

a review of the BARLOW WADLEY XCR-30 MARK 2 receiver

— A review by the AR technical staff.

The Barlow Wadley Receiver has already been the subject of two technical reviews; firstly in the RSGB magazine "Radio Communication" for January 1973, and also in Electronics Australia for May 1973. In this review it is proposed to give a picture of the receiver in operation at a typical amateur station by comparing it with some of the better known pieces of amateur gear.

The "Barlow" is a general coverage receiver with a frequency range of 500kHz to 30 MHz effectively in 30 bands each of 1000 kHz. It does not employ any form of bandswitching, the appropriate range being selected by a MHz dial calibrated from 0 to 30 MHz. The kHz dial is calibrated at 10 kHz intervals, the actual divisions being spaced approximately 2 mm. apart. The receiver is complete in itself, the cabinet measuring 292mm. wide x 190mm. high x 98mm. deep (11½" x 7½" x 3 7/8"), and the weight including batteries is 4.14Kg. or 9 lbs. 2 ozs. Reference to the photos shows that the set has the appearance of a typical large Japanese portable receiver, but it is, in fact, manufactured in the Republic of South Africa.

Front panel controls, apart from the MHz and kHz dials, include an antenna trimmer which actually tunes the front end throughout the entire range from 500kHz. to 30MHz; an SSB clarifier control giving a 'band spread' tuning over about 6kHz; a mode switch to select either upper or lower sideband, or AM reception, and a combined off/on volume control. There is also a calibration re-set control, and a small tuning meter.

The "Barlow" operates on the Wadley Loop principle which is also used in the well known Racal receiver and also in the locally designed Delta-het receiver. In order to cover the 30 MHz range, the front end oscillator is tunable

from 45.5 to 74.5 MHz. This is then mixed with the harmonics from a one MHz. crystal in a complex system to produce output into a tuneable IF range of 2 to 3 MHz. A 455 kHz IF section follows, which includes two ceramic filters, one giving 3kHz selectivity for SSB, the other 6kHz selectivity for standard AM reception. Both diode and product detectors are provided, the appropriate one being selected by the mode switch. The audio stages are quite conventional and provide in excess of .5 watt output into the built-in speaker or to a 3.5mm output socket for external headphones or speaker.

Before proceeding to "on air" impressions, here is a run down on the more important specifications.

Frequency Scale Accuracy:- Within 5kHz. at all frequencies.

Resetting Accuracy:- Within 1kHz. at all frequencies.

Selectivity:- 6kHz. overall on AM. 3kHz. overall on SSB.

Frequency Stability:- Will hold an AM transmission in tune indefinitely, and an SSB transmission on pitch for long periods of time.

Sensitivity:- Antenna circuit thermal noise audible at all frequencies.

Image Rejection:- 50db on all movable image channels. 60db and better on immovable images.

Current Consumption:- 20mA. quiescent from 6 internal "D" type cells.

THE BARLOW ON AIR.

Initial operation is simplicity itself. To set the receiver to any given frequency it is only necessary to move the MHz. dial to roughly indicate the whole number MHz. range, then move the kHz. dial to the required frequency. The exact frequency is then determined by

simply adding the two readings together. It might be thought that the setting of the MHz. dial is a critical process, perhaps in the style of the old band set, band-spread, receivers of bygone years; however this is not the case at all. The action is more related to a switch than to a continuously variable control and when a signal is located, it is only necessary to move the MHz. dial slightly back and forth to peak the signal. The frequency does not vary in any way at all.

For the purpose of our tests, the Barlow was operated on its inbuilt telescopic whip antenna with no external connections at all. The comparison receiver used was a Collins 75S3 connected to a tuned, long wire antenna. One of the first things noted was the difficulty in tuning SSB using the kHz. dial alone. The drive ratio of this is only two to one and, although a large edge type control is provided, it was more good luck than good management if a signal was resolved immediately.

However, it is not intended that SSB signals should be resolved on this dial. The clarifier control provides smooth and easy resolution once the signal has been located. When the process has been mastered, tuning becomes very easy and SSB signals could be located almost as easily as on the Collins. The overall sensitivity of the Barlow on its own whip antenna is quite incredible. On the 20 metre band any signal over 'S3 on the Collins was readable on the "Barlow." The addition of an external antenna to the "Barlow" made only a small improvement, possibly due to the difficulty in obtaining an impedance match into the external antenna connection of the receiver.

At 7 MHz and lower the Collins pulled away in sensitivity from the "Barlow" and it was found that either an earth or external antenna was needed to restore full sensitivity. Stability of the receiver was also most impressive. In the SSB position, drift did not exceed 400Hz., from a cold start, over a period of several hours operation. Most of this drift occurred during the first half minute due to shift in the BFO, the actual drift in the front end oscillators being so low that it was difficult to measure.

One surprising discovery was that the set caused quite a bit of TVI on both Channel 0 and 2 when tuned around the one to two MHz. range. This occurred when the "Barlow" was used within a twenty-foot radius of the TV receiver. If you live in a low signal area this could be a problem. Also it seems that strong signals from Channel 0 and 2 can cause birdies on the "Barlow" when tuning around the one to two MHz. region. However when used in average locations these effects should not present too much of a problem.

To sum up then, the "Barlow" receiver appears to outperform all other general coverage receivers in the price bracket around \$200. It would be hard to imagine a better receiver for the short wave listener.

However, to use the "Barlow" as an amateur station receiver presents a few problems. Firstly, some means of muting would have to be devised, preferably a system that left the BFO operative in order to eliminate the initial switch-on drift. Secondly, and it is perhaps only a minor point, the appearance does not fit in with normal amateur gear.

The Barlow Wadley XCR-30 Mark 2 receiver is currently available from at least one of the advertisers in AR.

