2. Supposing the capacity of the B accumulator were 900 mamps. hours, and the total drain from the valves 25 mamps., would this meant that my B battery would last 36 hours?

A.: You can always compute the life of a B accumulator by taking roughly half the capacity; that is, dividing the mamps. hours by two. Then divide into this the drain taken by your set. It is most unwise to run an accumulator down more than half. The accumulator described in the "Radio Guide" would, with a 25 mamp. drain, last 160 hours. Generally speaking, a B battery charger must be charged at double the rate of the drain imposed by the valve. That means that the charger must be on about the same length of time as the set is operated.

3. What valves should I use in push-pull?

A.: We would suggest the B605 type, which will work quite satisfactorily from 135 volts B, and give a higher output than the 112. The B charger accumulator, if the secondary were wound to accommodate 180 volts, would be quite ample to charge this. You should wind on 2100 turns on either side of the secondary.

ENLIGHTENED (Stratford): I have an American set which uses the following valves:—A615 and PM6 in the first and second radio, detector A615, first audio PM6, second audio B605. Can you suggest any improvement?

A.: We would suggest second radio and first audio 221. PM6 is not suitable for those two sockets as it is an output valve.

BALDY (Ohakune Junction): I have a Raytheon X210 valve. What class is it?

A.: The same as UX210, employing 7.5 volts on the filament and 400 volts on the plate.

F.J.M. (Pahiatua): If I obtain a radio dealer's license, do I have to have an electric wireman's license to instal radio sets?

A.: No. You may instal a set providing you do not interfere with the wiring of the house. You can connect the set up to a hot-point, but if one has to be installed an electrical wireman must do this for you.

SELECTOR (Gisborne): We do not recollect having seen the circuit to which you refer. However, we shall hunt up our files for you, and, if we can find the circuit, we shall send it along.

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STALLOY (Thames): I wish to construct an auto-transformer to go between my mains. Would such be satisfactory?

A.: No. The regulations state quite clearly that a transformer, with a separate primary and secondary, must be placed between your mains and any radio apparatus. Auto transformers employed in the manner you suggest are not at all suitable for radio work.

L.H.S. (Bluff): You can tell me how to neutralise a Radiola 20?

A.: Remove the chassis from the cabinet and set up as for reception. Tune in a station about 1400 k.c. and then remove the second valve from the left and insert a dummy. By a dummy we mean a valve which is intact except that one of the filament prongs has been cut off, or is covered with silk in order to prevent it making contact with the socket. If this stage is neutralised the signal will disappear, but if it does not, adjust the neutralising condenser mounted on the rear edge of the valve panel and between the first and second valves until the effect is obtained. The adjustment is quite critical and must be done carefully. Once the minimum signals have been obtained remove the dummy and replace with the normal valve. Now replace number one on the left with the dummy and repeat as with number two. This time adjust the condenser immediately under number one valve at the rear edge of the valve panel. These two condensers are of the small compression type, consisting of two plates separated by mica and adjusted by a central screw.

BOOZY (Hikurangi): I am using a BD4 and have a 256 valve in the last stage with 90 volts on the plate and 9 volt bias. Am using an output filter. The bass notes do not seem to be over emphasised, although the high notes are not shrill, but the tone is not all that could be desired. My second transformer is a 5 to 1 ratio.

A.: The trouble probably lies in your output filter which was not designed for a power valve of the 256 type. If you install a filter, preferably a taped one, we think you would get better results. Furthermore, a 5 to 1 transformer is not conducive to quality, and in itself would account for the low note loss. You will not get very good reproduction with 90 volts only on the plate.

2. The symbol to which you refer is a centre taped LF choke.

I.A.P. (Otekaiai): I made a diagram of a 4 valve set. Could it be converted into an AC. If so, what changes would be necessary? Would I have to change the valves?

A.: You would certainly need to change the valves and you would have to adapt wiring to the indirectly heated valves. There are several circuits in the "Radio Guide," so we think your best plan would be to build up one of these.

C.R. Mc. (Taranaki): I have a 6 valve set and cannot receive any American or Japanese stations. When I put my finger on the aerial lead the power is greatly increased.

A.: It seems as though your aerial is defective. Your body is then acting as an extra aerial and so increasing the strength. If your aerial proper were fully efficient the little extra that your body picks up would not be noticed. Examine your installation very carefully. If you have a lightning arrester, take it out and see how the set then operates. Examine any soldered joints. Let the aerial down and clean the insulators.

2. What would be the approximate cost of the Outspan Five with all batteries and valves?

A.: Probably about £15.

3. Could the Sparrow Hawk adapter be used with the Outspan Five?—Yes.

H.F.R. (Auckland): Would you give me the number of turns of about 26 enamelled wire on 2in. former for the secondary and tickler windings to work the broadcast band, the secondary to be tuned with a .0005 condenser and regeneration by a .00015 differential condenser?

A.: You people could save us a lot of trouble by looking these things up in the "Radio Guide." There is an excellent table published on Page 58. It has exactly what you wish to know about the secondary coil, and you could have experimented with the differential reaction. However, here are the numbers of turns. Secondary 83 turns, reaction 35.

2. Is there any advantage in using d.s.c. wire in this case?—No.

3. When mounting a screen-grid valve (A442) type is there any advantage to be gained by mounting the valve horizontally through a hole in the screen?

A.: Theoretically this is the best way to mount the valve, as any chance of the stray capacities finding their way from the grid to the plate is then very small.

FIGARO (Auckland): Is the 10 ohm resistance in the negative to earth between the bottom of the S.G. secondary coil and earth, or is it in the positive in the Radiogram Five circuit?

A.: The Rheostat is in the positive lead. There is small biasing resistance in the negative lead between one of the filament terminals and the shield. This is merely a few turns of resistance wires. Unfortunately the displacement of the figures 30 in diagram 27 in the "Guide" would lead one to think that the small biasing resistance is 30 ohms.

2. What are the coil diameters and turns for the aerial coil using .0005 condenser?

A.: For 26 DSC wire 72 turns for secondary and 25 for aerial.

3. Audio oscillation is apparent when the speaker is placed on the set and more C battery is required on the first audio. Would it be overcome by using more modern speaker?

A.: If the set whistles when the speaker is placed on the cabinet it would appear that you were getting microphone howl from the set itself. If you place the speaker away from the set and audio oscillation is not present you need not worry about a more modern speaker. Audio oscillation can possibly be overcome by reversing the primary connection to one of the transformers.

A.B.C. (Paeroa): I wish to build a four-valve battery set. Would you please give me the names of suitable circuits?

A.: If you wish to build a really good four-valve set we would advise you to try the Differential four, published in the "Radio Record" at the beginning of this year.

G.T. (Putaruru): My reception during the day is not as I should like it. I have four pipes driven into the ground two feet apart outside the house, and from these bare copper wire leads to a piece of copper plate from which an insulated lead goes to the set. In all I have about 16 feet of copper wire. Is this too much for earth?

A.: No, your earth appears to be quite efficient. Do you keep it well watered and have you tried the effect of salt upon it?

2. How could I get a better reception?

A.: Have you balanced up the condensers of your set? If you look in the back of the set you will see four holes near the top of the canisters shielding the coil. If you put a screw-driver in these you will find a little screw. Tune in a weak station and adjust these screws one after the other until the station comes in at its strongest. You will find to get at these screws you will probably have to remove the rectifier and the 245.