeting in New York's Waldorf-Astoria.

Licensing of servicemen is still firmly opposed by RTMA. Feeling is that competition from reputable servicemen will kill off the "gyps"; that proposed new code of advertising ethics will help expose shady operators; that licensing would be subject to political manipulation.

Other actions of board and committees: (1) Appointed committee to meet with FM broadcaster group plumping for more FM set production and inclusion of FM in more TV sets (Vol. 6:32); chairman is Zenith's H. C. Bonfig. (2) Voted funds to publicize Oct. 29-Nov. 4 as National Radio & Television Week, playing up "30th anniversary of broadcasting." (3) Advertising committee agreed to offer TV sets as prizes to spur more big-city interest in Voice of Democracy contests for high school students.

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Belated statistics on vacation-month July set production were released by RTMA this week. They show 253,457 TVs produced by member companies, compared with 388,962 in 5-week June (Vol. 6:30). But RTMA estimates that non-member production brought total to more than 330,000 for July (Vol. 6:33), 702,287 for August (Vol. 6:37)—which means total cumulative postwar production of 8,048,000 up to end of August. Breakdown of RTMA July models: tables 102,441; TV-only consoles or consolettes, 124,311; combinations (with AM and/or FM), 10,072; combinations (with phono), 16,633. Breakdown by tube sizes: 50,740 table models and 32,160 console-consolettes in 12 to 15-in. category; 50,098 table models and 103,854 console-consolettes in 16 to 18-in.; 16,577 sets 19-in. or over; exactly 27 under 12-in.; 1 projection. Radios totaled 478,903 in July, compared with 1,054,456 in June.

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New Meck line has 5 models plus 2 retained from old line. List of new sets and descriptions follow:

14-in. rectangular: MM-614T, mahogany table, \$179.50; MM-614C, same in console, \$229.50.

16-in. rectangular: MM-616T, mahogany table, \$219.50; MM-616C, same in console, \$259.50.

19-in. rectangular: MM-619C, mahogany console, \$349.50.

Retained from old line are XSB, 16-in. round deluxe, modern mahogany console, \$299.50; XSPT, 16-in. rect. traditional mahogany console, AM-phono, \$359.50. Retail discounts range from 30% to 37½%, says Meck.

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Packard-Bell raised prices \$20 to \$50 on 6 of its 8 models in new line (Vol. 6:30) effective Sept. 15. Following are new prices (increases in parentheses); for description of sets see *TV Directory No. 11*: 16-in. rectangular models 2101, \$249.95 (\$20); 2105, \$284.95 (\$25); 2102, \$329.95 (\$30); 2602, \$449.95 (\$50). 19-in.: 2301, \$399.95 (\$20); 2803, \$550 (\$50) . . . Hoffman Radio also reported planning 7-15% increases shortly.

Westinghouse has added 2 new models to line (Vol. 6:25). Model 636T17 is 17-in. rectangular table, \$249.95; 638K20 is a 20-in. rect. console, \$439.95. They replace same models in 16-in. rect. table, 19-in. rect. console.

Scare buying by public is ended, but dealers loading up with more than 30-day appliance inventory are "hoarding." So Crosley sales v.p. W. A. Blees told 2000 Crosley dealers at Waldorf-Astoria Hotel in New York Sept. 22.

Analyzing some 760 technical specifications submitted by 71 TV set manufacturers, *Tele-Tech* editor Dr. O. H. Caldwell comes up with some interesting figures that point up noteworthy trends in design and demand. For example:

Of models scrutinized, 62% are consoles, 23% table models, 10% consolettes. Of the table types, 55% have 16-in. picture tubes, 20% have 12½-in., 16% have 14-in., 7% have larger than 16-in. Of the console types, 52% have 16-in., 25% have 19-in., 11% have 17-in., 5% have 12-in., 3% have 20-in. or larger. Of the consolettes, 59% have 16-in., 21% have 19-in., 10% have 12-in., 7% have 14-in. (Note the absence of 10-in. and smaller; only "1951 models" were analyzed.)

In addition to TV, 13% of the models offer AM & FM, 6% offer AM only, 4% FM only, about 1% AM-FM-short-wave; 82% have built-in aerials, of which 30% are tunable by customer; 18% of all models (almost all of new consoles) contain 3-speed record changers, with 8% providing phono-jack; 70% use intercarrier IF; average set uses 21 tubes plus 3 rectifiers; average set provides audio power output of 3.5 watts. And 90% use PM speakers, 7% of which are oval, 39% are 6x9-in., 33% are 4x6-in.; of the round type speakers, 42% are 12-in., 28% are 10-in., 13% are 6-in., 10% are 5-in.

Average prices (figures were compiled in September, for publication in October *Tele-Tech*) were tabulated as follows:

Tube Size	Table	Consolette	Console
12½-in.	\$180.92	\$202.80	\$249.39
14-in.	195.95	227.85	283.39
16-in.	245.25	311.53	365.14
17-in.	239.95	254.95	394.61
19-in.	342.98	405.25	473.78
20-in.	---	---	562.84
21-in.	---	---	795.00

* * * *

New TV set maker is Commander Television Corp., 280 Ninth Ave., New York, formed by ex-Starrett executives Murray Daniels, president; Mitchell Fein, sales v.p. M. F. Jaffa, ex-Period Woodworking Co., is sec.-treas. Line will be announced in about week, comprising low-priced 17, 19 & 20-in. models to be sold direct to dealers. Production plans call for 250 TVs and 300 radio-phonos per day. Components problem is being met because "friends in components manufacturing have stood by us," said Fein.

American Radio & Television, N. Little Rock, Ark., is making TV table base with AM radio and phono, for private-label TV distributors Mercantile Stores, Allied Stores, Interstate Dept. Stores, National Dept. Stores, Aimcee.

Revision of "Regulation W" to make down payment on TV sets and other household appliances 20-25% instead of present 15% (Vol. 6:36), shorten time for repayment to 15 months instead of present 18 months, is reported under consideration by Federal Reserve Board. FRB officials deny any immediate change, intimated none would be made until November or December at earliest.

Leftish United Electrical Workers, expelled last November from CIO (Vol. 5:46, 49), has reelected Albert J. Fitzgerald, president; Julius Emspak, secy-treas; James J. Matles, director of organization. New York convention this week voted for 30-hour work week with same take-home pay as now received for 40-hour week, plus pension and other benefits.

Tele-tone has rejoined RTMA, and other new members are Trad, New York; Constantine Engineering Laboratories Co., Mahwah, N. J. (transformers, power supplies, etc.); General Ceramics & Steatite Corp., Keasbey, N. J.; Wright Zimmerman, New Brighton, Minn. (speakers, amplifiers etc.).

Philo Farnsworth, one of TV's great inventors but long silent, came forth this week with promise of "memory" tube—device which could lift many of TV's present limitations. Within 2 years, he told Electric Club of San Francisco, tube should be developed commercially, providing "biggest single development in TV in the past 5 or 10 years." Theoretically, tube can eliminate interlacing, increase brightness and resolution, reduce flicker, save bandwidth. Presumably, it could also do CBS color system worlds of good. Farnsworth is a research executive of Capelhart-Farnsworth.

Sarkes Tarzian's operations are described as "little RCA" by radio editor George Rosen in leading article in Sept. 20 *Variety*, based on visit to Bloomington, Ind. operations. City's No. 1 citizen operates 3 plants there, one in Philadelphia, one in Hawthorne, N. J., claims 70% of industry's total TV tuner productions, plans acquisition of 2 more plants, his annual gross runs \$12,000,000. He started in business 6 years ago with \$40,000, and now he plans to turn out small-town telecasting stations, counterparts of WTTV he operates in Bloomington, for "full-package" price of \$150,000; says WTTV expects to go into the black next month, when network revenues are available via new microwave relay from Cincinnati.

Rorabaugh Report on TV advertising, which each month lists TV sponsorships on networks and stations, in its July *Tele-Vane* reports 65 networks, 697 national-regional spot, 2971 local retail accounts on 99 of the then-operating 105 stations. Total of 3733 advertisers is 4.6% under June (due to vacation period) but 172.7% ahead of July 1949. Network was up 54.8%, spot 133.1%, local 188.8% ahead of July 1949. NBC is listed with 28 accounts, CBS 21, ABC 11, DuMont 9.

Daniel Starch & Staff, researchers, is out with another survey of TV impact, showing nearly 83% of TV set owners (in unnamed cities) found TV commercials more pleasing than radio commercials, less than 2% feeling other way, remaining 15% thinking they were about same. Women were more strongly in favor of TV commercials than men. Biggest complaint: local commercials, especially on participating programs, too frequent and too long.

