

loop being used is also home-made and is 2ft. square, having eight turns on each side, with 3-8th between each turn. The trouble experienced when using the loop is that it makes the dial of the first r.f. stage read too low. When I tune in 2YA, using the outdoor aerial, the three dials read 50 each, and when the loop is used I have to bring the first r.f. dial down to 50 to be properly tuned, the other dials remaining the same as before. You can see from the above that it is impossible for me to tune a station much below 400 metres when using the loop. I have tried taking a turn of each side of the loop and found it made no difference.—G.J.W. (Greymouth.)

ANSWER: A loop antenna is to be connected to a set so as to replace the aerial coil. The correspondent has included a diagram which shows that he has made an erroneous connection. The outside of the spiral should be connected to the end of the variable condenser that tunes the aerial coil that goes to the grid of the valve. The inner end must be connected to the other plates of the condenser, and so to the filament of the valve. Thus the aerial coil is cut right out of the circuit.

The Browning Drake.

W. G.K. (Dunedin) has written stating that his Browning Drake is not giving him satisfaction, and that he wishes to rewire it. He states that he would like a copy of the "Listeners' Guide" in which this was described.

Unfortunately the 1928-29 edition is now sold out, but the new issue is now well in hand, and should be out within the next five weeks. Considering the interest displayed in the Browning Drake it will be redescribed with all the most recent additions, e.g., the parallel plate feeds. Apart from the conventional type there will be a diagram of the all-electric B.D., and in all probability full details of the screen grid transformer coupled model.

The screen grid valve has already been applied to the B.D., but it has unfortunately thus lost its character. At the present time the transformer coupled set is being worked upon, and if complete will be described in the new edition of the Guide.

Can't Get Lower Wavelengths.

I HAVE a six-valve single control set, and until four months ago everything was OK. Since then, under the same conditions, except that the valves have been replaced with two continental and four radiatrons, I cannot get stations on the lower wave-lengths (below 280 metres) and between 280 and 340 normal working of the machine (except volume not so much) above 340 I find that if I place a variable condenser in series between the bottom end of the coil (just in front of the E and A connections) and earth I can get good volume, but not so clear.—**RECORD READER** (Westport).

A Corner for Beginners

A Unique Exponential Horn.

I INTENDED to try my hand at making the exponential horn, but was unable to get any wall-board in Te Kuiti, so rather than be without one, I decided to make one out of paper. I pasted 12 thicknesses of newspaper together and this made a fairly stiff board of the right size. This can be cut with a sharp knife. I found that this makes a fairly good speaker, although it needs a strip of thin board about 1/2 in. wide run round the mouth of it, to stiffen it. Each board must be dry before it is cut, and even then the speaker is a little bit limp until it is dried, on account of having the paste strips of paper inside and outside the joins.

It has one advantage over others, that it is very light; also it can either be painted or cloth can be pasted over it.

I find an annoying rattling develops in the speaker unit. This does not appear in the small horn, but spoils reception in the big horn. I have altered the screw at the bottom, but this does not stop the rattle until the music vanishes to almost nothing, yet when I return the unit to the little horn the rattle is not noticeable. Can you suggest a cure?

I find that the set does not deliver enough power to drive the large horn, although the small one has about three times the volume.—**F.M.** (King Country).

The innovation is a novel one, but it appears that the paper is absorbing

ANSWER.—Evidently the change of valves has caused the set to become demagnetised, and the cure is obvious. Methods of neutralisation have been frequently described in the "Record." Placing a condenser in series with the aerial and earth adds to the inductance and allows of tuning to shorter wavelengths and gives greater tuning range.

E.R.D. (Christchurch) writes: I have a two-valve set, but fear there is something wrong with the coils. Could you tell me how many turns to put on, using a three-inch former? How many coils would I need and where should I join them?

ANSWER.—Only one coil is necessary, and that is the aerial coil. This may consist of 65 turns of 22 s.w.g. wire (space wound if enamelled), when tuned with a .0005 variable condenser. If a .00035 condenser is used, 68 turns must be put on. One end of this goes to the tuning condenser, than to grid condenser, and the other to condenser then to A, and so to earth. The correspondent's diagram shows A+ going to earth.

The aerial is brought in at a tapping 18 turns from the earth end.

much of the volume. It should have been shellaced thoroughly and left to dry. Several coats would have made it more impermeable to soundwaves. The rattle is probably due to something being loose. Either some of the sheets or ends are not properly glued together.

Bad Connections.

A GOOD circuit and a good receiver may be utterly spoiled by bad connections. These may appear neat enough, but may be so arranged as to set up hand-capacity and occasion other evils. Lead should not run in absolute parallel, but should cross and travel at an angle. In most circuits the components are arranged so that this system will be easy to adopt.

It is unwise to use very thin wire possessing a naturally high resistance. The other extreme should also be avoided—the use of very thick wire, difficult to manipulate, and impossible to accommodate on a terminal shank when two connections have to join there.

A safe medium is No. 20, a gauge frequently advised when circuits are detailed. This is sufficiently pliable to permit easily wiring, but stout enough to retain its position without sagging and making contact with a neighbouring wire. If this appears possible, however, take the precaution to insulate one of the adjacent connections with "sleeving."

Too much of this insulating material causes internal capacity, which will probably upset tuning, especially that of the weaker signals. These may disappear when the hand is removed from the condenser knob.

Set Refuses to Oscillate.

IT sometimes happens that the set works at remarkable volume on a near station, and yet will not bring in distant transmissions. A set which functions thus, is, to all intents and purposes, a "local station only" receiver. Its range is about 30 miles. It will not receive over longer distances because it refuses to oscillate and is therefore lacking in sensitivity.

Lack of oscillation is a trouble which arises from any of several possible

causes. A high resistance rheostat in series with the filament of the detector valve is one of them, and the most likely. Another is a falling-off in the voltage of the accumulator due to deterioration or to a "short" between the plates. A reaction coil connected the wrong way round will absolutely prevent oscillation, and if the reversal does not correct matters, a faulty grid leak may be looked for.

When the Set Howls.

WHEN a set is worked in a state of oscillation and transmits interference a wave is radiated which varies in length as and when the tuning of the receiver is varied.

This explains the variation in tone of an interfering note. The transmitted wave is nearly the length of a wave the careless operator is trying to receive, and therefore approximate to the wave his victims are actually receiving with distressing interference. It is impossible for the victims to tune out interference, for the simple reason that the culprit, in varying his tuning crosses and recrosses the wave-length upon which or to which sets in the vicinity are tuned.

When Volume Decreases.

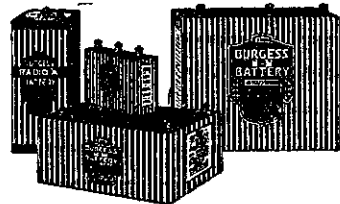
GIVE the A battery a good charge when a sudden decrease in volume is experienced. Test the B batteries with a voltmeter.

Operate the set for about fifteen minutes, and while the set is turned on apply the voltmeter to the B batteries. If they are rested after the set is idle for a period, the batteries will recuperate and show an increased reading. When the batteries are all in good working order, look for a defective valve. If the valves have been in operation for more than a year, it is possible they need replacing.

Position of the Speaker.

TO get the best results from a loudspeaker, it should be shifted about the room and even the entire home. Furthermore, the volume should be regulated according to the size and the nature of the room.

A large room can take more volume than a small room, while a sparsely furnished room will take less than a well-furnished and heavily draped room. It is well to remember that the loudspeaker is not necessarily chained alongside the receiver. Move it about with an extension cord or wiring, so as to be able to get the best results.



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