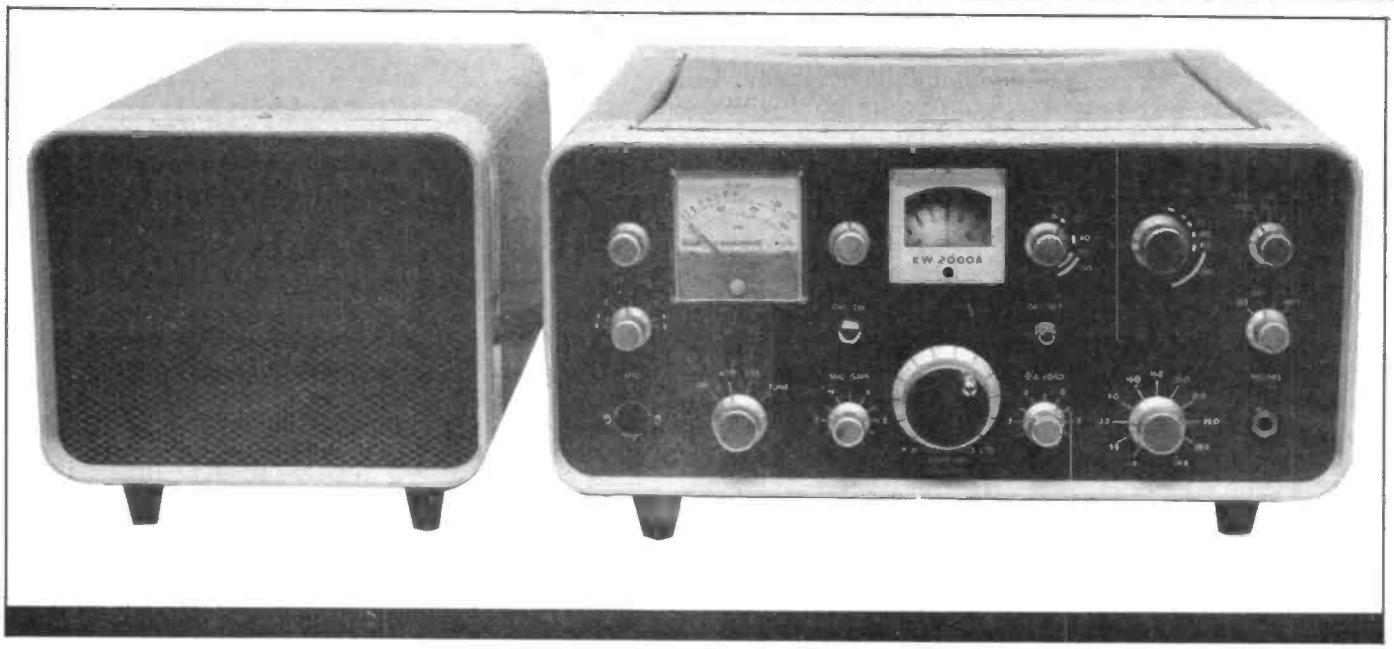

frequency, 455 kHz to be precise, and it is approximately this frequency which is fed to the balanced modulator by the carrier oscillator V16 (12AT7). A front panel switch allows the selection of either of two carrier crystals, one HF and one LF of the filter passband, producing lower sideband or upper sideband respectively.* From the modulator the signal passes through the sideband filter, a mechanical filter 2.1 kHz wide. It is then fed to the first balanced mixer V4 (12AT7), where it is mixed with the signal from the VFO V11 (6U8), which tunes 2.5 to 2.7 MHz, to produce a tunable IF of 2.955 to 3.155 MHz. It will be noticed that this is a tuning range of only 200 kHz, and in fact all the models in the KW2000 range, with the exception of the KW2000E, cover the bands in 200 kHz segments rather than the 500 kHz segments common on more modern rigs. In practice this is no great drawback until we reach the 21 MHz band to which only two segments are allocated, resulting in a gap of 100kHz in the middle of the band! The situation is even worse on 28 MHz, where only 600 kHz of this 1.7 MHz wide band are covered, namely 28.0 to 28.2 and 28.4 to 28.8 MHz. However, it is quite easy to modify the rig to overcome this deficiency, as will be described later.

The VFO utilises both sections of VII, the triode section being the actual oscillator and the pentode section functioning as a buffer amplifier. Both sections are supplied from a stabilised volt HT supply, V20 (OA2) being the regulator, and their heater is obtained from a separate 6.3 volt supply which can be regulated to improve VFO stability (see modification in a later article). Incremental tuning is provided by a varicap diode D3, and this can be switched to operate on receive only, transmit only, both or neither. In addition, a small relay RL3 introduces a shorted one turn link into the VFO coil when LSB is selected, reducing the inductance and hence moving the VFO slightly HF. This ensures that the output carrier frequency remains constant when sideboards are switched, a feature not always found in modern rigs!

The tunable IF signal from V4 passes through a bandpass filter composed of two back-to-back IF transformers and is then applied to a second balances mixer V5 (12AT7). Here it mixes with the output of the crystal oscillator V10 (EF91) to produce the desired output frequency. The crystal frequency is always on the high side of the output frequency, and this results in the frequency range being inverted. In other words, as the VFO tunes from the LF end of its range to the HF end, the output frequency moves from HF to LF. It is important to remember this if the VFO ever has to be serviced! From the second mixer the signal passes via the driver valve V7 (6CH6)* to the PA, a 6146 operating in class AB.

On receive, the signal traverses a similar path in the opposite direction, using mostly the same filters. The signal from the aerial is first amplified by the RF amplifier V6 (EF183) and then passed to the first receive mixer V9 (6BE6), the tuned circuit used between the two valves being the same one as is used between the second transmit mixer and the driver stage. V9 is also fed with the signal from the crystal oscillator V10, and thus converts the incoming signal down to the tunable IF, which is passed through the bandpass filter to the second receive mixer V19 (6BE6). Here it mixes with the VFO signal to produce 455 kHz, which passes through the mechanical filter before being ampilified by two IF stages, V13 and V12 in that order (both 6BA6). It is then fed to the product detector V15B (½ 12AX7) and from there via the AF gain control RV95 to the two stage AF amplifier V17 (ECL82) which drives the loudspeaker.

The IF signal from V12 also drives the AGC rectifier, one half of V14 (EB91), and the AGC voltage developed controls the two

In fact, the sidebands are inverted in a subsequent mixing process, so that the LF carrier crystal actually produces the lower sideband at the output of the rig, and vice versa.

This valve, by the way, is ridiculously expensive, costing almost twice as much as the PA valve!