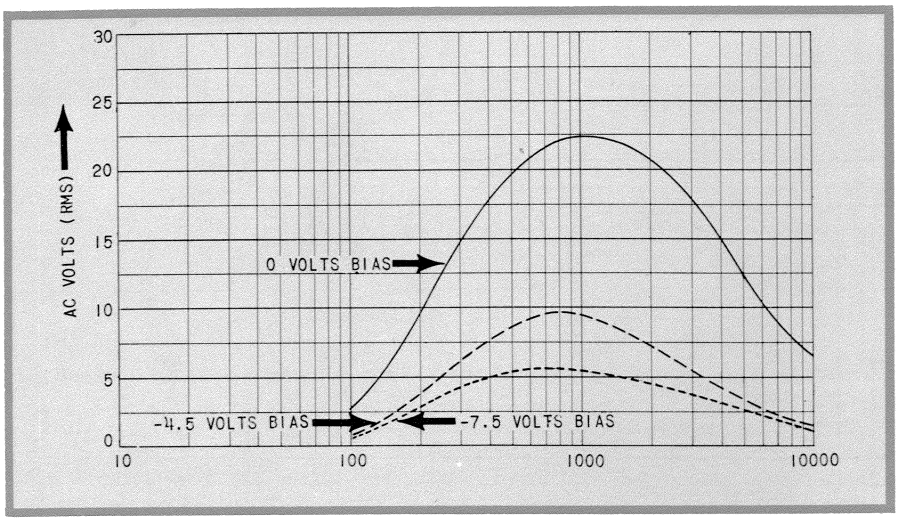

FIG. 3. AUDIO FREQUENCY response characteristic of the preamplifier. Curves show change in output level at constant input level with different values of ALC bias. When converted to decibel scale and normalized, all three curves nearly coincide. This indicates that the bandpass remains constant over wide gain variations.

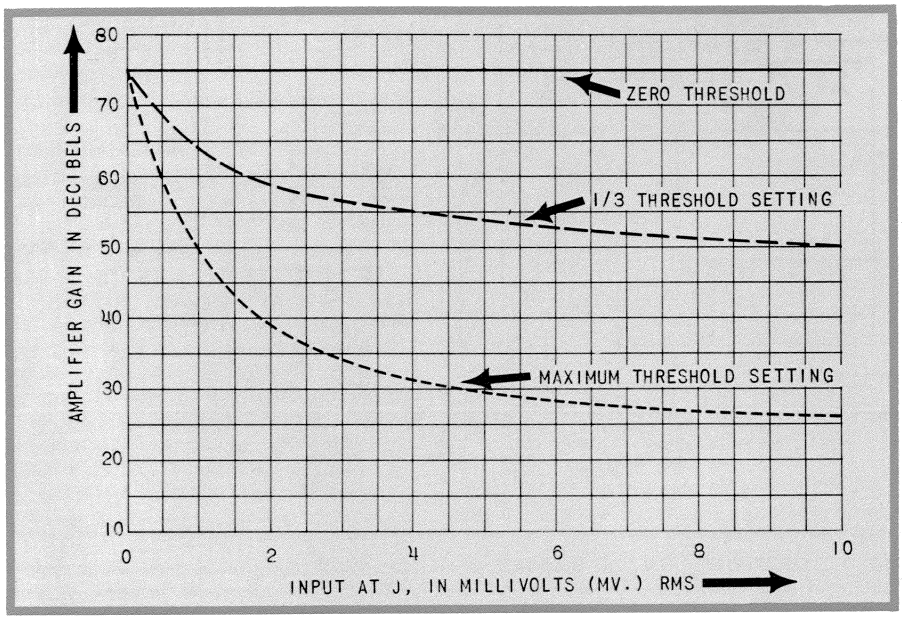

FIG. 4. GRAPH SHOWING range of control provided by ALC system over range of zero threshold voltage, to full threshold voltage.

