Questions and Answers

Compound for Accumulators.

"WHERE in Wellington can I purchase litharge (negative compound for accumulators)? asks "W.J.P.," Trentham.

ANSWER: Try Kempthorne, Prosser's, Victoria Street.

With regard to electrolytic "B" battery chargers, is it possible to calculate the voltage and the amperage output across the leads to the "B" battery?

ANSWER: Voltage is immaterial. It is the amperage that counts, and the only satisfactory way of determining this is to connect an ammeter in series with one of the leads.

Cramped for Space.

"W. S.H." (Wellington) writes stating that through lack of space he is unable to erect two masts, but at the present time has an aerial between two chimneys. He is getting interference noises badly. He asks for details of a cage aerial in the hope that this will cure his troubles.

ANSWER: Cage aerials are not recommended, as they have too much capacity to earth. To erect one mast and run the wires out in the fashion of the ribs of an umbrella, insulating them well above the ground, should give quite a good aerial. Regarding the tramway noises, a counterpoise should be tried instead of the ground. It may be a length of insulated wire under the carpet. Interference from power noises have been dealt with very fully in the 1929-30 "Radio Listeners' Guide."

Mush and Distorted Signals.

"IN the afternoon," writes "W.W." (Wellington) I can get Christchurch splendidly on my six-valve set, but at night both Christchurch and Auckland are practically unworkable owing to mushed signals, though at the same time Sydney comes in loudly and clearly. Can you explain.

ANSWER: It appears that the detector valve is being overloaded, for during the daytime, Christchurch, although usually weak, comes in well. When at night time, it would be coming in very much stronger, mushiness and distortion results, so that the case is apparently one of overloading.

There are several ways in which this difficulty might be overcome; for example, the provision of valves that will handle a greater amount of undistorted current, but the simplest method if the signals from one station come in sufficiently loud, would be to weaken the signals that are now being distorted. The most convenient way is to connect a variable resistance of 10,000 ohms between the aerial and the earth terminal. By varying this, according as to whether the signals are coming in too strongly or not, the correct amount only should be allowed to pass through the set.

Neutralising the 2-R.F. Browning-Drake.

"I HAVE found the following specific faults with my 2-R.F. Browning-Drake: (1) Very broad tuning of the first stage, although the second stage is quite selective. (2 I find it impossible to neutralise the first stage, though the second stage with the same number of primary turns and neutralising condenser neutralised well. (3) Under no circumstances would the first stage oscillate, though the second stage if out of neutralisation oscillates justly. (4) The first stage indicated in several ways that it was a passenger.

On one occasion I received fair loudspeaker volume with the first valve out of the socket. I have tried several different valves and checked up all the wiring. With two UX-199's with the same primaries (16 turns) I could get only 'phone strength with two stages A.F. More turns on the primary gave better results with the 199's, but caused the PM3's to howl. All the valves were tested and are O.K. Would a screen grid be applicable, or should I persevere with the 199's?

ANSWER: With regard to the four enumerated points: (1) Make sure that the "F" end of the coil is actually connected to the filament negative and that the capacity of the variable condenser is adequate to cover the band satisfactorily. That is, it should be .0005. The radio frequency transformer is probably the cause of the trouble, and trouble of this nature is usually to be found in the first grid coil. The primary of this transformer should for PM3's or 199's consist of at least 25 turns, and some recommened that there should be 32 turns. Make quite certain that there is no coupling between the various grid and anode coils, due to bad spacing or alignment. (2) It appears that coil interaction more than inter-electrode capacities is at the bottom of the trouble here. Check over the shielding, and try the reversal of the primary winding of the radio frequency transformer. (3 and 4) This more than ever suggests a disconnection somewhere in the first stage. Try taking out the first valve, by connecting the aerial to the plate of the first valve thus the primary coil acts as an aerial coil. Persevere with the 199's.

A One-Valve Problem.

"T. P." (Blenheim), writes: "I have a one-stage amplifier, and am using this in conjunction with a one-valve set. Wishing to experiment, I connected a variable condenser between the aerial and the earth outside the set, and have found that I get very good results. Do you think it can possibly do any harm to either set?

