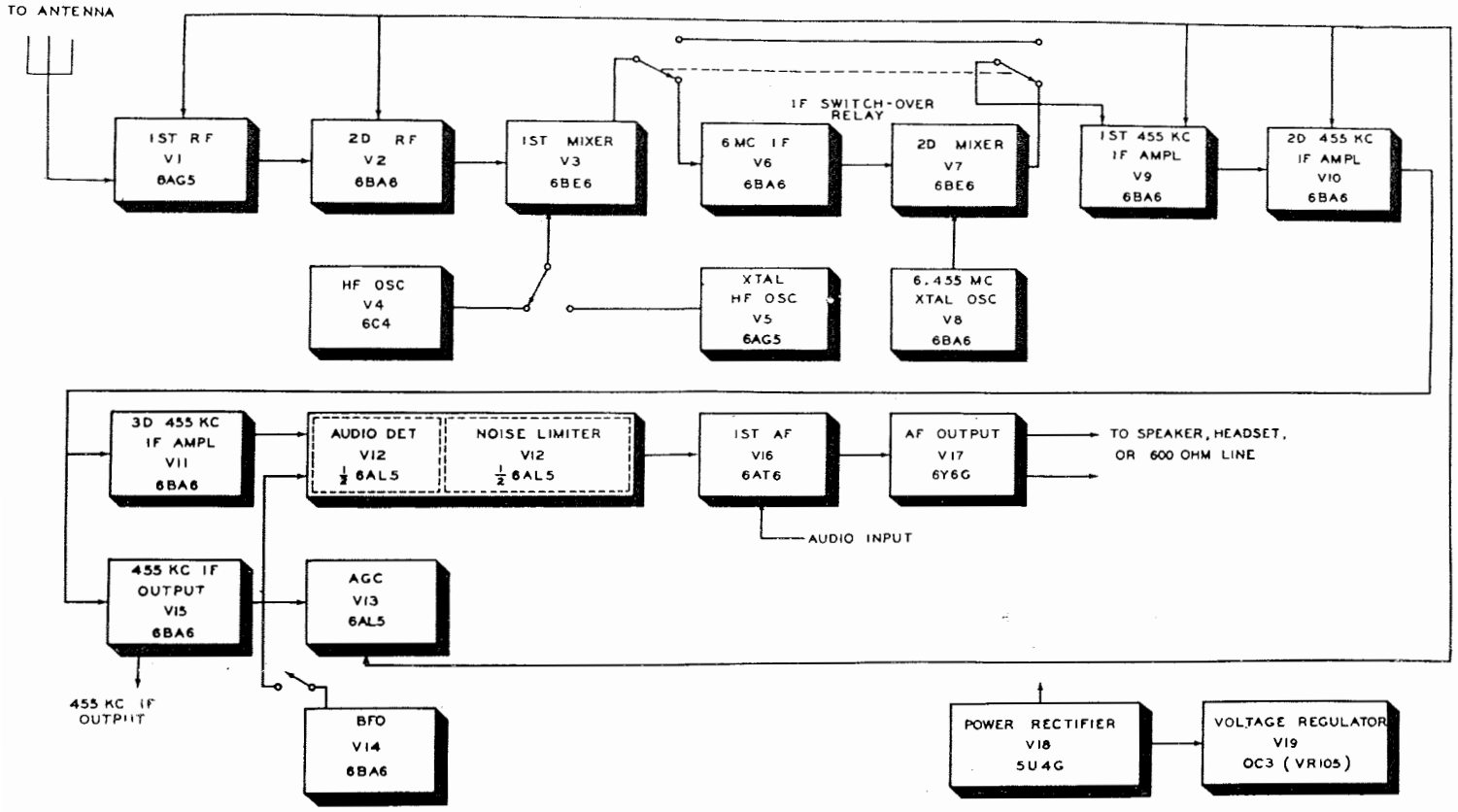


*Fig. 4. Block Diagram*

The signal from the antenna is coupled to the 1st r-f amplifier (V1) through antenna transformer T6. After amplification, it is impressed on the grid of the 2d r-f amplifier (V2). The use of two pentode stages of r-f amplification gives sufficient gain for a good signal-to-noise ratio. From the 2d r-f amplifier (V2), the signal goes to the 1st mixer (V3) where it is combined with the signal from either the variable-frequency h-f oscillator (V4) or crystal h-f oscillator V5, depending on the position of the VFO CRYSTAL switch. In the signal frequency range of 540 kc to 7 mc, the frequency of the variable-frequency oscillator is always 455 kc higher than the signal frequency, so that the output of the 1st mixer (V3), which is the result of the combination, contains a 455 kc signal. This signal goes to the grid of the 1st 455-kc i-f amplifier (V9). From the frequency range of 7 mc to 54 mc, a better image rejection ratio can be obtained if the intermediate frequency is increased. Therefore, in this frequency range, the variable-frequency oscillator is always 6 mc above the signal frequency. Thus, the output of the first mixer (V3) (in which the signal and the output of the variable-frequency oscillator are combined) contains a 6-mc signal.

When the receiver is tuned to a frequency, in the range of 7 mc to 54 mc, the i-f switch-over relay (K1) feeds the 6-mc output of the 1st mixer (V3) to the grid of the 6-mc i-f amplifier (V6) where it is amplified and where sufficient selectivity is provided to give a high degree of image rejection. However, more amplification and greater selectivity are required before detection. Therefore, the output of the 6-mc i-f amplifier (V6) goes to the 2d mixer (V7). The output of a 6.455-mc crystal-controlled oscillator (V8) also is injected into this 2d mixer (V7). As a result of the combination of these two signals, the output of the 2d mixer (V7) contains a 455-kc signal. This output then is fed through the i-f switch-over relay (K1) to the grid of the 1st 455-kc i-f amplifier (V9) for further amplification. Note that when the receiver is tuned to a signal in the frequency range from 540 kc to 7 mc, the output of the 1st mixer (V3) goes directly to the grid of the 1st 455-kc i-f amplifier (V9) so that when the signal reaches this point, the operation is the same regardless of the frequency to which the receiver is tuned.

The 455-kc signal which goes to the 1st 455-kc i-f amplifier (V9) is amplified successively by the 1st (V9), 2d (V-10), and 3d (V11) 455-kc i-f amplifier stages which also provide the proper degree of selectivity. Provision has been made for variation of this selectivity according to the requirements at hand.