

1957

A \$500 color TV set and 9 other models plus complete service contracts may make this the first big color year.

AN INDICATION that 1957 may be a big year for color TV can be seen in the fact that the new line of RCA color sets includes a total of ten different models, grouped into three basic series, "Special," "Super," and "Deluxe."

All RCA color receivers use the 21-inch round, three-gun, shadow-mask type color picture tube with a viewing area of 254 square inches. They are all automatically usable for either color or monochrome broadcasts and while the basic models feature a v.h.f. tuner, a u.h.f. tuner is optional in areas where both types of reception are available. The inclusion of the u.h.f. tuner is indicated if the receiver model number is followed by the letter "U."

Lowest priced of the RCA sets is the "Special" series which actually contains only the "Aldrich," Model 21CS-781, with a nationally advertised list price of \$495. This is a table model available in mahogany or lined oak with a matching stand provided at extra cost. The "Super" series is the medium-priced line with three sets from \$550 for the "Stanwyck" console to the "Dartmouth" console at \$650. For the higher-priced market, a total of six models are offered ranging from the "Whitby" open console priced at \$695 to the "Wingate" at \$850. The latter is a colonial style full-door console and is made of maple and French walnut veneers and solids.

All RCA color receivers are now being shipped with the picture tube in place and should, in theory, be very simple to install. In practice there are several problems which are likely to crop up and RCA discourages the average customer from installing the receiver himself. One of the problems is the misadjustment of various color controls which may occur in transit. Another is the frequent limitation which an apparently good antenna shows when a color receiver is connected to it. Ghosts, smearing, and limited bandwidth or detuning are sometimes tolerable in black-and-white sets but are quite objectionable when color transmissions are received.

Still another problem is the occa-



Mr. David Sarnoff, Chairman of the Board, RCA, shown here presenting a \$500 "Aldrich" color TV with 21" tube.

sional magnetization of certain components of the receiver due to transportation. This occurs when any ferric metal is moved across the magnetic lines of the earth, and may result in color impurities and/or poor convergence. A special demagnetizing coil is used to remove this defect.

Service

The RCA Service Company offers several plans for the installation and service of color sets. For installation alone their regular charge is \$25. This applies in cases where a usable antenna already exists and where no special couplers or divider networks are required. Installation of the receiver and final adjustments on both color and monochrome transmission only are included in this price.

All components in the color set are guaranteed for 90 days. The color picture tube is guaranteed for a full year like new black-and-white picture tubes. In addition, most dealers recommend that one of three RCA Service Co. service contract plans be taken at the time a color set is purchased. One plan provides installation to an existing antenna and a full year of unlimited service at a cost of \$99.50. This contract includes both labor and materials for any defect or trouble

By
WALTER H. BUCHSBAUM
Television Consultant
RADIO & TELEVISION NEWS

that might occur within the first year. The black-and-white set 1-year service contract with this company costs \$59.

Optimistic customers may feel that the first three months are the most critical and for them, RCA offers a 90-day service policy which also includes installation to an existing antenna and unlimited service for the period stated. This 90-day policy costs \$39.95.

Still another plan provides installation, 90-day service, and one year parts guarantee. The price of this contract is \$69.50 with a flat charge of \$7.50 for each service call after the 90-day period.

All of the preceding service and installation charges are based on the presence of a usable antenna. Installing a roof or window antenna in the New York metropolitan area, for example, costs a flat \$35. Special installations requiring more elaborate equipment naturally run higher.

Recent experiences of many TV service technicians seem to indicate that antennas which have been up for five years or more should be replaced when a color TV set is installed. The mechanical mounting as well as electrical connections are often so badly corroded that the replacement might

(Continued on page 124)

RCA Color Sets (Continued from page 49)

as well be made when the new color receiver is installed rather than wait for the next storm.