"Check the South In" captions page ad in Sept. 18 *Broadcasting*, sponsored by 5 CBS-TV outlets to call attention to Sept. 30 interconnection date (Vol. 6:31, 37): WFMY-TV, Greensboro; WBTV, Charlotte; WAGA-TV, Atlanta; WMBR-TV, Jacksonville; WAFM-TV, Birmingham. Another ad in same issue, by Youngstown's WFMJ (AM) is captioned: "Time Buyers Note! No TV stations within 60 miles of Youngstown, O."

Twenty percent of TV set owners dine out less often than they did before TV, according to U of Chicago Opinion Research Corp. poll released this week. Survey was made for General Foods and National Restaurant Assn. Restaurant business is down from last year, report 55% of NRA members; 22% say business is same, 16% better.

Report on TV's effect on big league baseball attendance this summer, being prepared by Jerry N. Jordan as supplement to his comprehensive report on sports-TV (Vol. #:19, 23, 33), will be distributed by RTMA, which printed and circulated original study.

Fundamentals of film-making for TV are covered in *Movies for TV*, by *Tele-Tech* associate editor John H. Battison, to be published by Macmillan in October. Besides being a TV engineer, Battison has also produced TV films, teaches at New York U.

The making of color film, its measurement and control, is given highly technical treatment in *Principles of Color Sensitometry*, 72-p. booklet compiled by Society of Motion Picture & Television Engineers. Copies are available at \$1 from SMPTE, 342 Madison Ave., New York.

Financial & Trade Notes: Magnavox reports net earnings for year ended June 30 were \$2,007,982, equal to \$2.81 per share on 703,763 common shares outstanding. This compares with \$1,323,598 (\$2.01 each on 659,989 shares then outstanding) earned during fiscal year ended Feb. 28, 1949. Fiscal period has since been changed. Sales reached highest level in company's history—\$31,716,630 for June 30 fiscal year, compared with \$24,402,206 for year ended Feb. 28, 1949. Net working capital as of June 30 was \$6,720,087, compared with \$3,490,370 as of Feb. 28, 1949; inventories were \$6,584,145, down \$1,549,656 in same period. Orders on hand will require capacity production for several months, August sales running about \$4,250,000.

Finch Telecommunications Inc. holds annual meeting Oct. 2 at Passaic, N. J. office, and stockholders will be asked to (1) authorize change of name to Facsimile & Electronics Corp.; (2) approve reduction of par value of common stock from \$1 to 25¢ and increase to 2,000,000 authorized number of shares and create 400,000 shares of new Class A stock of \$1 par; (3) approve Graham, Ross & Co. Inc. as underwriter; (4) approve grant of options to Casper M. Bower, president, to purchase 10,000 shares of common within 18 months at 87½¢ per share, with further options to purchase 10,000 shares within 3 years at \$1.75 per share. If proposed recapitalization is authorized, it's estimated there will be \$750,000 cash proceeds to corporation, leaving capital surplus of \$269,733. Proposed directors are: Raymond B. Littlefield, Providence, chairman; Casper M. Bower, president; Gregory Halpern, president of Polychrome Corp., Yonkers, N. Y.; Gilbert Parker, New York attorney; Charles D. McAuliffe, New York attorney.

Hallcrafters Co. will make public offering of 300,000 shares of common—150,000 new, 150,000 held by present stockholders—according to Chicago reports. When completed by Kebbon, McCormick & Co., proceeds of sale will be used to prepay short-term bank debt of \$800,000 and second mortgage notes of \$78,000, plus added working capital. After sale, 825,000 shares will be outstanding.

Wall Street Journal reports present indications are ABC will be back in red for 3 months ending Sept. 30 (summer quarter) but that final quarter will be profitable and year should show profit, compared with \$51,000 loss last year. First 6 months of 1950, ABC earned \$180,000, or 11¢ a share.

Raytheon stockholders meeting was told this week by president Charles Francis Adams Jr. that production of radios, tubes and TVs reached new highs in August; that fairly good earnings will be shown for quarter ended Aug. 31 (as against loss of \$547,000 same period last year); that good results are also in prospect for quarter ending Nov. 30 unless civilian production is curtailed.

Scott Radio showed first profit in 3 years for quarter ended Aug. 31 when sales ran \$542,773, net earnings \$41,073. Sales compare with \$79,232 in same 1949 quarter and \$604,900 for all last year. President John Meck said volume reflects addition of TV to line, estimates sales for Sept.-Nov. quarter will exceed \$1,500,000.

John Meck Industries public offering of 150,000 shares at \$4 a share, made this week through Otis & Co., Cleveland (Vol. 6:35), was over-subscribed almost immediately.

Sparks-Withington sales were \$17,020,260 for year ended June 30, compared with \$16,809,350 in preceding year. Profit was \$459,080 (48¢ per share) vs. \$25,710 (4¢).

Dividends: Emerson regularly quarterly 25¢ on common payable Oct. 16 to stock of record Oct. 5 . . . Hytron regular quarterly dividend of 12¢ on its 6% convertible preferred payable Oct. 14 to stock of record Sept. 29 . . . Trav-Ler cash dividend of 10¢ per share is payable Oct. 10 to stock of record Sept. 20, along with one share for each share held as of Sept. 18.

BUSINESS GOOD BUT PRICES CONTINUE UP: Boom TV market looks like it's definitely due for second round of price increases -- this in addition to 6-10% increases at retail level forced by 10% manufacturers' excise tax that goes into effect Nov. 1 (Vol. 6:38). Higher labor and materials costs are basic reasons, but it's part of an inflationary pattern taking place in whole appliance field. For example, such big companies as GE, Westinghouse, Frigidaire have hiked prices \$1 to \$30 on such items as irons, toasters, mixers, fans, washing machines, refrigerators, ranges, etc.

Philco this week raised prices \$10 to \$30 on 13 TV sets out of its line of 33, and Hoffman raised 17 of its 22 (see Topics & Trends for details). This was Philco's second hike, first having been average of about 7% across-the-board as of July 31 (Vol. 6:31). Also raised by \$10 each were 7 radio-phonos. Philco had just written new labor contract, calling for higher wages and other benefits.

Nearly all TV-radio manufacturers have posted increases last few months (Vol. 6:30, et seq) -- but Air King, Tele-tone and Zenith are only other ones thus far reporting second rounds (Vol. 6:36).

It's expected others will do likewise, some possibly waiting to consolidate new prices with markups forced by new factory excise. Any way you look at it, the trend that started in latter July continues upward, a complete turnabout from downward trend manifest about this time last year.

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Business at all levels continues "good" to "excellent" -- with such companies as Admiral, Philco and others even disavowing "guesstimates" by Television Shares Management Co., which once again essayed to pick top 10 producers and estimate their 1950 output (Vol. 6:38). RCA was rated No. 1 with 950,000, Philco next with 900,000, Admiral third 850,000. Both Philco and Admiral aver that, the way things are now going, they will hit their oft-predicted 1,000,000-mark this year -- provided only that shortages don't get more acute and war contracts come gradually.

Nobody seems to like the TSMC estimates, particularly those left out. For example, Crosley claims to be among top 10 at today's rate of output, Hallicrafters disputes Meck's right to rank ahead of it, others also say figures are cockeyed.

"Business is terrific," said one of the biggest manufacturers, while others in the top ranking restrain themselves with such comments as "good" or "very good". Remarkably few customers, we're told, have been asking questions about color TV, so that impact of FCC report hasn't been felt -- yet. With production now at breakneck pace, there now seems to be plenty of most brands of sets available at retailers without much waiting. Worse problem is installation and servicing. Inroads on servicing manpower are already being felt -- and everybody thinks that situation will grow worse before it gets better.

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TV-radio receiver trade isn't directly concerned, but this news is significant as possible straw in the wind: Raytheon is quitting AM-FM transmitter manufacture "due to govt. commitments that make necessary a reallocation of our production facilities." Shortage of components aggravates a situation already marked by diminishing market for AM and FM equipment, said Raytheon. In TV, it will continue to produce 50-watt STA microwave link known as RTRIC, and will manufacture off-the-line monitor receivers for station use. Agents in field will be continued.

GE's factories in Syracuse and Utica returned to normal TV-radio production end of this week as IUE Local 320 (CIO) heeded back-to-work plea of international chairman James B. Carey. Whole Electronics Dept. had been idle since Aug. 31 when 9500 workers walked out. Syracuse and Utica employes stayed out even after Sept. 15 agreement between international union and company (Vol. 6:37) because of unsettled local issues. Strike put GE out of TV-radio production nearly whole month.

Second September week's output was 124,348 TV sets, 197,485 radios, according to projected figures for entire industry released Friday by RTMA. This drop from first week's 163,860 & 235,284, respectively, was attributed to Labor Day stoppage and continued GE strike. (Note: For statistical purposes, first Sept. week actually ended Sept. 1; month will have 5 weeks.)

