

not infrequently finds that a shadow can be cast right across the aerial to completely spoil reception of stations in the shielded direction.

**"REACTION"** (Nelson): Will the iron I have on hand, the dimensions of which I give, be suitable for a small audio choke? How many turns of 40 or 36 gauge wire will be used?

A.: Use 40 gauge and you will require about 3/5lb. The gap should be about .03. Wind on all this wire, which should take up most of the space available. Actually you need about 15,000 turns.

2. What is the dielectric constant of paraffin paper of medium weight? Will it stand 150 volts?

A.: Dielectric constant 2 to 2.5. It should stand 150 volts.

**"NORTH-WEST"** (Rawene): We cannot get any result when the short-wave adapter is plugged into the second valve socket of my 1926 model H.R.

A.: There is probably something wrong with your adapter because the plug-in to the valve socket should act quite well. It would not be a bad plan to have your set brought up to date.

2. Why do we have space-wound coils for both long and short wave?

A.: These are really most efficient coils though the modern practice is to make them smaller and sacrifice some of the efficiency for the sake of neatness and convenience. Valves now are more efficient than they were in those days, consequently a little loss in the coils can be tolerated.

3. Would a small coil be used to tune the adapter in a similar way to the one in the broadcast set? If so, what are the specifications?

A.: We cannot quite see the point of your question. The adapter should have a set of short-wave coils which are plugged in according to the waveband required. There should be no need to interfere with the broadcast coils.

4. Would the distance between coils required to be altered for the different wavebands?—No.

**"PAROLE"** (Oamaru).—Does a sagging aerial affect results?

A.: Slight sagging does not have any effect upon results, but where it sags sufficiently to cause sway, artificial fading quite frequently results. It is more noticeable on short-wave.

2. My lead-in runs back from the set. Is this efficient?

A.: It would be more efficient if it ran forward under the aerial. However, it is quite a small point.

3. The earthwire is of fine copper, and is connected to the waterpipe underneath the house. Is this efficient?

A.: The wire should not be very fine; in fact, it should not be less than 14 gauge

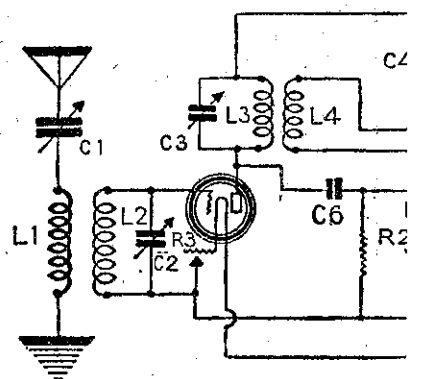
copper, or better still, stranded wire. It should be tightly affixed to the water pipe (soldered if possible), and preferably the ground round about it should be damp.

4. Occasionally there is a crackling in my set. How can it be remedied?

It may be due to interference. Remove the aerial, and see if it persists. If not, you have no control over the cause, except to let your radio inspector know. If it does, one of your valves, probably the detector, is at fault.

**"EXPERIMENTER"** (Nelson).—I have been saving up the following questions for the past two months. They are sixteen in number.

A.: What about sending them in every week? They would be easier for us to handle.



L1 and L2 comprise a tuned aerial circuit. L3 is a tuned primary or tuned anode.

1. Does a tuned aerial circuit consist merely of a condenser across the coil?

A.: The condenser is really across the primary coil. In its simplest form a tuned aerial circuit consists of two coils, one between the aerial and the earth (this is the primary), and the other (the secondary) close to it, but not in contact with it. It is across this secondary coil that the condenser, is usually shunted. A sketch shows a good example of a tuned aerial circuit.

2. Will thin wire be better than thick for shortwave coils?

A.: Thick wire is generally the better for shortwave, and slot-wound primaries are rarely, if ever, used.

3. How is the Beverage aerial erected and is it better than 100 feet aerial 30 feet high?

A.: Full instructions were given for this type of aerial a month or so back. For stations to which it points it is decidedly superior to the ordinary aerial.

4. What is the best soil for an earth?

A.: That question was fairly fully discussed about the middle of this year. Moist loamy earth.

5. Would an anode bend detector be better than a leaky grid for either broadcast or short-wave?

A.: The anode bend would not be suitable for short-wave, but it gives good results on broadcast.

6. Would a battery of small Leclanche cells maintain a three-valve set drawing 10 m.amps?

A.: Yes, if you built up a battery using for central elements the manganese and carbon rod from an old torch cell you would get a battery which would keep your set charged indefinitely.

7. With my three-valve set I have received American stations on the broadcast. Can Indian stations be received in New Zealand?