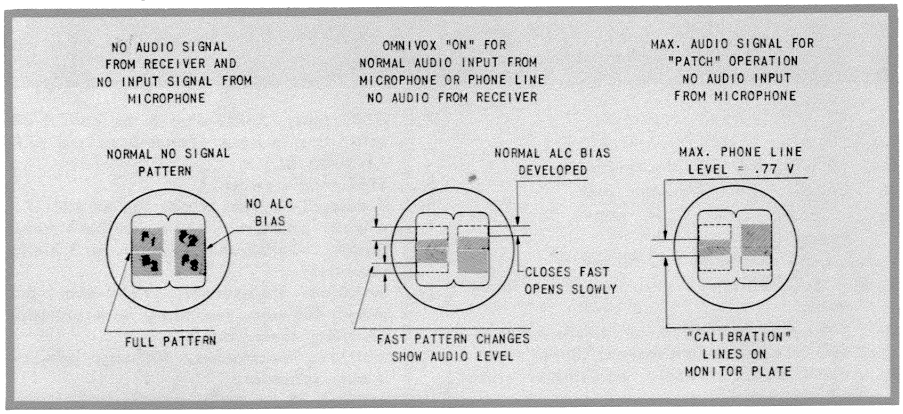

FIG. 5. PATTERN SHOWN on 6AL7-GT indicator tube (V_5) with (left) no audio signal; (middle) audio signal compressed normal amount, with left hand pattern changing at syllabic rate, and right hand pattern changing at slow rate with variations in ALC bias. Maximum phone line level of 0.77 volt is shown in pattern view at right.

OMNIVOX (continued from page 3)

small output transformer operated backwards), where it is stepped up and rectified by a 1N48 diode (D_1). The voltage developed across C_{16} and R_{28} provides negative going pulses of voltage which are superimposed on the positive DC voltage on the No. 1 grid of V_4 by adjusting the *Anti-Trip* control (R_{28}). An additional RC filter (R_{13} and C_9) provides a DC voltage to the deflection electrodes of V_5 which is proportional to the peak audio voltage delivered by the station receiver to the OMNIVOX. Thus the pattern of three sections of V_5 compresses as more audio voltage is fed from the receiver, as shown in Fig. 5.

HEART OF THE CONTROL SECTION of OMNIVOX is the 6BN6 gated beam tube (V_4). This tube is constructed in such a way that its plate receives current only when *both* of the grids are cut on. Thus an anti-trip voltage at the No. 1 grid can cut off the beam and, regardless of the amount of positive voltage on the second control grid, the plate cannot draw current. By this means, anti-trip action is not a matter of delicate balance between opposing voltages.

The 6BN6 (V_4) operates with nearly constant cathode current, developing 9.5 volts across R_{31}, and providing cut-off voltage for the second control grid. The first grid is connected to a voltage divider made up of R_{30}, R_{29} and R_{28} from plus 300 volts to ground, and is clamped at zero bias. Thus, in the absence of anti-trip voltage derived from receiver output, the input gate is open.

Since the second grid is cut off, no plate current flows until audio voltage applied to V_{3B} develops a positive gating bias at the 6BN6's second grid. This starts plate current flow in the 6BN6, causing R_{Y1} to close. Its DPDT contacts unground the audio output signal from V_{2A}, mute the speaker and close the external VOX control circuit on terminals 7 and 8.

The gating bias remains on the second control grid of V_4 as long as there is sufficient positive voltage across C_{11}. The *HOLD* control (R_{15}) adjusts the discharge time of C_{11}. Space charge effects in V_4 further modify the discharge characteristics so that the components specified give a range of *Hold* from milliseconds to continuously *on*. In the *Manual* position of S_1, the cutoff bias for the second gating grid is removed and closes R_{Y1}.

THE PHONE PATCH SECTION of OMNIVOX is a hybrid circuit made up of a pair of transformers, a balancing network, cou-