Thus, 1950 production was 4,434,810 TVs through Sept. 8, and 9,350,734 radios of all kinds. RTMA estimates first 8 months output of TVs valued at \$700,000,000 at factory, radios \$210,000,000 -- more than for whole of 1949. Monthly output projections for first 8 months (not including the 2 Sept. weeks):

	<u>Television</u>	<u>Home Radios</u>	<u>Auto Radios</u>	<u>Portable Radios</u>
January.....	424,000	581,000	329,000	69,000
February.....	536,000	505,000	379,000	120,000
March.....	643,000	587,000	389,000	114,000
April.....	432,000	526,000	273,000	143,000
May.....	557,000	796,000	291,000	351,000
June.....	522,000	710,000	567,000	262,000
July.....	330,315	391,170	234,025	97,323
August.....	702,287	754,232	320,960	128,255
Total 8 months	4,146,602	4,850,402	2,782,985	1,284,578

Financial & Trade Notes: Philco Corp. has called special stockholders meeting Nov. 28 to vote on 2-for-1 split in common stock to be effected by increase in authorized shares from 2,500,000 to 5,000,000. President Wm. Balderston said move is in recognition of company's growth from sales of \$52,311,000 in 1940 to estimated 1950 volume of \$300,000,000. Presently outstanding are 1,709,980 common shares, including 31,202 in treasury.

Zenith-sponsored Teco Inc., formed to promote Phonevision (Vol. 6:15-16), has notified rights holders that entire issue of 100,000 shares at \$10 par has been fully subscribed and that stock certificates will now be issued. Zenith stockholders last April were offered privilege of purchasing, on or before May 9, one-fifth of \$10 Teco share for each share of Zenith common held. First sales were 1000 shares to Zenith officials, including 590 to Zenith president E. F. McDonald Jr. Phenomenal rise in Teco stock earlier this year was subject of headlines that led Teco president T. M. McNicholas to state Phonevision was still experimental and rise wasn't considered warranted (Vol. 6:21-23).

Sylvania sales this year will probably total around \$140,000,000 and net, based on present tax rates, will at least double the \$1.82 per share earned last year, may run between \$3.75 and \$4. So Max Balcom, chairman, told N. Y. Society of Security Analysts Sept. 28. Company's TV division ran at loss until August, he said, and now is operating at profit.

Hallicrafters Co., which is planning public stock offering shortly (Vol. 6:38), this week disclosed sales for fiscal year ended Aug. 31 of \$28,513,540, nearly double last year's \$14,572,008. Profit is \$1,167,905, or \$1.73 per share on 675,000 shares outstanding, compared with \$403,050 (60¢) for preceding year. Breakdown of sales shows 72% TV receivers, 3% home radios, 14% communications and amateur shortwave equipment, 11% govt. communications equipment. President Wm. Halligan announced new \$1,500,000 govt. contract last week increases Hallicrafters total defense contracts to slightly more than \$13,000,000.

Packard-Bell president H. A. Bell proposes to sell 117,000 of his 179,000 shares of 50¢ par common, and v.p. J. M. Spain would sell all his 18,666 shares, according to registration filed last week with SEC. Hill Richards & Co., Los Angeles, would be underwriter of public offering

at price to be set. Mr. Bell and Mr. Spain also own warrants entitling them to purchase an additional 77,000 and 10,000 shares, respectively, at \$3.75 per share. Under Sec. 16(B) of Securities Exchange Act, short-term trading profits of officers, directors or 10% owners in any equity security of a company with listed securities, may be recoverable by the corporation. But no part of proceeds would go to company under proposed new SEC rule which would exempt transactions whereby a security is acquired by redemption of another security. Assuming exercise of all warrants, Mr. Bell will own 139,000 shares (23.6%). Packard-Bell stockholders recently approved 2-for-1 stock split (Vol. 6:35).

How big Paramount's 29.5% DuMont holdings now figure in its financial setup, is hinted in statement of Paramount Pictures Corp. estimating earnings for 6 months ended July 1, 1950 at \$2,826,000, or \$1.07 per share. This does not include \$829,000 profit from Paramount's interest in various non-consolidated subsidiaries, principally DuMont. Paramount owns 560,000 (all) shares of Class B stock and 43,200 shares of Class A in DuMont, which for first 24 weeks of this year showed profits of \$2,797,000, or \$1.16 per share on 2,358,466 A & B common outstanding as of June 18, 1950 (Vol. 6:30). Paramount paid some \$164,000 for its DuMont holdings acquired between 1938 and 1943 (Vol. 6:4), only \$56,000 for first 500,000 shares of B (Vol. 5:51). Recent interim dividend of 25¢ (Vol. 6:33) paid Paramount more than \$100,000—first dividend this year. In 1949, DuMont paid 50¢, in 1948 it paid 25¢.

Oak Mfg. Co. reports net profit for quarter ended Aug. 31 as \$417,018 (93¢ a share), compared with \$143,543 (30¢) for same 1949 period.

Dividends: Olympic, 25¢ on common payable Oct. 16 to stock of record Oct. 6; paid 20¢ in July after 20% stock dividend in April . . . Hoffman Radio, 25¢ on common payable Oct. 16 to stock of record Sept. 30, first cash dividend since split of 1½-for-1 Aug. 23 . . . Tung-Sol, \$1.25 on common payable Nov. 1; also paid 50¢ in August, 25¢ in February . . . Clorostat, 8¢ per share on common payable Oct. 16 to holders of record Oct. 9.

Correction: Last week's dividend reports stated Traveler has issued dividend of one share for each share held as of Sept. 18; actually, it has issued one for every 5.

Topics & Trends of TV Trade: Manufacturers readying new price lists for TVs produced Nov. 1 and thereafter are almost invariably planning to incorporate new 10% excise tax into price, rather than quote separate tax item to customers that would automatically reveal distributor cost. This is apparent from informal reports received since tax was enacted (Vol. 6:38). On Sept. 29 Internal Revenue Bureau released these instructions as guide for businessmen and information for consumers:

"Television sets: Beginning Nov. 1, 1950, there will be a 10% tax collected on the manufacturer's selling price of television sets. It should be noted that this tax is not a retail tax; that the payment thereof is the responsibility of the manufacturer, producer, or importer, and that the tax applied to their selling price. However, there is no prohibition against the amount of the tax being passed on to the consumer. The tax also covers television chassis, cabinets, tubes, speakers, amplifiers, power supply units, built in antennae and the like."

Practically identical instructions were issued with respect to deep-freeze units, only other new excise in Revenue Act of 1950.

* * * *

Philco's second price boost covers 13 of its 33 sets, runs \$10 to \$30 per set. These are the new prices, the increases (listed in parentheses) being from prices announced last month reported in Vol. 6:31 (for description of sets see *TV Directory No. 11*):

14-in. rectangular: Model 1443PW, \$379.95 (\$20); 1443PM, \$399.95 (\$20); 1443PL, \$429.95 (\$30).

16-in.: 1601, \$229.95 (\$10); 1601T, \$249.95 (\$10); 1634M, \$319.95 (\$20); 1634L, \$339.95 (\$20).

17-in. rectangular: 1836M, \$379.95 (\$20); 1836L, \$399.95 (\$20); 1838, \$469.95 (\$20); 1872, \$449.95 (\$20); 1874, \$499.95 (\$20); 1874L, \$529.95 (\$30).

Philco also added to line 2 new sets: Model 1634W, 16-in. walnut console, \$299.95; 1836W, 17-in. rect. walnut console, \$359.95.

* * * *

Hoffman raised prices \$10 to \$25 on 17 sets in line of 22, keeping only 14-in. prices unchanged. Following are new prices (increases in parentheses); for description of all sets see *TV Directory No. 11*:

16-in. (each up \$10); Model 635, \$269.95; 634, \$279.95; 877, \$349.95; 878 & 876, \$359.95; 867, \$389.95; 868 & 866, \$399.95; 951, \$489.95; 952 & 950, \$499.95.

19-in.: 891, \$459.95 (\$20); 892 & 890, \$469.95 (\$20); 961, \$575 (\$25); 962 & 960, \$595 (\$20).

* * * *

Imperial Television Mfg. Co., 2034 E. 48th St., Los Angeles (of which Tele-tone distributor Wood & Cies is subsidiary; Vol. 6:29), makes 4 basic sets with 18 variations in cabinets. All sets contain Tele-tone chassis and are advertised as "Tele-tone Imperial." Basic set in each group is Tele-tone's Imperial model. Line follows:

Model 2217, 17-in. rect. console with doors: Windsor, walnut, \$279.95; in mahogany, \$289.95; Coronet, mahogany, \$289.95; in blonde, \$309.95; Provincial, \$299.95.

