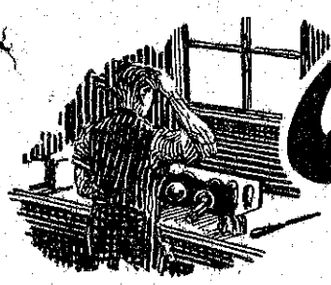

Questions and Answers

"PUZZLED," Auckland, asks the following questions concerning the band-pass four:—

1. What is the size of the panel—24 x 7.

2. Concerning the coil formers. The list says 1ft. of same. Are the formers for each coil 4 inches long?

A.: The usual method in winding inductances is to wind on the number of turns for the smallest coil on to the total length of tubing, leaving about half-inch at one end. When this is wound, cut the former, leaving about half-inch clear from the end. Then wind the next sized coil, and finally the two coils for tickler and secondary. You will find by doing this that you have a little to spare.

3. Concerning the by-pass condensers. What is the value of the one on the left of the detector socket ?—1 mfd.

4. The list of components prescribe two 2 mfd. and one 1 mfd., whereas the wiring diagram shows six, and the theoretical diagram five. How do you account for this?

A.: The total of by-pass condensers is five, but the grid condenser shown in the layout, slightly smaller than the by-pass condensers, give the appearance of six bypass. There should be two 2 mfd. and three 1 mfd.

4. Regarding the coils. The diagram shows the coils marked C, D, E. F. Which are the ends of the secondary and tickler?

A.: The lower sketch shows this, though the lettering has been slightly obliterated. It should read: Top reaction, C; bottom reaction, D; top secondary, C; bottom secondary, F.

5. It was stated that all condensers might be ganged with a balancing condenser as shown. Where is it shown?

A.: In the theoretical diagram.

6. There are four condensers illustrated. Can they all be ganged, making single dial control?

A.: The three tuning condensers can be ganged, that is, the one in the screen and the two tandem, but the reaction must be separate. To gang the three condensers the layout must be separate, and will have to be altered slightly. The condensers in the shield must be turned round so that the shaft passes through the shield, to connect with the other two condensers, which are interchanged with the reaction condenser.

7. Re the fuse in screen-grid lead. Where is it placed?

A.: It is shown in the layout diagram in series with B+ "screening grid." Note the difference between the shaded lines as shown on the shield and the solid ones. The shaded portions represent large holes in the shield, covered with insulation, so that the wire passing through may not touch. The solid patches show connections.

8. I presume the rheostat controls the detector and screen grid valves?

A.: As shown, yes. However, the other three valves are shown without any control. A— must be brought to one side of the switch and the other side of the switch taken to the rheostat. To the other side of the rheostat must be connected all the leads to be controlled by it, presumably the screen grid valve and the detector. The audio valves should be connected to the side of the rheostat nearest the switch.

"SUPREME" (Waikato) has replaced a transformer and finds that there is a continual squeal which cannot be controlled.

A. Reverse the connections to the primary of the replaced transformer. Everything appears to be correct from your description except this.

"C.W.D." (Wellington) states that some time ago he asked if it were possible to construct a crystal set for receiving short-wave broadcasts. Our answer was in the negative. The correspondent has recently received a short-wave station on his set.

A.: This sometimes happens when the set is close to the transmitting station. It is very difficult to explain.

"A.E.A." (Avondale) states that he altered a set and found that it would go better with the four valves than when the last audio was switched into the circuit, but directly the rheostat was turned up the five came on with greater volume than before.

A.: This is due probably to the fact that when an amount of current passes through a resistance (the rheostat) the voltage drops. When more current is passed through the same resistance the voltage drops still more. As this current is passed to all the valves it probably explains the phenomenon.

"N.S." (Hastings) asks how he might neutralise a Fada.

A.: Find the neutralising condenser, in most models of this receiver they are like the regulator of a clock. Find out which one controls the valve nearest the detector. Stop filament current reaching this valve by isolating one of the prongs. This might be done by wrapping thin silk round it. Adjust the condenser until the signals are at minimum strength, then remove the silk and repeat the process with the other valve.

"HOPEFUL" (Manuka) has a three-valve battery set and with a long aerial cannot receive the local private station. He asks if a series condenser in the aerial of .00025 would bring in these stations.

A.: Probably, for it seems as though the long aerial is raising the minimum wavelength the set can tune to. A series condenser has the same effect as reducing the length of the aerial.

2. Can I add another valve to the set. If so, what would be needed other than the valve?

A.: If the set is one radio detector and one audio, another valve can be added to the audio quite well. If, however, it is detector and two audio, there is not much hope. To add another audio stage you will require in addition to a valve, a full knowledge of what you are doing, and an extra transformer.

"T.M.L." (Kilbirnie) has built the tetrode crystal set and amplifier, but has not had success with it. The reaction coil does not work.

A.: The condenser between the primary and the secondary of the transformer should be connected on the aerial side of the crystal. If this is not fully effective, insert ¼-megohm grid leak in series with the grid of the detector. It may be necessary to try a low frequency choke in series with the plate of the valve and the loudspeaker. The bottom of the tapped coil is earthed.

"H.G.T." (Wellington) drops a note stating that his first query was overlooked. He adds, "I was under the impression that enquiries of this sort were encouraged in your paper." He then details three questions concerning an aerial.

A.: In the first place we must justify ourselves for delaying reply. We specficially ask that all technical communication be addressed to the "Technical Editor." Both letters were addressed "The Editor," and the first lost its way because of this.

1. Although the aerial is 40ft. above the ground or grounded objects does not the lead-in lower its capacity to earth?

A.: Only rarely. The ideal aerial is about 50ft. vertical. It is the horizontal part that gives the trouble. If this is low, the capacity is unduly lowered.

2. If one pole is erected 50ft. and an aerial runs from it to a pole 20ft., would not the extra efficiency of the portion above the average height compensate for that below?

A.: To a certain extent. It will be better than an aerial 20ft. high, but it will not be as good as 40ft. both ends.

3. At the worst, would not the effect be equal to an aerial say 30ft. long varying in height from 50ft. to 37ft?

A.: This aerial would not be as good as the other.

"D.C." (North Auckland) asks if it is possible to make eliminators from D.C. mains.

A.: Yes, they are quite successful. One will be described in the 'Radio Record" shortly.

"E.W.2" (Auckland) is assembling "Round-the-World" Two, and is not clear about the coils. He asks the number of turns on each coil and on the tickler.

A.: The first set of numbers refers to the secondary coils, which are tapped to eliminate the primary, the second set of numbers refers to the tickler coils, which are built up in exactly the same manner as the secondaries.

"L.C.B." (Nelson).—The set of valves is quite O.K.

"G.J.I." (Oamaru) finds that his set operates on the 40-90 metre band, but will oscillate in one place only on the 16-45 metre band.

A.: Increase the number of turns on the tickler for this particular band and try a series condenser of small value (midget) in series with the aerial to remove any dead spots.

"W B.H." (Houipapa) thinks that his set is overloading as it does not give good tone. Distortion is very bad at night, though fairly good in the daytime.

A.: Your situation may be bad, but it seems that a great deal of trouble is being occasioned through the use of a power valve in what appears to be the second last socket. Where PM6 should not be used in other than the last stage, PM5 should be used in all other sockets, but PM6D used as detector. See that your grid bias voltages are correct, and that the grid circuit of either of the valve is not open.

"COURIER" (Wellington) asks if it is necessary to instal a lightning arrester in an all-electric set.

A.: Yes; there is not one in the circuit.