Questions and Answers

IN BRIEF.

"NEW CHUM" (Palmerston North)—Before we can give you explicit directions we would require to see the lay-out of your set. If you forward this, we shall do our best to assist you.

"B" Class Stations.

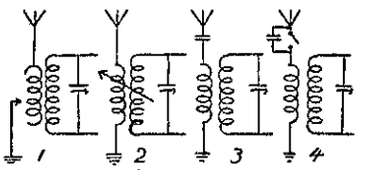
"BLUEBIRD" (New Plymouth) asks: (1) The wavelength and power of 2AQ, Taihape, but as announced some time ago, 2AQ has closed down, and its owner removed to Auckland to experiment with television. (2) The wavelength and power of 2ZL, Wanganui—500 metres, 25 watts. (3) "Are there two wireless stations in Gisborne, because the call sign in the "Radio Record" I have is 2YM, and whenever I get them they call 2 ZM?"

A.: 2ZM is correct, and if 2YM has been given as the call sign in the "Record" it has been done so erroneously.

Dead Spots.

"L. J." (Wellington) writes: I find that there are two dead spots, both very bad ones. In one case the only way the set will oscillate is by turning down the primary till it is on the baseboard, yet on detaching the aerial the set will oscillate all over the dial.

A.: As briefly as can be explained, dead spots originate through the resonance effect of the aerial. This is naturally turned to a certain wavelength, and when the set becomes tuned to the same wavelength, a dead spot occurs, and it is impossible to receive signals in the affected area. The cure suggests itself—alter the tuning of the aerial, and this can be done in any of the ways suggested in the accompanying diagram. The easiest way to effect this is by using a small condenser in series with the aerial. Actually, this will not cure the dead spot, but it will shift it further up or down the frequency scale, and stations in the area once affected can now be turned in. Another method suggested by the diagram is a tapped



primary (diagram 1), but this suffers from the disadvantage of dead-end losses. Diagram 2 illustrates primary and secondary whose relationship with one another is variable, like a tickler coil and secondary coil, of course of the usual specifications for aerial and secondary. Diagram 3 illustrates a fixed condenser in series with the primary, but this too will either permanently shift the dead spot up or down. Diagram 4 illustrates a method of using a switch and a condenser, so that the dead spot may be shifted to either one of two positions. This is probably the next best arrangement from the variable condenser. A neutralising condenser in the aerial lead would be excellent.

The correspondent complains of interference from an amateur. As he suggests, he should write the District Telegraph Engineer, lodging his complaint.

The Use of Power Valves.

TWO correspondents have raised the question of power valves. "H.J.T." (Gisborne) states: My B batteries have a habit of cutting out in about five or six months—rather a short time, I think. (We don't. That is the usual life of a battery.) I have seen recently a set using a power valve with 22½ volts grid bias instead of 6, as I use. Could you give me some particulars?

A.: Yes, certainly. The amount of grid bias depends on the type of valve to be used. A good power valve such as the 171 type Radiotron, PM254 Mullard, J71A Ceco, 610P Cossor, or B403 Philips, is essential if tone is to be obtained. Most of these valves will take up to 150 volts plate current, but this can rarely be supplied except by means of an eliminator. When 100 volts are applied to any of them, they will require approximately 15 volts grid bias. Smaller valves, for example, Radiotron 112A, Philips 409, and similar valves, require much less bias, usually about 6 volts, but they will not handle the amount of current the bigger power valves will handle, and consequently distortion arises. Unfortunately, unless we know the type of valve being used by the correspondent in his last stage, we cannot specifically state the amount of bias to be used. In the "Listeners' Guide," valve tables are published, giving particulars of bias, etc., for almost every valve on the New Zealand market.

ANOTHER correspondent, "D.S.", of Market Cross, writes: "I have an American 5-valve set, using 90 volts, with 4½ volts grid bias. Bad distortion and rattle is evident if the volume is turned up, using a horn speaker. It is not quite so bad with a moving coil, but it is yet bad. The set is provided with 201A valves only. What valve would you advise for the last stage, the voltage, and the grid bias?

A.: It is quite evident that the distortion and rattle is caused through the last valve being unable to accommodate the volume. Bigger valves, such as those suggested to "H.J.T.", should be used with correspondingly increased grid bias, and plate voltage if possible. If the set is to be operated from batteries, 135 volts will be the optimum power, with a 22½ volt block used for bias, but if an eliminator is available there should be no difficulty in stepping the power up to 150 volts. Some makes of valves require very high grid voltage for this plate voltage, but power valves in this direction are by no means uniform, so that the correspondent would have to consult the characteristics of the valves given on the cartoons and the pamphlets that accompany them.

A power valve is really no different from any other valve, so that no alteration in the set other than additional power are required to fit them. The main characteristics is their ability to handle great volume without distortion, and where five or four valves precede the last stage, a power valve is essential if quality is to be realised.

The same correspondent asks: Is it necessary to alter the wiring to apply bias to the second last valve?

A.: Yes, slightly. On removing the set from its cabinet, it will be seen that one filament terminal of this valve connects with the second last audio transformer. Break this connection, taking the filament lead to the filament negative, and the transformer to "GB" 4½. Connect the positive of this battery to "A—" or to the other grid bias positive.

Changing Valves.

"W. B." (Dunedin) states that his set is of American manufacture, specifying American valves. He asks: "Would the neutralising condensers be suitable for English or Continental valves?"

A.: In changing from American to English or Continental valves, the set will have to be re-neutralised, that is, if these are being used in the radio frequency stages. It is most unlikely that the neutralising condenser will be insufficient capacity to effect this. Methods of neutralisation have been described in our columns and in the "Listeners' Guide."

Increasing Anode Voltage.

"IN Trouble" (Mosgiel) wonders why increasing the plate voltages of his 2-valve set from 45 to 85 does not perceptibly increase volume.

A.: If the connections are made correctly, this should very much bring up the volume, but it is possible that in this case there is one voltage tapping only to supply both the detector and the audio valve. That is, the one that went originally to 45 volts. If now this is increased to 85 the full voltage is being applied to the detector, and as the maximum voltage here should be just sufficient to make the set oscillate, the increased voltage can have none but a detrimental effect. Probably, applying 22½ volts or, at the most, 45, to the detector, will strengthen the signals.

The correspondent adds that he cannot receive certain stations on a low wavelength unless he disconnects the earth, when they come in with good volume. He has noticed the same phenomenon with short-wave.

A.: This is quite the usual with short-wave—these sets invariably work better without an earth.

Fluctuating Current.

"N.O.F." (Hokitika) states that the power in his district fluctuates a great deal and is asking the effect of this on an "A.B.C." eliminator.

A.: Fluctuating current is one of the restrictions to the widespread use of "A.B.C." eliminators. When the surge up and down is considerable, an "A" battery eliminator can be rendered almost useless, but the surge has not such a marked effect upon the "B" and "C" eliminators. The voltage fluctuation is