Model 3117, 17-in. rect. console with AM-FM-phono: Georgian, walnut, \$399.95; in mahogany, \$419.95; Catalina, mahogany, \$419.95; in blonde, \$449.95; Provincial, maple, \$439.95; Normandie, blonde, \$459.95.

Model 3019, 19-in. console: Winthrop, walnut, \$339.95; in mahogany, \$349.95.

Model 3119, 19-in. console with full doors: Wakefield, walnut, \$369.95; in mahogany, \$379.95; Bel Aire, mahogany, \$379.95; in blonde, \$399.95; Salem, maple, \$389.95.

* * * *

New Magnavox set is 17-in. rect. 18th Century mahogany Embassy console with AM-FM-SW-phono, \$775.

First of Raytheon's series of 9 "truth about television" ads broke in newspapers in 44 TV cities Sept. 24, designed to "help build up a sound dealer organization, and incidentally benefitting other reputable set manufacturers as well as ourselves." First ad ran 1000 lines, others will be somewhat smaller. Under caption "3 reasons why you should buy your television set from a dependable dealer," first ad notes: (1) He's here to stay. (2) He offers good products. (3) He takes care of his customers. Then it gives public these "Eight Good Guides for Better Television Buying":

1. Buy your TV set through a reputable dealer in whom you have confidence.

2. Ask for names and telephone numbers of several purchasers of the make of set you're thinking of buying. Ask for references in your neighborhood.

3. Make sure the dealer or agency handling your service policy is technically competent and financially sound. Ask for and check his references.

4. Make sure the manufacturer of your set not only is reliable but also has a recognized background in electronics. If the manufacturer is not known to you, ask for proof.

5. Make sure the set you're buying is up to date and contains the latest developments. Don't be fooled by trick names for circuits. Contrary to some manufacturers' claims, there is no magic about television!

6. Make sure the cabinet housing your set is well constructed and finished. Use the same care you would in selecting fine furniture.

7. Examine the picture critically and listen to the tone quality, too. Make sure the tone is at least equal to what you would expect from a good radio set.

8. Ask for proofs of dependability, such as testimonial letters, certificates of approval by recognized testing laboratories, etc. For your own safety, make sure the set bears the seal of Underwriters' Laboratories.

Unscrupulous racketeers in guise of TV dealers and servicemen are preying on uninformed public, says Lloyd Wendt in October *Better Homes & Gardens* article titled "Look out for the Television Tinkers!" Citing "3-way switch"—bad set, exorbitant installation and service fees, no service—Wendt recommends reputable dealers and servicemen as guard against being "taken." He tells of Bronx dealer who sold rebuilt 10-in. rag-tag chassis in console with RCA nameplate as new RCA 16-in. set—which didn't even work! Wendt emphasizes: "If you don't know your merchandise, know your merchant!"

* * * *

Plant expansions: Westinghouse new \$1,500,000 TV plant with 400,000 sq. ft. in Raritan Township, just outside Metuchen, N. J., is planned as "last word in industrial design" . . . Hoffman Radio adds seventh plant, 2 buildings with 17,000 sq. ft. at 335 S. Pasadena Ave., Pasadena, giving company total 260,000 sq. ft.; other 6 plants are in Los Angeles . . . Federal Telephone & Radio has leased 130,000 sq. ft. of added manufacturing space in Passaic, N. J.; Federal Telecommunications Laboratories has leased former Isolantite plant, with 75,000 sq. ft., in Belleville, N. J. . . . National Video Corp., picture tubemaker, has purchased site at Milwaukee & Kilbourn Aves., Chicago, will erect 150,000 sq. ft. building for expansion of production, now reported at 50-60,000 tubes per month . . . GE reopening Clyde, N. Y. plant Dec. 1 for manufacture of germanium products used in electronics equipment, allowing room for expanded govt. production at Syracuse; T. E. Jamro will be in charge of Clyde plant.

* * * *

New Kaye-Halbert sets added to line (Vol. 6:18): Model 731, 17-in. rect. walnut table, \$279.95; in mahogany, \$289.95; in blonde, \$299.95. Model 733, 17-in. rect. walnut console, \$319.95; in mahogany, \$329.95; in blonde, \$339.95. Unique "Owner's Club Service Plan", sponsored by company's Los Angeles distributor, works this way: Set owner pays \$10, all repairs done at factory for \$3.95 per job. First year there's no charge for parts since they're covered by manufacturer's warranty. After first year, owner has to pay for parts at dealer's cost.

Trade Personals: Inwood Smith, mgr. of refrigeration, promoted to general sales mgr. in charge of all products, Crosley, under sales v.p. W. A. Brees, who also appointed William J. O'Brien New York branch mgr., succeeding Bert Cole, resigned . . . Sylvania appoints L. R. Wanner plant mgr. in charge of plastic operations, Parts Div., and Curtis A. Haines gen. mgr. of operations for Radio Tube Div. and TV Picture Tube Div. . . . Arthur Baxter, purchasing agent, promoted by Hoffman Radio to director of purchasing, succeeded by Charles G. Locke, ex-Bendix; M. W. Horner put in charge of production, Hoffman's Special Apparatus Div. . . . Henry C. Roemer, v.p., comptroller and member of board of IT&T, elected executive v.p. of Federal Telephone & Radio Corp., where he served as senior v.p. during war . . . Malcolm Ross, ex-Sylvania, named Tele-tone purchasing director . . . Edmond Sherman promoted to Starrett engineering v.p., names Sidney Lidz, ex-CBS, as director of color TV research in charge of developing color receivers . . . Gerald Light named mgr. of govt. contracts for Emerson . . . Joseph H. Moss Jr. named to new post of mgr. of distribution, DuMont Receiver Div.

Among larger military contracts for electronics equipment announced by Commerce Dept. for week ending Sept. 22 and let through Signal Corps, Philadelphia: Collins Radio, \$728,000, radio sets (1504 units); Johnson Service Co., Milwaukee, \$604,400, radiosondes (75,000) & radio-sonde modulators (30,000); Hallicrafters, \$350,022, radio sets (297); Bendix Aviation, \$300,000, radiosondes (70,033); Midland Mfg. Co., Kansas City, \$266,301, crystal unit sets (57); Molded Insulation Co., Philadelphia, \$250,000, radiosondes (68,692); Motorola, \$221,000, radio sets (21) & sound ranging sets (121); Rauland-Borg Corp., Chicago, \$175,000, radio terminal sets (128) & radio relay sets (66); Emerson, \$150,000, radio sets (2859); RCA, \$150,000, countermeasure receiving sets (31); Lewyt Corp., \$120,650, radio sets (504). Let through Navy Electronic Supply Office, Great Lakes: Sperry, \$193,800, electron tubes (1500).

New color phosphors have been developed by Sylvania and supplied to color tube developers such as RCA. Dr. Elmer Larsen, chief engineer of Tungsten & Chemical Division, said phosphors would be available in commercial quantities as soon as industry has agreed on standards for them. Phosphors are of sulphide and oxide types. Dr. Larsen is particularly gratified with new red phosphor, since previous red phosphors have been extremely inefficient, greatly limiting tube light output.

Radio receiving tube sales in August totaled 36,269,435, all-time record, RTMA reports, bringing total for first 8 months of this year to 227,773,373, compared with 198,753,295 in all 1949. Sold for new sets in August were 28,202,620 tubes, for replacements 7,017,115, to govt. 906,450, for export 143,250.

Increasing govt. purchases of radio transmitter and communications equipment, including radar, are reported by RTMA, which shows second quarter sales by its member companies totaling \$33,393,093 compared with first quarter's \$30,640,943. Second quarter orders placed by govt. amounted to \$61,701,467 (\$27,676,595 of it for radar) compared with \$41,305,390 in first quarter.

Proxy notice for Magnavox stockholders meeting Oct. 25 in Ft. Wayne was issued this week, along with financial report on fiscal year's operations ended June 30 (see Vol. 6:38)—and it discloses executive v.p. Frank Freimann as beneficial holder (family) of 76,308 of the 758,965 shares of common stock outstanding. These executive salaries for fiscal year were also listed: R. A. O'Connor, president, \$55,833; Mr. Freimann, \$48,333; Gerard M. Ungaro, v.p., secy. & gen. counsel, \$22,916.

Latest "community antennas" for TV reported are those in Franklin, Pa., 65 miles from Pittsburgh. Haren Corp., of that city, erected high-gain structures on nearby mountains, feeds signals via wire lines and amplifiers into some 40 homes and public places. It charges \$9.25 per month for homes, \$25 for TV dealers. Among other such installations is that of L. E. Parsons, Astoria, Ore., whose "network" is said to number hundreds of sets; pictures come from Seattle. FCC engineers say they've even heard of a California engineer who strung 8 miles of wire to get good picture to his home. FCC has no jurisdiction over practice unless wires happen to cross State lines or radiations are involved. However, State or local regulations may cover installations.

