

# THE MULTI-MU VALVE

The high frequency portion of the modern receiver has to comply with two conflicting sets of conditions. On the one hand, consistent and pleasurable long-distance reception demands efficient, high-gain radio-frequency amplification; on the other hand the high power radiated from local stations is liable to overload normal screened-grid H.F. amplifying valves.

A solution to the problem is furnished by the multi-mu valve—a high frequency amplifier of either the screened-grid or H.F. pentode type, but with a characteristic such that the effective stage gain may be varied over wide limits by adjusting the negative grid bias.

The valve may thus be operated at high sensitivity, i.e., with zero or low grid bias for distant reception, or at lower sensitivity, i.e., with increased negative bias, for the reception of more powerful signals. Although this method of gain control is intended mainly to avoid H.F. overloading, and consequent distortion and cross modulation, it also

forms a convenient and efficient method of pre-detector volume control.

Moreover, by means of special circuits, the variation of grid bias can be made automatic. In these circumstances the volume level can be maintained substantially constant at a predetermined value for every station normally receivable, while at the same time the effects of certain forms of “fading” can be minimised.

Valves of the multi-mu type are available in the Mullard battery, A.C. mains and D.C. mains ranges. In the 2-volt battery range, the multi-mu valve is a screened grid valve Type P.M. 12 M. For A.C. mains receivers, a multi-mu H.F. pentode Type V.P.4 represents this class of valve, while in the D.C. mains range there is the choice of a multi-mu H.F. pentode, Type V.P. 20 and a multi-mu tetrode, Type M.M. 20.

Fig. 1 shows the grid volts/anode current characteristic of the Mullard P.M. 12M, 2-volt multi-mu screened grid valve, which is