Adapting "R & T" Television Receiver for 7" Tube

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The tube now performed very well indeed—so well, in fact—that it was soon evident that further improvements could not be realized. As a consequence, certain changes were made in the receiver, which brought about improved performance.

The most notable change was the addition of a hold control. The clipping and synchronizing amplifier were automatically maintained in the required range of 15% but the replacement of R25 (2 megohm pot) by a 1 megohm pot, was found to improve synchronizing qualities. This new control permits the clipping percentage to be adjusted somewhat to accommodate different signal strengths. A study of the T-111 standard television signal will show that the synchronizing pulses comprise the upper 20% of the modulation envelope. Clipping too much will make picture with synchronizing pulses below operating level.

A 10 microfarad condenser, C5, was connected to ground to reduce the effect of the R.F. on the picture, thereby improving the quality. A .05 microfarad condenser, C8, connected to the output of the synchronizing amplifier, helped clear the noise out of the pictures. The horizontal and vertical synchronization circuits were found to be improved. Changing C30, the horizontal synchronizing pulse output condenser from .005 to .0002 microfarads helped clear the upper picture. These changes all improved picture stability when low signal strength was encountered. Pictures are now rock-steady.

Both the horizontal and vertical frequency controls were found to be operating near the end of their range. R36 in the horizontal oscillator was changed from 25,000 to 50,000 ohms; C35 in the vertical saw-tooth oscillator was changed from 2 microfarads to 1 microfarad. This corrected the condition.

Linearity of picture was not quite as good as with the 7" tube, but it had been with the 5" tube. The picture was found to be slightly improved at the bottom and at the left side. This was improved by changing R2 and R8.

The changes were made in large measure under the skilled hands of Andy Tait, recent graduate of Brooklyn Technical High School and last term president of the Television Club there.

Parts List

INTERNATIONAL RESISTANCE CO.
1—1 megohm potentiometer, R16
1—50,000 ohm, 1 watt resistor, replacing R16
(See December, 1939, R. & T.)
1—50,000 ohm, 1 watt resistor, replacing R23
(See February, 1941, R. & T.)

CORNELL-DUBILIER
1—25 microfarad, 500 volt condenser, C6
1—.0005 microfarad 500 volt condenser, replacing C90
(See December, 1939, R. & T.)
1—.0004 microfarad 500 volt condenser, C9
1—Inf. 500 volt condenser, replacing C35
(See December, 1939, R. & T.)

NORTHERN MFG. CO.
1—N407-T4 Television picture tube (7" dia.)

ALDEN PRODUCTS CO.
1—211 FC-111-groove, large cathode-ray tube socket