Novel idea for "compatible" uhf TV system, is broached in September *Radio & Television News* by J. R. Popkin-Clurman, Hazeltine engineer who developed inexpensive amateur uhf TV rig (Vol. 6:8, 27). He contends new uhf antenna, with associated crystal, can feed uhf signals directly into standard vhf receivers. FCC engineers are skeptical, saying idea will work after a fashion—but only in areas of very high signal intensity. They say it's similar to "blooper" once proposed as an inexpensive FM converter (Vol. 3:13).

Curious angles on TV's social and industrial impact, as reported in daily press: (1) In Union, N. J., realty company dropped plans for new theatre, started \$50,000 supermarket instead, blamed "changed conditions," principally TV, for switch. (2) In Fall River, Mass., 16 bus drivers were released, bus line manager telling State Dept. of Public Utilities cut in service partly attributable to reduced passenger loads on night runs because people stay home watching TV instead of going out. (3) On West Coast, Los Angeles-San Francisco Short Line has equipped one bus with TV receiver visible to everyone except driver, plans to equip 7 more; line says reception good for 40% of route. In London, number of buses traveling to outlying points have been equipped with two 9-in. sets each. (4) In New York, fire dept. official warned that roof antennas were endangering firemen, suggested requirement that lowest arm of antennas be at least 8 ft. above roof's cornice and that lead-ins be placed so they can't trip firemen or foul hose.

TV's impact on set owners in Oklahoma City and Norman, Okla., can be felt, but isn't nearly as strong as in many other cities, according to careful study by U of Oklahoma. *When TV Moves In*, 35-p. report available from Sherman P. Lawton, coordinator of broadcasting, compares family habits during 3 periods: pre-TV, 6 months after TV, 12 months after. Mild impact may be due to fact Oklahoma City has one station, non-interconnected, is relatively "young" in TV service. Survey concludes, for example, that "there appeared to be no clear-cut relationship between amount of TV-viewing and movie-going, attendance at sporting events, participation in outdoor activities, having guests in the home."

Advertising expenditures for second half 1950 have been increased by all but one of the 12 manufacturers represented on RTMA advertising committee informal poll at Sept. 19 meeting indicates. Increases range from 20% to 200% over first 6 months of 1950, average being 104%. All but 3 of same group plan to up 1951 budgets, average being 9% over 1950; 3 plan to spend 45% more.

To compare vhf and uhf propagation, RCA-NBC was granted 50-watt authorization, for 90 days, on Channel 4 in Bridgeport. New experimental station will be measured against signals of KC2XAK, which uses 529-535 mc.

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Responses to FCC Proposals for 'Bracket Standards'

Brief Summaries of Replies to Notice to Manufacturers for Proposed Rule-Making

(FCC Public Notice No. 50-1065; see Special Color Report published Sept. 2, 1950)

Includes All Replies Received Up to Sept. 29, 1950

ADMIRAL CORP.—Short covering letter accompanies outline by chief engineer, Robert Jones. Letter states engineering staff has been working on problem but time permitted has not been sufficient for valid conclusions. Annex lists following engineering problems that must be solved for bracket standards and sets forth questions arising in connection with each: test equipment, hum, horizontal sweep width, bandwidth, bracket standards, automatic switch, model design (both chassis and cabinet), field testing. "We shall continue working," states letter, "until such time as an adequate solution can be reached. At that time we should like to present our findings and conclusions to the Commission."

ANDREA RADIO CORP.—Could build bracket sets by April or May, 1951. Adoption of brackets now would mean: (1) Plant-wide layoff of 335 people. (2) Unsafe inventory building. (3) Financial burden that would undermine the company's ability to meet its obligations. Feels that color must be compatible and fully electronic. Suggests "one overall standardization rather than possible individual steps or dual standards."

ARVIN INDUSTRIES INC.—(1) Test equipment is not available; estimates 2 months needed to procure it. (2) Three months required for new set design development. (3) Field testing would take longer than usual, due to lack of CBS-type signals. (4) Tooling requires 2 months. (5) Components procurement cycle is 3-4 months. Thus, total of 8-9 months would elapse before brackets production would start.

BELMONT RADIO CORP. (Raytheon)—Needs more time to study costs, feasibility and production dates. Asserts bracket sets far different from 2-position switch. Says latter "probably could be engineered in the present state of the art." Two-position switch would probably cost \$30—"too high a premium for insurance against obsolescence during the advent of color." Has "every desire to cooperate" but regrets that brackets aren't possible within time allocated. Is continuing study, nevertheless.

COLUMBIA BROADCASTING SYSTEM—Approves bracket standards idea if costs are not excessive. Isn't certain whether they would cost more than 2-position switch. But adoption of CBS field sequential system will provide "competitive impetus" for manufacturers to incorporate at least 2-position switch internally, and brackets might come later if their feasibility is proved. CBS also suggests Commission make clear that paragraph 5(c) in

brackets proposal, which requires "equivalent size" pictures, "also permit additional provision for reduction in size for purposes of conversion" through addition of color disc.

COMMUNICATIONS MEASUREMENTS LABORATORY INC.—Favors TV on uhf only. Asserts FCC's color decision is inconsistent with FCC policy. States: "I've been at odds consistently with the mass producers. . . . However, in fairness to them . . . FCC displays woeful lack of knowledge of 'lead time' required for a change of this type, or the decision is a carefully calculated scheme to adopt the CBS system now on a permanent basis with the knowledge that manufacturers cannot possibly produce receivers within the time limit." Estimates that normally such change would require 4 months, but asserts that components situation is abnormal, e.g., "resistors are virtually unobtainable."

Maintains: "I see no reason for haste in the light of situation which has resulted from the events in Korea." Color and allocations "cannot be completely divorced from each other." Suggests that CBS system would lose two-thirds of information when used with tri-color tube; that field rate might be lowered to make system compatible; that all proposed color systems may be made to work with universal set.

CONNECTICUT STATE DEPT. OF EDUCATION—Requests reservation of educational TV channels. Urges more time for research "until such time as an electronic system of color transmission has been suitable demonstrated by CBS."

CONRAC INC.—Will not make bracket sets because: (1) "Considerable technical difficulties." (2) Components in very tight supply. Believes FCC would make "grievous error" in not picking compatible system.

CROSLY DIVISION, AVCO MFG. CORP.—Cannot estimate when bracket sets could be made. All its research has been in dual standards, not bracket. Had abandoned dual-standard research because it felt compatible system was necessary and feasible. Urges deferment of color adoption because: (1) No satisfactory system is fully developed. (2) CBS system is impracticable at present time, even if it could be perfected. (3) Delay in adopting color would hurt no one, nor aggravate compatibility problem. (4) Dual or bracket standards would be detrimental to public.

ALLEN B. DuMONT LABORATORIES INC.—Responded it would need at least 6 months to year before coming to any engineering conclusions on bracket standards. Calls attention to fact cost estimates submitted during hearing referred to 2-position switch, not bracket standards. Calls bracket standards "immature," recommends that Commission's proposals thereon be rescinded or a full hearing be held on subject.

CBS system requires complete redesign of TV receivers, DuMont states, and doesn't meet FCC criterion that color system be capable of being received in black and white on present receivers "with relatively minor modifications."

DuMont holds FCC's comments on RCA tri-color tube are not proved, and points out inconsistency in holding out hope single tube will permit large, direct-view pictures for CBS color system. Points out that under FCC's proposal to investigate horizontal interlace and long-persistence phosphors it's possible Commission will some day change standards again, making them incompatible with CBS color standards.

Questioned is impartiality of Comr. Jones, and it's charged he showed "unprecedented bias." Questioned also is "adequacy of FCC's facilities for full technical investigation . . ." Commission is urged to postpone any decision on color, permit continuance of research on subject.

GAROD RADIO CORP. (Majestic)—Preliminary engineering on brackets yet to be done. Has provided space in forthcoming sets for additional components and controls. Field testing will be needed. Estimates production to commence 4-5 months after final decision. Internal adaptation to cost about \$35, external \$50-\$75 plus costs of installation by highly technical personnel. Is "anxious to cooperate" but points out that monochrome from CBS transmissions will be degraded and that color disc is good only for sets up to 12-in.

GENERAL ELECTRIC CO.—(1) "Definitely" will build bracket sets if "the public will buy in sufficient quantities to justify the investment in engineering time and in production facilities." (2) "Our attorneys advise us that we may not have the right to enter into an agreement with anyone, even the FCC, to abandon the design and manufacture of all types of TV receivers except one specific type." (3) Strike has hampered study of problem. (4) Uncertain about "retrace" time, other engineering details. (5) Recommends FCC and industry work out proposal together. (6) After everything is clarified, GE could be ready to make brackets by June 1, 1951, if components are available.

