Controls

The main tuning dial is located near the center of the front panel and operates the 4-gang tuning condenser. Full details of the tuning arrangement will be found in the last section of this booklet, which is reprinted from an article originally appearing in QST.

Starting at the top right-hand side of the front panel, the uppermost knob is the Variable Selectivity Control of the Single-Signal Crystal Filter. With the crystal filter in use, minimum selectivity will be found with the pointer nearly vertical. Rotating the knob in either direction from this point will increase the selectivity. When the filter is not in use, the knob should be set at the point giving maximum volume and sensitivity.

Immediately below the Selectivity Control is the Phasing Control and the Crystal Filter Switch. When this control is rotated to 0, the crystal filter is disconnected. When the control is at any other setting between 1 and 10, it acts as a phasing condenser for balancing the crystal bridge circuit, eliminating heterodynes, etc. The action of these two controls is explained in detail in Part 2 of the Alignment Section.

The switch below the phasing control is connected in the B+ lead of the receiver and its purpose is to shut off the receiver during periods of transmission OR WHEN CHANGING COILS. This last function is important. Series connected with the B+ switch and mounted at the rear of the chassis is a pair of contacts, BSW, intended for use with relay control of the receiver.

The bottom control on the right-hand side is an R.F. Gain Control, connected to the second R.F. tube and to the two I.F. tubes.

At the bottom left-hand side of the front panel is located the C.W. Oscillator Switch and Vernier Tuning Control. The c.w. oscillator is used to obtain an audible beat note when receiving c.w. signals or to locate the carrier of weak phone and broadcast stations. After the phone carrier has been found, the c.w. oscillator is, of course, turned off.

The switch just above the c.w. beat oscillator dial is for turning the AVC on or off. AVC is disconnected with the toggle thrown to the right.

Above this switch is the Audio Gain Control, which is wired into the output of the diode detector and serves, therefore, to control audio volume when using either headphones or speaker.

The S-meter for indicating carrier intensity of signal strength is in the upper left-hand corner. Just below it, and to the left, is a push-switch which connects the meter in the circuit.

Operating Instructions

Phone or Broadcast Reception

In receiving phone signals, the AVC may or may not be used, as desired. If it is not used, we suggest operating the audio gain control about halfway on and controlling the sensitivity with the R.F. gain control. If the operator prefers a "quiet" receiver, the audio control may be operated at 1 or 2. If AVC is used (left-hand toggle thrown to the left), the R.F. gain control may be turned all the way on; i.e., to 10; and the volume controlled by the audio gain control only. The setting of the two gain controls is largely a matter to be determined by the preference of the operator and by receiving conditions. If, for instance, local noise or atmospheric static is high, it will be desirable to retard the R.F. gain control when using AVC so that the sensitivity of the receiver will be held to a definite maximum. If the c.w. oscillator is to be used for locating carriers, as mentioned above, the AVC switch must be in the off position (to the right). Turning on the c.w. oscillator with the AVC on will block the receiver, making reception of anything but extremely strong signals impossible.

C.W. Reception

When receiving c.w. signals, the c.w. oscillator must be turned on and the AVC switch turned off. Best signal-to-noise ratio will usually be obtained by retarding the audio gain control considerably and controlling sensitivity with the R.F. gain control. Turning on the c.w. oscillator switch will, of course, result in a considerable increase in circuit noise. When the control is turned back and forth, the characteristic pitch of this noise will change. When the characteristic pitch is fairly high, the semi-"single-signal" properties of the receiver are very pronounced, one side of the audio beat note being several times as loud as the other.

Phone Reception Using the Crystal Filter

The use of the crystal filter in phone reception is recommended particularly when the operator must contend with heavy interference, static, heterodynes, etc. Since such conditions prevail at most times in the amateur phone bands, the filter will be found particularly useful to amateur phone operators. To receive a phone signal when using the crystal filter, the filter is switched in by means of the phasing control and the phasing dial set at approximately mid-scale. The selectivity control is then adjusted for minimum selectivity, as indicated by maximum noise as the control is rotated back and forth. All phone signals will be greatly reduced in volume, making it necessary to advance both audio and R.F. gain controls. The signals may then be tuned in in the usual manner, but it will be found that the selectivity is very high, with the result that all audio frequency side bands above a few hundred cycles are comparatively weak. Normally, this would result in low intelligibility of the received signal, but since the background noise, static, etc. have been correspondingly reduced, the net result is usually an improvement.

The principal advantage of the crystal filter,