Circuits

The new RCA color TV receivers use, in addition to two crystal diodes, 27 tubes, including the "B+" and high-voltage rectifiers. Operating controls are located at the upper right of the set, either on the front panel or on the side, and consist of the v.h.f. (and u.h.f., when furnished) channel selectors, fine tuning, "on-off" switch, and brightness and volume controls. A set of secondary controls is located below the screen, covered by a small hinged panel. Some of these are screwdriver adjustments; those which have knobs and can be manipulated by the customer are the horizontal and vertical hold, hue, chroma gain, and contrast controls. At the rear of the receiver are the vertical and horizontal centering, focus, width, and killer threshold controls.

The hue and chroma controls should always be adjusted together with the contrast control because color saturation and over-all picture contrast are closely interdependent. The hue control determines color phase and there can only be one correct setting, that setting when red appears as red, green as green, and flesh color looks most natural.

While some of the earlier color receivers already used two printed-wiring boards, the new RCA series of receivers use six such boards. These are used for all sections of the receiver except the power supply, high-voltage circuit, and the tuner. The various controls and the power, audio, and vertical output transformers, and similar components, are mounted directly on the chassis.

The circuit and components used in the "Special" series receivers are practically identical with the chassis used for the "Super" models. Both feature a new triode color demodulator section which is a departure from the pentagrid synchronous demodulator circuit found in the RCA "DeLuxe" series. At the same time, the new triode demodulator system is quite different from the high level triode demodulator system used by so many RCA licensed manufacturers.

It appears that in 1955 when the RCA Laboratories first announced and released its version of a 24-tube color receiver, most of the licensees immediately worked on improving that particular system. The RCA Victor division, however, followed a somewhat different path, and developed a different color demodulator and color synchronizing section.

There are certain advantages in the high level demodulator circuit, the most important of which is tube economy. But there also appear to be

disadvantages and in the case of RCA Victor, the use of additional tubes was preferred.

The circuit of the "DeLuxe" color receiver models uses two 6BY6 pentagrid stages as synchronous demodulators followed by three triodes acting as the three color-difference video amplifiers. In the "Super" and "Special" models, two 12AT7 dual triodes are used and they provide the three color difference signals directly. The "DeLuxe" receivers also use a two-stage sound i.f. circuit and three loudspeakers.

It is significant that even in the low-priced model, the \$495 "Aldrich," a total of 27 tubes is used. The only apparent economy in that particular receiver is in the extensive use of printed-wiring subassemblies which are identical in most instances with the subassemblies used in the "Super" and even the "DeLuxe" series. —56—

"Corona Loudspeaker" (Continued from page 57)

trodes and found that each produces a wind, the "positive" wind being stronger than the "negative" one. Placing the ring or grid nearer the positive electrode, he found that by suitable combinations of voltage and position he could adjust the positive wind to equality with the negative, so that with no signal input there is no "net" wind and that "an alternating potential applied to the grid causes the air to pulsate and hence to become a source of sound." This, then, is an embryonic loudspeaker capable of producing a pure a.c. output. See Fig. 2B.

The amount of sound produced by a single corona triode is very faint, so that it becomes necessary to parallel or stack a number of them. The first small model was constructed with a needle spacing of one-half inch, and with an area of a quarter of a square foot, as shown in the photograph. (Fig. 1.) Even this is still too small to produce any real volume, although it could be heard in the back row at the demonstration given before the AES, which was in a fair-sized recording studio. It is likely that at least four square feet of area will be required to produce adequate volume for home hi-fi systems, and this is still fairly small when compared with some of the better wide-range conventional speaker systems. Also it is possible that further research will improve the efficiency factor and thus reduce the size requirements. For theater and auditorium use the area would have to be increased proportionately to the power outputs required, or a number of "standard-sized" units could be driven in parallel. The cubic area requirements are likely to be non-critical, since the device itself can be made very thin, and it is only necessary to provide suitable baffling to preserve the low-frequency response. This will probably be of the infinite baffle type.

(Continued on page 127)