Convinced FCC's whole color-brackets proposal is "technically and economically open to serious question, particularly since it comes at a time when the Armed Forces requirements in terms of electronic engineering man-hours is becoming an increasingly major factor in this industry."

HALLICRAFTERS CO.—Requires 3-6 months of basic research. Time factor also depends on development work by suppliers of components such as ferromagnetic structures, coils, switches, possibly tubes. Is "willing but unfortunately not able to give an unconditionally affirmative statement."

HOFFMAN RADIO CORP.—Wants to cooperate, is willing to install 2-position switch in sets, but it will take at least 8 months before such sets start coming off production lines. But company doesn't know how to build bracket standards. Calls attention to fact black-and-white picture from CBS colorcast would be "degraded," also that Commission's ideas on bracket standards seem to be based on

out-of-date sets. States CTI has improved system, urges reexamination of CTI system.

JOHN MECK—Sent 2 telegrams as John Meck Industries and as Scott Radio Laboratories stating that he was filing no comments.

NATIONAL TELEVISION SYSTEM COMMITTEE—Submitted unedited minutes of Sept. 12-13 meetings of panel on station equipment (Dr. T. T. Goldsmith, DuMont, chairman) and panel on receivers (David B. Smith, Philco, chairman). Both panels assumed "bracket standards" meant black-and-white standards and CBS standards (2-position switch for receivers).

Station equipment panel consensus showed that some items requiring modification could be accomplished immediately. Most, however, required from one week to 4 months. New equipment incorporating needed changes would take up to 2 or 3 years for film recording equipment. Receiver panel agreed that bracket standards means "redesign of receivers" due to higher voltages, more tubes, other changes required.

Following are estimates of additional cost to list price of 17-in. rectangular receiver with 70-degree deflection tube and date first such set would be off production line (all 1951 unless otherwise noted):

Bendix, \$40, June; Capehart-Farnsworth (no estimate), June; DuMont, \$35-\$40, March 1952; Emerson, \$30-\$40, June; Freed, \$40, September; Garod, \$35, June; General Electric, \$30, May; Hoffman, \$35, September; Motorola, \$40, April; Philco, \$35-\$40, April-June; Pilot (no estimate), April; Stewart-Warner, \$40, June; Stromberg-Carlson, \$30, May; Westinghouse, \$30, April; Zenith, \$30, June.

Following estimates are for external adapters plus installation fee: DuMont, \$130 and unestimated; General Electric, \$50 and unestimated; Hoffman, \$100 & \$25; Philco, \$60 & \$25-\$50; Stromberg-Carlson, \$100 & \$25.

PACKARD-BELL CO.—Can't meet brackets deadline because: (1) Decision was surprise; no engineering on brackets had been done. (2) Test equipment difficult to obtain. (3) Components in tight supply. (4) Field testing needed. (5) May require retooling of chassis, redesigning of some cabinets. Intends to proceed with engineering, but would like to know whether to continue. Emphasizes "our honest and sincere desire to cooperate for the common good of all consumers, and we believe this can only be accomplished by ascertaining all the necessary facts before making any decisions and commitments which might be either inaccurate or unnecessary as of this date."

PILOT RADIO CORP.—Brackets deadline "physically impossible." Since FCC lacks authority over manufacturers, "you seek thereby to accomplish indirectly what you cannot do directly." FCC has admitted CBS system far from satisfactory. FCC offers manufacturers an "illusory reward." Says FCC has admitted defects in CBS system, such as low resolution, low brightness, restricted size. Asks that more time be allowed to study CBS system with long-persistence phosphors, horizontal interlace, tri-color tube. Says time allowed for compatible systems "seems to be no more than a holiday weekend." Quotes Comr. Henock's remarks concerning RCA's improvements during hearing. Cites impact of FCC decision on military effort. Says "revamping of our industry would be impracticable and heedlessly wasteful." Asserts that commercialization of CBS system "seems neither wise nor lawful."

RADIO CORPORATION OF AMERICA—Contentions: (1) Color decision "scientifically incorrect." (2) CBS and

RCA systems should be allowed to go ahead simultaneously, for "reasonable period of time," with public making final choice. (3) Brackets proposal is "impossible and illegal." (4) FCC doesn't understand RCA system. (5) FCC favors CBS system "merely in order to do something about color now."

(6) Condon Committee recognized RCA system potential; FCC confused apparatus with systems. (7) Black-and-white has tolerances even more stringent than 1/11,000,000 of a second tolerances in RCA system. (8) RCA system improved greatly in a few months, "a thousand percent," according to CBS's Dr. Goldmark. (9) Non-RCA witnesses and commissioners said they've seen good RCA color fidelity.

(10) FCC ignored post-hearing improvements. (11) RCA system adds color, subtracts nothing, while CBS system adds color but loses resolution. (12) Compatibility will insure quickest development of color.

(13) Brackets proposal doesn't comply with FCC rules on adopting new standards. (14) Brackets far more difficult than when TV standards were first being considered. "Triggered" synchronizing circuits, employed then, are now obsolete because of their susceptibility to interference.

(15) Cost of brackets would be \$61 automatic, \$50 manual. (16) If change in standards is made later, "those who had bought the bracket standard receivers and paid the additional sums required would not receive an improved picture when the change was made." (17) Brackets couldn't be made before second quarter of 1951.

(18) Brackets would produce inflationary effect because of greater set costs, contrary to policy set forth in Defense Production Act of 1950. They'd also mean "unnecessary use of critical materials." (19) Bracket sets would intensify difficulties stemming from components shortages. (20) FCC is in error in its comparisons of CBS and RCA

systems in respect to flicker, brightness, contrast, registration, fidelity, resolution, picture texture, susceptibility to interference, adaptability, convertibility, equipment considerations.

STROMBERG-CARLSON CO.—Has devoted bulk of engineering time and laboratory facilities, since Sept. 1, to brackets. Number of problems remain with regard to 2-position switch, "very many" with regard to brackets. Engineering for 2-position switch to take 1-2 more months, brackets much longer. Then one month needed for field testing. Then additional 4-6 months required before actual production. Asserts that people who don't need or want additional circuitry shouldn't have to pay for it. Brackets idea "unsound economically and practically." People will want to adapt to color, not merely to black-and-white. Present plans are to make "modest" changes in circuits so that people can purchase adapters optionally.

WESTINGHOUSE ELECTRIC CORP.—Has adapted sets for 2-position switch only, concluded adaptation is feasible, but hasn't adequately field tested sets. If brackets adopted, proposes: (1) To make sets with 2 positions. One position will give standard monochrome adjustable "within a reasonable range of present standards." (2) To provide sets with plug receptacle. If proposed CBS standards are adopted, plug-in unit will be built to give monochrome from color transmissions. If CBS standards are changed at some later date, new plug-in units will be made to give monochrome, replacing old. States it cannot make desired sets within 30 days after "any decision which has been reached which requires important changes in either design or material content."

WTVR (HAVENS & MARTIN), RICHMOND, VA.—Formal brief requests permission to appear if hearing is held on bracket standards.

COY REAFFIRMS THE FCC COLOR REPORT

Excerpts from Addresses by Wayne Coy, Chairman of the FCC

Before National Electronics Conference, Chicago, Sept. 25 and
Chicago Television Council and Radio Management Club, Sept. 26

Except for different introductory and concluding paragraphs, Chairman Coy's speeches were identical—devoted primarily to the color issue. The verbatim report of his discussions of color TV issues are herewith reprinted in full because of their significance as a follow-up interpretation of FCC's much-discussed Color Report. (Text of Color Report available with our issue of Sept. 2, 1950; see also articles in Vol. 6:35, et seq, Television Digest Newsletter.)

THIS is truly the Electronic Age.

And color television is about to mature as one of the electronic products of that age.

I would like to take this opportunity to discuss with you the Commission's color television decision of September 1. I feel sure that most, if not all of you, have spent many hours reading that report. If you read the report I know you spent hours doing it!

We labeled this report on color "First Report" because it is No. 1 in a series of reports that we will issue on various phases of our television proceedings. These include, besides color, such issues as allocation principles, assignment of channels to specific communities, etc.

You undoubtedly all realize how this report on the color television issues fits into the picture of the television hearing. The hearing includes a general review of the status of the television service in both the VHF and UHF bands. As a result of our review of this service we will amend the Commission's television rules and standards as they apply to the VHF stations to eliminate interference which we know now exists under the present VHF allocation plan, and to establish a sound foundation for the continued expansion of the VHF television service. Our review of the status of television in the UHF band will determine whether the Commission's proposal for commercial television service in the UHF should be adopted, and will try to establish a sound foundation for the commencement of that service.

Color First, Then Allocations

These objectives are of utmost importance to the welfare of the television industry. Only by achieving a sound basis for VHF and UHF television can we insure that the American people will enjoy the best possible television service. Only by achieving these objectives can we insure that the television broadcasting and manufacturing industries can proceed to serve the people of the United States with assurance that no unnecessary technical obstacles will arise to plague them in the future.