ANSWER: It certainly cannot do any harm if the connections are as has been shown by a diagram. The reason that the correspondent gets improved results is because of the fact that the aerial and aerial coil are being tuned to the wavelength desired. A tuned aerial has a far greater efficiency than an untuned aperiodic coil.

Re-neutralising a Set.

WOULD you tell me how to re-neutralise my set, which has been unbalanced by my inserting new valves? I have changed from American to Continental valves, and it now oscillates.

ANSWER: As the set is a factory-made one and specially designed for American valves it is quite likely that it will continue to oscillate, as very much trouble has been occasioned other users of this set who have departed from the valves specified. This is not at all a wise procedure, as each set maker designs his set around his valves, and the greatest efficiency can only be obtained by adhering explicity to the valves in question. However, in response to your request, we publish in the "Beginners' Corner" this week a simple method of neutralising.

Transformer v. Tuned Anode.

"DIALS" (Napier) writes: Why is it necessary that the screen grid Browning-Drake should have a primary? Apparently, a large number of turns should be put on the primary and the step-up of the transformer is going to be reduced to a ratio of 1 to 1. Where is the gain, for by the use of the condenser (tuned anode) we simply by-pass the signals by electrostatic induction? With the primary and secondary we pass the signals by electro-magnetic induction. Why not use the condenser if there is no gain to be had by the transformer method?

ANSWER: The secret of obtaining the full efficiency from the screen grid valve is to have its external plate circuit as near as possible matched to the impedance of the valve, and for this reason the inductance of the coils is brought as near as possible to that of the valve. This is most nearly accomplished by transformer coupling.

Certainly, the tuned anode system is far simpler, but has the disadvantage of tuning very flatly. Again, if the radio frequency transformer is done away with, can the receiver be called a Browning-Drake?

The Beverage Aerial.

"C. H." (North Auckland) writes: I have a five-valve factory-made set, and I can get the New Zealand and Australian stations with good volume. Of the Americans, I can get only KFON faintly.

1. Would a Beverage aerial improve reception?

ANSWER: Yes, it is fairly safe to assume that if a Beverage aerial running from north-west to south-east is erected, reception from the Americans would improve.

2 Would plain wire be suitable for same?

ANSWER: Yes, quite suitable.

3. Would you kindly give directions for erection?

ANSWER: Get a clear run of about 600 yards or more in the direction indicated, and lay off the wire supporting the same at frequent intervals, if possible, by masts or trees. If trees are used, keep the wire clear from the foliage. The distant end of the aerial should pass to a 400-ohm resistance, and through to earth. The total height of the aerial should be only a few feet, just sufficient so that it may clear stock, etc. The receiver terminal of the set should be connected to the aerial through a small fixed condenser.

The "B" Battery Eliminator.

"R.K.," writiug from Wellington, states that he has not had success with the "B" eliminator described by "Megohm" some fifteen months ago. He states that he is using ordinary receiving valves as rectifiers, and does not know what to do with the grid terminal. He does not quite understand the connection between the plates of the valves. He has now bought a Raytheon (filamentless type), but cannot understand how to connect this to the eliminator. At the present time he is getting only sufficient current to run a one-valve set, so that there is evidently something radically wrong with his eliminator.

ANSWER; In the first case it would have been advisable for the correspondent to use the special rectifying valves produced by the different makers, for, where any great current is to be delivered, it will be found that the ordinary receiving valve is insufficient to handle the output. This would possibly account for the little current being delivered. The grid of the ordinary receiving valve should be connected to the plate of the valve by means of a short piece of wire on the valve socket. The plates of the rectifying valves are connected one to each end of the secondary winding of the transformer, that is, HT1 and HT2. Other than this, there is no connection between the plates.

To adapt this circuit for use with a Raytheon valve, the two ends of the secondary winding are connected one to each of the filament terminals of the valve socket. This really connects with the two plates of the Raytheon. The third electrode in the Raytheon connects with P of the valve socket, and this takes the place of the filament centre tap of the original circuit. That is, it connects to the high-tension terminal through a radio frequency choke. The filament