

A.: We should imagine them to be, but of course have not tried them. We are always a little dubious of things we do not try.

C. D. (Christchurch): I have constructed the "E" accumulator as per the 1930 "Guide," but find its capacity is very low indeed.

A.: The plates you sent appear quite normal for unformed plates, but do not appear to have had any charge. The trouble appears to be the charging voltage, which may not have sufficient extra voltage above that of the cells to charge them fully. The hydrometer reading is about right for cells with only a small charge. The original of this battery has been running for two years with distilled water added when required, and charges in series in about 10 hours at 60ma. Do both of the parallel halves charge up equally? In parallel charging, especially in large groups, such as 100 volts, there is always the risk of one half having a higher resistance than the other, and consequently it will receive less charge and run down early when in use. The remedy for this is to have a variable resistance in circuit with the block of least resistance, and adjust until each block is passing equal current. When charging in parallel, always break the parallel connection between groups before cutting off the charging current.

A CORRESPONDENT, whose coupon has gone astray, and whose name was not on his letter, states that he has built a second audio on the "Night Hawk," but gets the Australians only faintly on the phones, but he can put Siberia and Indo-China on the speaker.

A.: You must realise that the broadcast function of the "Night Hawk" is only a compromise unless the coils are made on 2in. formers. Other than that, it might be as well to bear in mind that the Australian stations at the present time are very weak indeed.

2. I had to put about 70 turns on the reaction condenser to make the set oscillate.

A.: This is not altogether unusual. We presume you were using a fairly small-sized reaction condenser, or that you had a valve which was not a good oscillator. Use a PM3, not a PM4, in the first audio socket. Your B406 is a last stage valve, and with 90 volts should carry about 12 volts bias. We are pleased to hear that you have had such success on short-wave.

The Short-Wave Adapter

Hints from a Constructor

(To the Editor.)

EVER since the "Superheterodyne Short-wave Converter" was described, constructors have written in reporting failure. So far as I know mine was the only report of success.

Having built the converter four times, perhaps a few notes may be of use to those not so fortunate.

I have on each occasion built a battery version adapting the circuit to "Anode Bend," first Det., "Grid Leak First Det." (Grid Leak with reaction on First Det.), and "Untuned First Det."

Let constructors take heart, also take down theirs from the attics where doubtless many have stored them in disgust, remove the cobwebs, blow out the dust, and tune 'em in within half an hour.

All that is required is a slight alteration to the oscillator coils. Select the 25-metre oscillator coil first, and take off the winding that couples the "grid to plate" L4. Then put it on again, putting the bottom end of winding to plate pin of valve base and the top to the cathode pin of valve base. That is just the opposite to the illustration in the "Guide" and "Record."

In the schematic drawing, if one accepts the top of the coils as being nearest to the top of the page, it is O.K. However, the coils are rather difficult to understand, and most constructors would work from Figs. 4 and 5 in the "Guide."

This is the only way to get the oscillator in this particular circuit. However, use a good choke.

Be sure and start with the 25-metre coil. There are two good reasons, one being there are plenty of Morse stations offering, and they will kick up a din, too, even if the broadcast receiver will not oscillate.

Having reached this stage, start on the next coil (you want about six coils if you use .0001 condensers), this will bring you up to say 32 metres. When you reach the coil that tunes in the 80-100-metre band, you will probably encounter fresh trouble, for when the dials are brought into resonance on this band, an awful howl may result. This howl may possibly take place also on the 40-metre band, but this is unlikely. If you strike this trouble take out the oscillator valve; you may then tune in Morse and telephony, but not too well. If you do tune in stations it

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is proof positive that the first detector is oscillating, and must be stopped. Cutting down the B voltage proves satisfactory in some circuits, but in others it stops the first detector from oscillating only after the oscillator stops. Dimming the filaments in the battery version is not entirely satisfactory. I have found the simplest measure to adopt is to take off the connection from the fixed plates of C1. Leave the biggest aerial coil in its socket, and everything else, including aerial and earth in position. You then have an adaption of untuned first detector. This in turn will stop the first detector from oscillating, and give single dial control, also signals appear to be as loud as when the first detector is tuned. However, interesting comparisons can be made.

Further Points.

IT is impossible to give particulars of number of turns on "grid" winding of oscillator circuit owing to the different capabilities of valves. There is a difference of as much as 50 degrees on the dial between an English valve and a 201A.

Unless the power pack has plenty of reserve a separate eliminator is necessary.

Tune the "intermediate stages" where the broadcast receiver gives most amplification and keep the dial in

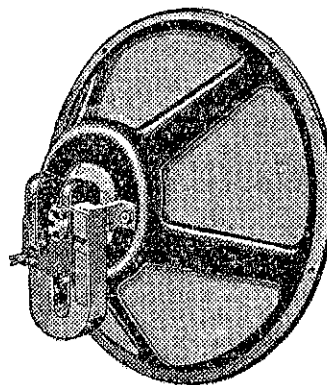
that position; use the same type of valve as oscillator always, and the stations will tune in at the same dial readings. The coils will have to be wound, bearing in mind that you will have to try to cover the wavelengths, so about six coils with .0001, or three with, say, .0002. Personally, I use two double-spaced .0001 condensers in parallel to tune the oscillator stage.

The pre-selector circuit L5, C4 is unnecessary where the first stage of the intermediate amplifier is tuned. Use choke coupling here.

As for sensitivity, the adaptor, when coupled to a receiver of medium power, will perform almost as well without an aerial and earth (and by this I do not mean 2 feet of wire for an aerial, but "no aerial"), as a three-valve short-wave receiver will do on, say, 60 feet.

MORSE stations that are not audible on screen grid receivers, such as the 1930 receiver described in the "Guide," when the receiver is brought out of oscillation, are with the super het., received at R9, with the broadcast receiver not oscillating.

Power lines are most troublesome even on the lower bands. Weak carriers can be brought up to a roar, but of course that does not make the signals readable. It is on those stations that before were received faintly, but were readable, that the supersonic adaptor proves its worth.—W. A. Riddell.



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