As you know, it has long been plain that 12 VHF channels cannot accommodate a sufficient number of stations to make possible a nationwide, competitive television service. For this reason the Commission in July, 1949, proposed to open up 42 channels in the UHF band for commercial operation.

At this point it became obvious that the Commission and the industry had to face up to the question of color

television. When in 1945 the Commission gave the go-ahead signal to post-war black-and-white television, only VHF allocations were involved. A large band of UHF frequencies was set aside for experimentation with higher definition monochrome television and also color. Again in 1947 when the Commission refused to adopt color standards on the basis of a 16-megacycle color system, black and white was permitted to proceed on VHF only. The UHF band was still preserved for future experimental work.

Following the 1947 decision, television started to grow by leaps and bounds. Not even the most optimistic were able to foresee the rapid strides the new industry was able to make. The result was that the 12 VHF channels became hopelessly inadequate to handle the demand that grew up—a demand that the Commission and the industry believed would take many more years to develop. It was thus imperative to find more channels for television stations. It was not possible to assign any more space in the VHF band since all VHF space was committed to other services, both government and non-government. The only place to pick up channels was the UHF band and the Commission in its July, 1949, notice proposed to allocate a large portion of this band for commercial television. This action meant that the last portion of the spectrum where television could operate in the present state of the art was about to be carved up. It was television's last frontier.

Thus, if color television were to be given any chance of developing in the foreseeable future, it was apparent that this chance had to be given to it before the last spectrum space where it could operate was disposed of.

What's So Important About Color?

Many of you no doubt are asking the question which I have been asked privately but which has not been expressed publicly. My questioner asks—assuming that this proceeding represented the last chance for color for some time to come—what is so important about color that warrants injecting the issue at this time in such a way that it may cause serious disruption to a young and growing industry?

I am aware of the fact that there are those in the industry who sincerely feel that color is a "phoney" issue. Let me assure you that, in the judgment of the Commission, there is nothing "phoney" about the issue. Congress through the Communications Act commanded the Commission to "generally encourage the larger and more ef-

fective use of radio in the public interest." Certainly, the Commission has encouraged such a development for the past several years. Having reached the point in the development of a television service where the UHF band of frequencies was needed to provide a basis for a nationwide competitive service, we were at a crossroads with respect to the past encouragement given to the development of color television. We could provide for color along with black and white in the VHF and UHF or we could provide for black and white service only in both bands. We were aware, and I am sure that you are aware, that the latter course might foreclose the opportunity for the development of color television in the foreseeable future.

Therefore, it seemed quite clear to us that the groundwork should be laid now for the joint use of both bands—VHF and UHF—for both black and white and color. Hard emphasis is given to this point by the extraordinary development of the monochrome service, there being almost 8,000,000 television receivers in the hands of the public at the present moment. If we did not now lay the groundwork for such joint use, it is obvious that when the Commission did get around to adopting a color system we might not be able to choose the best possible color system but would as a practical measure have to consider only such systems as might be compatible with black-and-white television.

FCC's Color Report Findings

Now for the report itself. There were three color systems proposed to the Commission—one by Color Television, Inc., one by Radio Corporation of America and the third by Columbia Broadcasting System. The first two systems are compatible systems, that is, present receivers without making any changes could receive a black-and-white picture from color transmission of such systems. The CBS system is not compatible. Some changes must be made in existing receivers in order to enable them to receive a black-and-white picture from CBS color broadcasts.

The Commission carefully analyzed the voluminous record of the hearing. We had to weigh testimony covering almost 10,000 pages of transcript and evidence that was submitted in 265 exhibits. We made detailed and specific findings concerning all three systems—findings approved by all seven members of the Commission. The care with which this work was done can best be indicated by the fact that while, as was to be expected, the particular result we reached was disappointing to some of the parties, there has been no intimation by anyone that the Commission's findings are not supported by the evidence in the record.

The Commission unanimously found that the CTI and RCA color systems were not suitable for adoption. I am not going to attempt to restate in detail at this time all of the reasons we set forth in the report for arriving at this determination. However, I shall mention two of the fundamental defects.

CTI and RCA Systems "Unsatisfactory"

In the first place, the Commission found that the quality of the color picture produced by the two systems was not at all satisfactory. In the case of the CTI system there is a serious line crawl or jitter and in the case of the RCA system there is a prominent dot structure and a marked loss of contrast.

Moreover, the colors are not true in either system. This is particularly true of flesh tones. At none of the demonstrations did CTI or RCA correctly reproduce flesh tones. Since the purpose of the hearing was to pick a color television system, it is obvious that no serious consideration could be given to a system that failed to produce true colors.

In the second place, the equipment required for the CTI or RCA system appears too complex for normal use. This is true both for receivers in the home and studio equipment at the station. At the outset of its conclusions the Commission stated that a color system to be adopted must produce a satisfactory color picture, must use apparatus that is simple to operate in the home and is cheap enough to be purchased by the great mass of the American people. The Commission specifically rejected the notion that the backbone of television should be black and white with color television being available only to those who can afford to pay luxury prices. The Commission believes that any television structure must be so constructed that color television is available to all and not merely the rich. The Commission knows that color television receivers will cost more than present monochrome receivers but we expect the price levels to follow the pattern of the present receivers. As production increases to mass volume, prices will fall.

At all of the demonstrations CTI and RCA had trained operators at hand who worked assiduously before each demonstration to make sure that the equipment was adjusted in tip-top shape and who hovered over the equipment during each demonstration continuously making adjustments to insure optimum performance. Despite all of these efforts RCA and CTI were unable to maintain accurate registration and color control throughout the demonstrations. You can imagine what the situation would be like in the ordinary home where children or untrained adults had to operate such receivers.

The Question of Compatibility

The Commission, of course, recognizes that both the CTI and RCA systems were comparatively new systems and that the equipment that was demonstrated was not commercial-type equipment. However, an analysis of the two systems showed to the Commission's satisfaction that the defects were fundamental. The equipment is complex because by the nature of the systems, registration and color controls are extremely critical.

CTI and RCA thus did not meet the tests of simplicity and economy.

The conclusion appears to be inescapable that CTI and RCA devoted so much of their efforts to the compatibility part of their systems that they never succeeded in producing satisfactory color. The net effect from the adoption of either system, as we saw them demonstrated, by the Commission would be that the public would continue to receive black-and-white pictures. We did not believe that the public would buy receivers that would get the type of color pictures that RCA and CTI showed to the Commission.

For these reasons you can see that there was just no basis upon which the Commission could approve either the CTI or RCA system.

CBS Picture Quality High

The CBS system did not labor under these handicaps. The quality of the color picture was of a high order. A wide variety of subject matter was displayed involving many different colors. Broadcasts were made from studios and from outdoors. In all instances color rendition was of a high quality. The equipment utilized was easy to operate. At not a single demonstration was there any evidence of misregistration or inaccurate color control.

The CBS system does have fewer lines per picture than the present system. However, the addition of color to the picture more than outweighs the reduction in lines so far as apparent definition is concerned. You only have to look at a scene in color and compare the same scene in black and white to be convinced that the addition of color increases several-fold the amount of information that can be transmitted by a picture.

True, a monochrome picture from color transmissions under CBS standards is not of the same good quality as monochrome pictures from transmissions under present television standards. But neither were the monochrome pictures from color transmissions under the RCA or CTI proposals. However, I regarded such pictures as satisfactory in the case of CBS and RCA and unsatisfactory in the case of CTI.

Answers Objections to CBS

You have undoubtedly heard the CBS color system described as a mechanical system. This arises from the fact that a mechanical disc is used at the receiver to achieve color. The Commission pointed out in its report that the CBS system is not limited to the mechanical disc. A projection receiver was shown which did not require a disc. Also, if a direct view tri-color tube is successfully developed, all the expert witnesses agreed that it can be utilized on the CBS system.

You also have undoubtedly heard the CBS system described as an incompatible system. Indeed, most of the objections to the CBS system were based on this fact. All of the Commissioners agreed that it would be desirable to have a compatible color system if that were possible. However, the Commission was forced to conclude that no successful compatible color system had been demonstrated. Since existing receivers can be adapted to receive black-and-white pictures from CBS color transmissions at a reasonable price, the Commission felt that it was not fair to deprive 40,000,000 American families of the opportunity to have color simply because the owners of 7,000,000 or 8,000,000 sets might have to spend some money in adapting their present receivers.

All of the Commissioners are of the opinion that if a decision must be made now, the CBS color system would be adopted. However, five of the seven Commissioners are willing to postpone a decision, if certain conditions are met, in order to see a demonstration of a tri-color tube on the CBS system, to receive further evidence concerning horizontal interlace and long persistence phosphors and to look into certain developments in so-called compatible color systems which have occurred since we closed the hearing record to see if they meet the requirements of a color television system as set forth in the report.