A.: Yes, usually at about three o'clock in the morning.

8. If every component of a set were screened from the rest would it promote better efficiency?

A.: In a set such as yours, no.

9. If a fixed three-coil tuner with condenser reaction was totally screened would it make the reaction easier?—No.

10. Would two five to one transformers produce distortion or howl?

A.: They would produce distortion and in all probability howling. It is not

wise to use two high ratio transformers.

11. Should an ordinary two-valve amplifier with a pick-up give more volume than the average cabinet gramophone?

A.: It will give slightly improved signal strength but greatly improved tone.

12. Would a pentode in the last stage give me more volume than a 112A using the same plate voltage?

A.: Yes, but generally speaking the pentode unless properly matched is not very satisfactory. A high gain power valve would be better.

13. I have a crystal set which receives 2YA. Would a full-wave set give double the volume?

A.: It is questionable. Some full-wave sets have given excellent results, while others have been most disappointing. Generally speaking it is a dubious experiment.

14. Where can I obtain particulars about amateur transmitting?

A.: This week we are commencing a series of articles on that subject.

15. Where can I obtain the circuit of an eight-valve Edda?

A.: Try the National Electric Engineering Co., Wellington.

16. Could any other valves be used to replace the two 171A's in the above set?

A.: Not without making several alterations in the power pack.

**E. W. (Raukokore).**—It seems to me that with the Daniells cell charger the cells should not be connected directly to the set, as they are of higher voltage than the valve.

A.: See our reply to a previous correspondent.

2. I cannot receive any station during the day, but get good reception at night. Why?

A.: This is quite a seasonable complaint. It is caused by the sunlight. Your locality may have something to do with it.

3. I can get nothing on the low wave except a broken buzz, which I take to be Morse.

A.: This is probably Morse, and your failure to get telephony may be due either to your not having become accustomed to the set or to be detector voltage being too low. Try removing the earth when searching for shortwave stations.

4. Would you suggest a change in my valve combination?—No, it is excellent.

5. I was told that it would be improved if I added a third B battery and a half a C, but results have been inferior. The diagram shows the wiring and the alterations.

A.: We cannot understand why this is. Your diagram is correct, only it would be better to use the full 9 volts C instead of the half battery. It may be an advantage to take the connection that usually goes from 87½ to 90, instead of 112.5. It may be an improvement too, to bring the lowest tapping up to 45.

**"INTERFERENCE"** (Blenheim): During what hours can Morse amateurs operate their transmitters, and what wavelength are they allowed?

A.: This subject will be fairly fully dealt with in a series of articles which commence this week. They can operate at any time and are confined to low wavelengths. Those who wish to go on to the broadcast wavelength must not operate during ordinary broadcast hours.

Note: Your coupon was missing.

**"ENTHUSIAST"** (N.P.): Could I use the super-het, short-wave adapter on my four-valve set?—Not satisfactorily.

2. Can a stage of r.f. amplification be added to the adapter?

A.: It would be a risky experiment for anyone who has not had considerable practice in experimenting.

3. Would a better method be to cut out the audio stages and add an oscillator after the detector and use this as an adapter in conjunction with a three screen-grid valve set?

A.: No, you are really looking for trouble in attempting an ambitious thing like this. Super-hets, although very

powerful, are not as easy to make as they appear, and to avoid disheartening readers we have left them alone in our columns.

**"DIRECT"** (Auck.): Do you know of any d.c. sets on the market?

A.: We do not happen to know of any particular makes, though it is possible that Stewart-Warner might have one.

2. Are they dependable, as I am told they are very hard on valves?

A.: It would be, almost essential to have a voltmeter across the filament supply and this would have to be watched very carefully and the voltage regulated. If this were done the set would be no harder on valves than the battery or the a.c. set.

3. What type of set would you advise me to use in the d.c. area?

A.: Either a good battery set with a B eliminator and a trickle charger, or an a.c. set with a rotary converter. Probably one of the dealers would build one of the eliminator type to order and you would operate it from the wall as you would an a.c. set. When you turned off the set the trickle charger would be turned on automatically and you would not have to worry about charging batteries. Of course both eliminator and trickle charger would have to be specially made. Another plan would be to have a d.c. set built up following out one of the circuits we published a short time back.

**O. C. S. (Hamilton):** Is my sketch of the Loftin Four with a 245 in the last stage correct?

A.: Yes, the amplifier end is the same as for the Loftin Three.

2. Will a 280 be satisfactory with two 245's in parallel?

A.: Yes, but an Osram U8 would stand a higher voltage and perhaps it would be safer.

3. Are two 245's as good as a single 250?—Yes.

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