

wire, consisting of 19 turns. For the four volts valves you will require two windings each of 16-gauge wire, with 16 turns on each. For a dynamic speaker your best plan would be to have one with a high resistance field winding, and increase the number of turns on the secondary to allow for the drop in the speaker. This would mean that you would need to provide at least 250 volts, the drop in the speaker being approximately 50 volts.

DX91A (Hamilton).—Would loss of volume in a battery set be caused by a condenser having been burned out?
A.: Yes; if a condenser were burnt out you would get a leakage from one of the tappings or no voltage at some particular point. This would cause weakness.

2. Are the valves suitable, using A415 as detector and in the last stage?

A.: A415 used as a detector is excellent. In the last stage, although it will give a high lift, it is not really suitable for that socket, and you should use one of the B406 class, which will give you much improved results as far as tone is concerned.

3. Would it be the "B" batteries wrongly connected that cause loss of volume and skipping oscillation?

A.: Yes. If the "B" batteries were wrongly connected these symptoms would manifest themselves. It sounds, too, as though your set is not now neutralised. As a matter of fact, your set was designed for the 119 types of valves, and unless it is very carefully re-neutralised it is not advisable to use any other type in it.

PUZZLED (Berhampore): Reception is variable. Signals come in strongly and then die away.

A.: It is impossible to say. The first thing would be to measure the voltage of each of the valves when the set is in a quiet period and when it is normal. Make quite certain that there is no voltage fluctuation. Obviously, then, the trouble must be on the h.f. side. Have all the valves tested.

2. Can you tell me how to step my detector voltage down to 22½?

A.: Yes; connect in series with detector, tapping a variable resistance of 20,000 ohms and put a 1 mfd. by-pass condenser from the set side of this resistance to B—. You can then regulate the voltage to any value you desire.

3. What bias is required on B205?
A.: It depends upon the "B" voltage, but presuming you are using the full you will need from 15 to 18 volts.

SUPERHET (Gisborne): Your best plan would be, if you cannot get satisfaction from your local man, to write direct to the N.Z. agents and make a complaint. The address is Spedding, Ltd., Auckland. Certainly do not call in anyone else if you are protected by a guarantee, and if we were to tell you to interfere with your set yourself, you would likewise lose the guarantee.

SPARKS (Wellington): Could you advise me how best to obtain experience in order to get my radio serviceman's examination?

A.: You first of all should study the fundamentals of radio in such a book as Henney's Principles of Radio, or if you do not want to go as far as Henney takes you, get a general idea of the principles from the "Radio Guide," and in the "Radio Times." In them you will find many of the fundamentals explained from month to month. Certainly as far as the a.c. set is concerned we would recommend you to look back over the last two months and read the series now running, on the A.B.C. of the a.c. set. The best servicing book that we know is "Radio Servicing," by Ghirardi, a book which is not particularly expensive. As far as the experience is concerned, you certainly need a fair amount of this before you would be eligible for a serviceman's certificate. The requirements are that you be three years in the trade. However, by having your wireman's registration you will be able to install radio sets, and possibly you could make arrangements with some

of the local dealers for a small remuneration to fit in in some way in their service department and so obtain your experience.

DX127A (Rotorua): Is the suppression of noises through electrical supply by means of a filtering device satisfactory?

A.: Where interference is bad and it is being picked up by the a.c. mains a suppressing device will have a great effect. We understand that these are not obtainable in New Zealand commercially, though they can be made up from specifications which have been given in the "Radio Record."

2. Explain the method of earthing the free end of the aerial for the purpose of suppressing power line interference.

A.: We do not know anything more about this than you do. A correspondent wrote to say he earthed the free end of his aerial, so presumably he ran a wire down from the distant end and grounded it. Other than giving you the advice we did last time, we can do nothing for you. Interference is one of the biggest problems that the radio listener has to face and it has nonplussed many a clever engineer.

NOVICE (Auckland): How can I find the place on my three dials to tune in a station on a given wavelength?

A.: Only by a knowledge of your dials. For instance, you might know that 2YA, which operates on 420 metres, comes in at 80 on one dial, 81 on the other, and 79 on the third, and that 2BL, on 351 m., comes in, say, on 64, 65, and 68. You then would know that a station on a wavelength intermediate between these two points would come in somewhere between those dial readings. Otherwise, there is no other method.

2. Where could I obtain a book from which I could get a working knowledge of radio to build a set myself?

A.: We can do little more than recommend our "Radio Guide," which is obtainable from all booksellers in New Zealand for 2/6.

DEE STREET (Invercargill): I have tried out two sets in my shop, which is near the trams, but the interference from trams is very considerable and reception is unsatisfactory. What can I do?

A.: There is very little you can do. Interference is one of the bugbears of radio, and you are very near a tram-line. Keep your aerial as short as possible, and have it at right angles to the tramlines. You are in a particularly bad place, as there is a loop in the line just by, and that would cause a fair amount of noise, which would probably be fed in through the mains. Try an interference filter if you can get one.

TUI (Buller): Which line of figures is used for each class of battery "A," "B," and "C" on my meter?

A.: The lowest range is for the "A" battery, the next range for the "B," while the "C" can be tested either on the "A" if it is of low value or on the "C" if it is of high value. The top one measures current and must be used only in series with the lead through which the drain is to be ascertained.

2. Can the valves be tested with a voltmeter? If so, how?

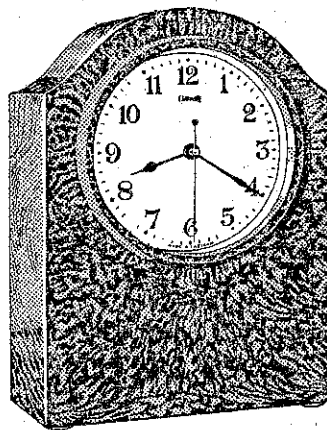
A.: You can test them with your milliammeter providing they take the large current, but as you are using a battery set, the valves of which do not take much current, the scale is too coarse. You would need a 0-20 milliammeter at the most to test your valves satisfactorily. On your meter there must be four terminals, one for the negative, one for the milliamps, another for the high scale (volts 160), and the other for the low scale (volts 8). To test your "A" and "C" batteries, have one at the negative and one at volts 8. To test the "B" one at negative and the other at volts 160. You will probably not need

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