The "Bracket Standards" Idea

You will note I said that five Commissioners are willing to postpone a decision if certain conditions are met. These conditions relate to the so-called bracket standards about which you have been hearing so much. Briefly speaking, so far as the color problem is concerned, the incorporation of bracket standards into television receivers would enable them to receive a black-and-white picture from present transmissions or CBS color transmissions. You can readily see that if receivers had such bracket standards, there would not be a compatibility problem so far as the three color systems are concerned. Note that this applies only to future receivers. If bracket standards are added to receivers henceforth manufactured, the compatibility problem would stop growing so far as the field sequential system, which has been described to the Commission, is concerned. The bracket standards would provide opportunity for certain changes in standards of a field sequential color system. The Commission could then proceed to consider the other matters which I have enumerated knowing that in the meantime it would not risk having the mere force of the obsolescence problem eliminate the only color system which has been successfully demonstrated.

The Commission has given the manufacturers until September 29, 1950 within which to tell the Commission whether they will manufacture receivers incorporating

bracket standards. If we receive adequate assurances on that score we will postpone a color decision and look into the developments I have already referred to. If we do not receive such assurances, we will adopt a final decision and designate the CBS system as the standard color system.

The manufacturing industry is given a choice as to whether or not it will voluntarily adopt bracket standards at this time. We are making this choice available so that an opportunity may be presented to those people who have been coming to us after the record closed with stories of new compatible systems or improvements in compatible systems to show whether they can meet the requirements for a color television system as set forth in the report. And the opportunity for this choice is likewise available for those manufacturers who have urged compatibility to the Commission as the sole basis for adopting color television standards. Mr. William P. Mara of Bendix put this view very well in a recent statement attributed to him in the September 9th issue of *Television Digest*. He said: ". . . While we did not endorse any of the various systems . . . we felt that solely on the basis of compatibility the RCA system should be adopted."

Why "Bracket Standards"?

But you may ask, why is it necessary for manufacturers to adopt bracket standards in the meantime? For, you may say, if a new compatible system is developed the brackets will have been unnecessary.

These are fair questions and I will give you frank answers. In the first place, no successful compatible color system has been demonstrated.

In the second place, the Commission recognizes that it is entirely too easy to invent a new compatible system every time the Commission appears to be ready to adopt an incompatible system. If a lengthy hearing is held each time, then the number of receivers in the hands of the public becomes so large that as a practical matter an incompatible system cannot be adopted.

In other words, if the Commission were to postpone making a decision on color at the present time and proceed with a further hearing, without having assurances as to brackets being incorporated into receivers, we would be inviting a situation where at the end of such hearing, fundamental defects might still be present in the compatible system but the incompatible system could not be adopted because the number of receivers in the hands of the public would have increased tremendously. We have a color system before us today—the CBS system—which all Commissioners feel is suitable for adoption. We all believe that color is an important improvement in broadcasting. We are willing to postpone adopting the CBS system for the time being if the industry by adopting bracket standards will make it possible to give color to the American people if the new or improved compatible systems should fail to meet the requirements of the Commission, as have all compatible systems in the past. We are unwilling to postpone adopting the CBS system if the manufacturers do not build receivers with bracket standards, for, in that event, we would be inviting the risk that if the compatible systems failed again, we would probably not be able to adopt the CBS system.

New Developments in Offing

In the third place, two developments were demonstrated during the hearing that hold real promise for improving resolution in black and white pictures. These are horizontal interlace and long persistence phosphors. More work is needed before a final answer can be given concerning these techniques. If they are successful, a change in line or field scanning rate, or both, might be desirable in order to take advantage of the improvements. By building

receivers with bracket standards at the present time we will not be confronted at a later date with the vexation of not being able to improve resolution in black and white pictures because so many sets would be outstanding and incapable of operating on the new standards.

These bracket standards are insurance that if the Commission postpones a color decision now, it will not be precluded from making color available to the American people. They are also insurance that if techniques presently being developed are successful in making better resolution possible in black-and-white pictures, the Commission will be able to make this improvement available to the American people.

Before leaving the subject of bracket standards, I want to talk a little bit about costs. It is to be expected that receivers with bracket standards will cost more than present receivers. The record in our hearing contains a poll of many manufacturers as to what the cost of adaptation to the CBS system would be. The cost for bracket standards should be of approximately the same order.

Compatibility and Adaptability

I would like to discuss for a bit more the subject of compatibility. The Commission's notice scheduling the present hearing did not contain a requirement that a system must be compatible—that is, that receivers without any changes would be able to receive a black and white picture from color transmissions. The notice stipulated that a color system to be eligible for consideration must be adaptable and convertible. By adaptability is meant that present receivers should be able to receive a black-and-white picture from color transmissions simply by making relatively minor modifications in the receiver. By convertibility is meant that existing receivers should be able to receive color pictures from color transmissions simply by making relatively minor modifications.

CBS and RCA were the only proponents that demonstrated converted receivers. The RCA converter was demonstrated only once and was apparently withdrawn although the record is not absolutely clear on this point. It is clear from the record that CBS demonstrated the only practical converter. However, the question as to the convertibility of the RCA and CTI systems did not prevent the consideration of all the systems on their merits.

The Commission recognized in its report that if a satisfactory compatible color system were available, it would certainly be desirable to adopt such a system. And I should like to emphasize this point. However, from what I have already said, you can see why we were unable to do this.

Buy Adapter or Turn in Old Set

We recognize that the adoption of an incompatible system means certain transition problems. For the owners of the present receivers it means that if they do not buy an adapter, they will not be able to receive programs transmitted in color. As the number and quality of color programs grow, the owners of present receivers will either buy an adapter or turn their old set in for a new model which is a color receiver or at least has adaptability built into it.

For the broadcaster, the initial months of color broadcasting can be difficult. There will be comparatively few receivers that can tune in on his color programs. Of course, the adoption of bracket standards by manufacturers would make the broadcaster's task much simpler. For, if the Commission postpones a color decision upon receiving assurances from manufacturers that they will manufacture receivers with bracket standards, there will be no broadcasting of color programs except on an experimental basis. If, as a result of such postponement, a successful com-

patible color system should be developed, the broadcaster would have an audience that could receive his color programs in black and white. However, if no compatible system succeeds and the Commission adopts the incompatible CBS system, a portion—and a continuously growing portion—of the television audience will have receivers capable of receiving a black and white picture from the color broadcasts. The extent of this audience will depend on the rate of production that is achieved by manufacturers for bracket receivers. And each month that passes will increase the size of the audience that is available for color programs.

The Summing Up

To sum up the color decision—

First, we have decided that color is an important improvement in broadcasting that should be made available to the American people. This is perhaps the most controversial aspect of the whole decision.

Second, we have decided that of the three color systems demonstrated to us, the two compatible systems—CTI and RCA cannot be adopted because they do not produce a satisfactory color picture and because they do not meet the other minimum requirements for a color system prescribed by the Commission.

Third, the CBS color system, although incompatible, does meet the requirements for a color system prescribed by the Commission and could be adopted as standard.

Fourth, the Commission is willing to postpone adopting a final color decision now, and, among other matters, give the proponents of a compatible system another opportunity to show that they have a system that can satisfy the Commission's requirements, provided that the manufacturers will prevent the compatibility problem from increasing, by giving assurances that they will build their television receivers with brackets.

If the Manufacturers Don't—

Fifth and finally, if manufacturers do not give assurances that they will build television receivers with brackets, the Commission will adopt the CBS color system now, for without the assurance of bracket receivers, the Commission would be inviting the risk that if the compatible systems failed again, it might no longer be possible to adopt a color system we know is satisfactory because the number of receivers in the hands of the public could have increased to a point where as a practical matter it would be extremely difficult to adopt an incompatible system.

In conclusion I would like to remind you again that besides the color issue we have many important and intricate problems to solve before we can establish television on the sound and comprehensive basis that we all desire.

I sincerely hope you agree with me that the Federal Communications Commission is taking every precaution to see that the decisions will be reached in a spirit of fairness, patience and regard for the public interest worthy of our free democracy. We may have differences of opinion but we must not shirk our duty in digging up all the available information on the problems we face. As Bernard Baruch put it: "Every man has a right to be wrong in his opinion but no man has a right to be wrong in his facts."

I believe you realize also that the more quickly and fully that information is supplied, the quicker we will be in a position to issue our decisions.

The Commission believes that television is destined to become the dominant form of broadcasting and is destined to be of inestimable service in promoting the welfare of the American people. We are anxious to see the service extended the length and breadth of the nation at the earliest possible moment. In that effort, we solicit your cooperation.